

1 B-126,986
 2 RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
 3 VS. * JEFFERSON COUNTY, TEXAS
 4 AMERICAN PETROFINA, ET AL * 60TH JUDICIAL DISTRICT

5 A-134,614
 6 FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
 7 VS. * JEFFERSON COUNTY, TEXAS
 8 BETHLEHEM STEEL CORP., ET AL * 58TH JUDICIAL DISTRICT
 9

10 B-141,242
 11 ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
 12 VS. * JEFFERSON COUNTY, TEXAS
 13 AMERICAN OPTICAL CORP., ET AL * 60TH JUDICIAL DISTRICT
 14

15 A-138,633
 16 MARGARET FAULKNER, ET AL * IN THE DISTRICT COURT OF
 17 VS. * JEFFERSON COUNTY, TEXAS
 18 AKRON CHEMICAL CO., ET AL * 58TH JUDICIAL DISTRICT

19 A-136,143
 20 KEITH GIBLIN, ET AL * IN THE DISTRICT COURT OF
 21 VS. * JEFFERSON COUNTY, TEXAS
 22 MOBIL OIL CORPORATION, ET AL * 58TH JUDICIAL DISTRICT
 23

24

TAKEN ON SEPTEMBER 24, 1992

25

1 E-141,216
 2 JOSEPH E. BARNARD, ET UX * IN THE DISTRICT COURT OF
 3 VS. * JEFFERSON COUNTY, TEXAS
 4 ALLIED-SIGNAL, INC., ET AL * 172ND JUDICIAL DISTRICT

5 A-140,498
 6 JOYCE A. BORNE, ET AL * IN THE DISTRICT COURT OF
 7 VS. * JEFFERSON COUNTY, TEXAS
 8 ALLIED-SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT

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VIDEO DEPOSITION OF
 JOHN E. HILL

20 On September 24, 1992, the video deposition of
 21 John E. Hill, a Witness in the above-styled cause, was
 22 taken at the instance of the Plaintiffs at the Clarion
 23 Harvest Hotel, 1345 28th Street, Boulder, Colorado,

24 pursuant to Stipulation of Counsel contained herein.

25

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1 S T I P U L A T I O N

2

3

4 IT IS STIPULATED AND AGREED between Counsel
5 for the parties hereto that the deposition of the
6 Witness named herein is taken pursuant to Notice
7 attached hereto.

8

9

10 IT IS FURTHER STIPULATED AND AGREED that
11 the Witness may sign said deposition before any duly
12 authorized and acting Notary Public for the appropriate
13 area in which signature is obtained.

14

15

16 IT IS FURTHER STIPULATED AND AGREED that
17 this deposition, or any part of same, may be used upon
18 the trial of this cause with the same force and effect
19 as if the Witness were present in Court and testifying
20 in person.

21

22

23 IT IS FURTHER STIPULATED AND AGREED that

24 all objections, other than those that relate to the form

25 of the question and responsiveness of the answer, are

1 hereby preserved and may be made at the time any
2 testimony herein is sought to be offered upon the trial
3 of this cause, despite no objection having been made at
4 the time the testimony was taken.

5

6

7 IT IS FURTHER STIPULATED AND AGREED that
8 Rick Smith, a Certified Shorthand Reporter in and for
9 the State of Texas, may act as a Certified Shorthand
10 Reporter in and for the State of Colorado for purposes
11 of swearing the Witness in this deposition.

12

13

14 IT IS FURTHER STIPULATED AND AGREED that
15 the original deposition will be given to Darren Lee
16 Brown for safekeeping and for use at the time of trial.

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1	I N D E X	
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1 JOHN ELWOOD HILL,

2 having been duly sworn, testified as follows, to-wit:

3 EXAMINATION BY MR. HOBSON:

4 Q. Good morning, Mr. Hill.

5 A. Good morning.

6 Q. My name is Herschel Hobson, and I represent
7 a number of people who have filed a lawsuit against
8 among others Dow.

9 As I was saying, Mr. Hill, my name is
10 Herschel Hobson; and I'm one of the attorneys that
11 represents a number of people who have filed a lawsuit
12 against Dow. And I understand that you have worked for
13 Dow in the past; is that right?

14 A. That's right.

15 Q. Would you introduce yourself, please, sir,
16 to the group here.

17 A. I'm John Hill. Do you need more
18 information than that?

19 Q. Do you have a middle name, Mr. Hill?

20 A. Elwood.

21 Q. And where do you reside, sir?

22 A. In Boulder, Colorado.

23 Q. Would you give me just a very brief summary

24 of your work history after you finished your formal

25 education.

1 A. I went to work for Dow in Rocky Flats in
2 March of 1953, as a radiation monitor. And about
3 December of '53, they made me a - what they called a
4 junior scientist, which was really a salaried radiation
5 monitor. And I was in that for about a year, and then
6 became what would now be a foreman out there. It was
7 still called a scientist in the health physics
8 department.

9 I worked in all of the buildings for a very
10 short time, ending up eventually in Building 444, which
11 was a depleted uranium facility. And I worked there
12 from about '54 or '55 up until 1961.

13 Then in December of 1961, I became the
14 plant industrial hygienist. And I remained that until
15 April of 1983, when I became manager of environmental
16 and occupational health. And I kept that job for a year
17 until I retired in May of '84.

18 Q. Have you done any professional work since
19 your retirement, sir?

20 A. No, except I have gone back to the plant a
21 few times to look through some records and stuff for
22 them.

23 Q. May I ask you, Mr. Hill, have you retained

24 any counsel for the deposition here today?

25 A. No.

1 Q. And have you been employed by anyone to be
2 a consultant in this litigation?

3 A. No.

4 MR. ALMQUIST: Well, Herschel,
5 while he has not retained counsel, of
6 course, he's a former Dow employee.
7 And as Dow's attorneys, both
8 Mr. Stuart and I are here in that
9 capacity with Mr. Hill.

10 MR. HOBSON: I understand.

11 (By Mr. Hobson)

12 Q. What was your formal education, Mr. Hill?

13 A. I have a Bachelors degree in Zoology from
14 the University of Colorado.

15 Q. And that was here in Boulder?

16 A. Yeah.

17 Q. May I ask you, sir, when you completed that
18 B.S. degree?

19 A. '52.

20 Q. So, you went directly from your
21 undergraduate program to work for Dow?

22 A. I had some odd jobs here in Boulder until I
23 went to work out there. It was just starting up in '52.

24 I worked for the street department and stuff like that

25 until I went out there.

1 Q. How is it that you got the job out at Rocky
2 Flats?

3 A. I got it I think through the referral
4 service or placement there at the university. I think
5 they gave them my name as being a possibility, and they
6 called me out for an interview.

7 Q. What kinds of training have you received in
8 the area of industrial hygiene?

9 A. Mainly through the Industrial Hygiene
10 Association, their workshops, reading material, things
11 like that; their conventions.

12 Q. Have you attended any formal training
13 programs, short courses of that kind that you can
14 recall?

15 A. Short courses in connection with the
16 meetings, a one-day session or a half-day session, yeah.
17 I can't tell you what they are, but we did that
18 routinely.

19 Q. But you don't recall ever attending any
20 Public Health Service training programs or NIOSH
21 training programs?

22 A. No.

23 Q. Is there any of the work at Rocky Flats

24 that is for some reason a government secret of some

25 kind?

1 A. Most of it is, yes, sir.

2 Q. I want to make sure today that if we even
3 get close to any area that you feel is covered by some
4 sort of official secrets, you let me know so we don't
5 run a muck of the government in any way.

6 A. Will do.

7 Q. Thank you. Can you tell me the general
8 type of activity that was undergoing - that was in
9 progress at Rocky Flats while you worked there?

10 A. The plant itself was involved in plutonium
11 work, uranium work, beryllium work, machining and
12 foundry operations, some chemical operations, that sort
13 of thing.

14 Q. And what was your job prior to getting to
15 be the plant industrial hygienist? Would you tell me
16 generally what you did.

17 A. I directed the activities of four or five
18 radiation monitors in the - essentially in the depleted
19 uranium machining and foundry operation building.

20 Q. Would it be accurate to say that really
21 while you were doing the radiation monitoring work, you
22 had little contact with industrial hygiene?

23 A. Very little, yes, sir.

24 Q. And I take it most of the training that you
25 were receiving up until you got into industrial hygiene

1 then had to do more with health physics and measuring
2 radiation ---

3 A. (Interrupting) Yeah.

4 Q. --- and other kinds of hazards?

5 A. That's true.

6 MR. ALMQUIST: Mr. Hill, to make
7 the deposition go a little bit better,
8 let Mr. Hobson finish talking
9 completely before you start talking.

10 (By Mr. Hobson)

11 Q. Also it's easier for this gentleman to get
12 everything down.

13 How is it that you got involved in the
14 industrial hygiene program out at Rocky Flats for Dow?

15 A. I don't know. They had had I think three
16 different people; one left; one took another job. And
17 it was in the safety department. And for some reason
18 they decided it should be in with health physics, in the
19 health protection. And my boss just said, "You are
20 going to be the industrial hygienist from now on." What
21 he based that on, I never asked him.

22 Q. So, one day you walked in and they said you
23 are it?

24 A. Right.

25 Q. Were there other industrial hygienists then

1 at Rocky Flats for Dow prior to you taking this job?

2 A. Yes.

3 Q. Who were those folks?

4 A. First one -- Well, there were two. And I
5 don't remember who was first. El Ray Johnson is one of
6 them. Goodwin - I think his name was Darrell. And Tim
7 Hicks was the one I took over from.

8 Q. You said El Ray. Is that ---

9 A. (Interrupting) E-I capital R-a-y.

10 Q. And did you understand that Mr. Johnson,
11 Mr. Goodwin and Mr. Hicks were professional industrial
12 hygienists?

13 A. Not really. Goodwin was, and he left - got
14 a fellowship I think at Pittsburgh and then never came
15 back. He went somewhere else. ElRay was in the health
16 physics department. I don't know what his background
17 was. I don't know if he was a chemist or what. Tim
18 Hicks was a safety engineer.

19 Q. And you took over industrial hygiene from
20 Mr. Hicks then in December of '61?

21 A. Yes.

22 Q. What -- When you took over industrial
23 hygiene in December of '61, what kinds of industrial

24 hygiene problems did you see facing you that you chose

25 to deal with?

1 A. I don't remember any specific problems.
2 Probably some noise problems, some lumination, solvents.
3 Beryllium really was the biggest one. We had just
4 started a beryllium operation shortly before then. And
5 that was the biggest operation we were concerned with.

6 Q. And that was from breathing the particulate
7 beryllium into the air by the workers handling the
8 beryllium materials?

9 A. Yes, sir.

10 Q. Was the use of thermal insulation materials
11 something that occurred at Rocky Flats while you were
12 there?

13 A. There was thermal insulation there that
14 was - I think was put in when the plant was built. Yes,
15 it was there on mainly steam pipes.

16 Q. Since I've never been to Rocky Flats and
17 have no idea of how the configuration was set up, would
18 you tell us how steam pipes would have been used at
19 Rocky Flats where the thermal insulation was used.

20 A. Each of the major production buildings back
21 then had their own steam boilers. The steam was piped
22 through the building. The -- What we called the "lump
23 some area," which was mainly administrative buildings

24 and stuff, had a central steam generating plant; and

25 pipes suspended overhead that distributed the steam to

1 the buildings.

2 Q. In the production areas, how was steam
3 utilized?

4 A. Heating air. I think it was probably used
5 some in - in process heat. But mainly I think was just
6 for heating the buildings.

7 Q. Do you have any recollection of what size
8 boilers were being used at Rocky Flats?

9 A. No.

10 Q. Now, Rocky Flats is a facility that is
11 owned by the United States Government?

12 A. Yes, sir.

13 Q. And Dow was a contractor to the United
14 States Government?

15 A. Yes, sir.

16 Q. Did Dow operate all of Rocky Flats, or were
17 there other contractors working there with Dow as you
18 understand it?

19 A. Rocky Flats ran the plant. But as far back
20 as I can remember, there were always some construction
21 companies - there were almost always construction
22 companies on the plant.

23 Q. Dow ran the plant, but there were

24 contractors that came in to do work at the facility?

25 A. Mainly new construction, yes.

1 Q. Was there a maintenance crew that were Dow
2 employees?

3 A. Yes, sir.

4 Q. In that maintenance crew was there a
5 category that did insulation work?

6 A. Not as such, no.

7 Q. What is your recollection of who would have
8 been doing any work that would have involved thermal
9 insulation?

10 A. Had any been done, it would have been
11 pipefitters.

12 Q. Was there a crew of pipefitters that were
13 Dow employees?

14 A. Yes.

15 Q. Can you recall about how many that would
16 have been?

17 A. No, sir, I can't.

18 Q. Are we talking 50 people or less than 50 or
19 100?

20 A. Somewhere around there. I would say 30 or
21 40 if I had to guess, but I really can't say.

22 Q. Certainly we are not talking about a couple
23 of 100 people; that's too many?

24 A. Not pipefitters. There may have been a
25 couple of hundred in the maintenance group itself, but

1 the pipefitters were just a part of that.

2 Q. Would the pipefitter category of Dow
3 employee as you understand it have been the person who
4 would have put thermal insulation on pipes as well as
5 take it off if it needed to be done?

6 A. If it needed to be done, yes. Not new
7 pipe. If they had to repair a pipe, they might have to
8 remove some insulation and put it back on. But I don't
9 recall -- Most of the pipe was clad in aluminum
10 coverings. And I don't remember any work along that
11 line. There could have been, but I don't know. I don't
12 remember.

13 Q. The organization that you were in at Rocky
14 Flats after you became the plant industrial hygienist,
15 you said that was in health physics?

16 A. I was in the health physics group, yes.

17 Q. And to whom did that group report to at
18 Rocky Flats?

19 A. They reported to a director. There was a
20 plant manager and an assistant plant manager. And it
21 varied at times from seven to ten directors. And each
22 of those directors had a group. One of them would have
23 all of the health and safety group, which would include

24 nuclear, safety, health, physics, medical. Another

25 group might be budget people. Another group was

1 maintenance. One was production. We had -- We had a
2 director that was over health and safety.

3 Q. And then the director would report to ---

4 A. (Interrupting) To the plant manager.

5 Q. --- the plant manager? After you became
6 the plant industrial hygienist, during your tenure with
7 Dow at Rocky Flats, did you ever get any help,
8 industrial hygiene help?

9 A. From Dow?

10 Q. No. No. Any other folks who worked with
11 you out there at Rocky Flats who were industrial
12 hygienists?

13 A. We had a couple of radiation monitors,
14 hourly people assigned to us to collect routine air
15 samples and do some of the very routine work at first.
16 Later we added a chemist. Later we added a physicist.
17 And then later when they became available, we hired
18 industrial hygienists that had a degree in industrial
19 hygiene. And when I left in '84, I think there were
20 five of us.

21 Q. You ---

22 A. (Interrupting) Plus we still had the hourly
23 people and the clerical people, that sort of thing.

24 Q. Who else worked with you in industrial

25 hygiene at Rocky Flats?

1 A. Al Voight was the chemist.

2 Q. And would you know where Mr. Voight is
3 today?

4 A. He's in Boulder.

5 Q. Is he retired or still working?

6 A. Yeah. Oh, yeah, he's retired.

7 Q. And, so, he was a chemist but worked in the
8 industrial hygiene group?

9 A. He worked in the industrial hygiene group,
10 but his main duties were sanitation, food service, water
11 treatment, this sort of thing. He kept an eye on that.

12 Q. And any of the other folks that you would
13 have ever ---

14 A. (Interrupting) John Handschy was the
15 physicist.

16 Q. Could you spell his last name, please.

17 A. H-a-n-d-s-c-h-y.

18 Q. And he was your health physicist?

19 A. Yeah. It -- Well, no, he wasn't a -- I'm
20 sorry. He wasn't a health physicist. He was a
21 physicist. And he came into the group, and he tended
22 to -- He would take care of nonionizing radiation
23 surveys, things along - more along the physical line.

24 Al Voight did the sanitation. If we had a chemical
25 problem, he would tend to gravitate towards that until

1 later until we got - hired degreed health physicists and
2 branched out.

3 Q. And about when would you say this was that
4 you got degreed health physicists and began to branch
5 out?

6 A. Oh, mid to late '70's. I don't recall when
7 we got the first one. John Handschy came up to our
8 group about - I would say around 1972. And it was
9 sometime after that.

10 Q. And after you began to branch out and get
11 the degreed people, do you recall the folks that came on
12 board then?

13 A. Mike Richen would have been I think the
14 first one.

15 Q. Could you spell his last name.

16 A. R-i-c-h-e-n. Sharon Reffel, R-e-f-f-e-l.
17 Steve Saddler, but he was only there about a year before
18 I left.

19 Q. What was his first name?

20 A. Steve.

21 Q. Steve.

22 A. S-a-d-d-l-e-r. I can't think of any others
23 just offhand.

24 Q. What did you understand Mr. Richen's

25 background was?

1 A. As I recall he had a degree in industrial
2 hygiene. And he had worked I think at Fitzsimons Army
3 Hospital as an industrial hygienist before he came out
4 to the plant.

5 Q. Was he in the U. S. Army then?

6 A. No. No, he was a civilian employee.

7 Q. And what would have been Mr. Richen's
8 duties after he joined Dow?

9 A. Any industrial hygiene activities that we
10 might have been involved in.

11 MR. ALMQUIST: Herschel, I want
12 to make sure that we are clear here
13 because he has taken you all the way
14 up until almost the time he was
15 leaving with Mr. Saddler being there
16 just a year. Dow did not operate this
17 facility that length of time. And,
18 so, we are talking -- When was it that
19 Rockwell took over the operation ---

20 THE WITNESS: (Interrupting) '75.

21 MR. ALMQUIST: So, after '75 we
22 would be talking about people that are
23 not employed by Dow but employed by

24 Rockwell.

25 A. I think probably Voight and Handschy and I

1 were probably the only three that worked for Dow in our
2 group.

3 (By Mr. Hobson)

4 Q. Okay.

5 A. I don't remember for sure just when Richen
6 came in, but it was in the mid to late '70's.

7 Q. So, to make sure we have the facts as
8 correct as we can, the government changed the contractor
9 that was operating the Rocky Flats facilities?

10 A. Yes, sir.

11 Q. And it went from Dow to Rockwell
12 International?

13 A. Yes, sir.

14 Q. And rather than stay with Dow and go with
15 their organization, you and the other folks, the
16 industrial hygiene group that were there in 1975, stayed
17 on as Rockwell International employees?

18 A. Yes, sir.

19 Q. How does that affect your retirement
20 situation?

21 A. Not at all.

22 Q. They just flanged you up and put you into
23 Rockwell International's retirement program?

24 A. I don't know if it's Rockwell's. It was

25 D.O.E. And all the benefits stayed the same as though

1 we had continued on with Dow.

2 Q. Were your benefits then set by the
3 Department of Energy as you understood it, or were you
4 considered a Dow employee?

5 A. I think it was probably a - how do I say
6 this - an agreement between Dow and the plant operator.
7 It was negotiated. I don't know, but I think this from
8 day one was a negotiated thing.

9 Q. So I'm clear, before 1975, while you were
10 working out there, did you consider yourself an employee
11 of Dow?

12 A. Yes, sir.

13 Q. Did you have any contacts after you became
14 the plant's industrial hygienist in 1961 with any of the
15 industrial hygiene people from Dow?

16 A. Yes.

17 Q. How about before 1961?

18 A. Indirectly. I think some of their
19 industrial hygiene people had been out to the plant and
20 I had met them. There was nothing official. They
21 weren't here to see me or here to see my bosses, but I
22 think we did meet them.

23 Q. Do you recall any of the names of the early

24 Dow industrial hygiene people who came to Rocky Flats?

25 A. Don Irish and Harold Hoyle are the two that

1 I remember.

2 Q. Prior to you becoming the plant industrial
3 hygienist, what would have been the reason that you
4 understood that you would need to meet these folks,
5 Mr. Irish and Mr. Hoyle? Just to get acquainted and say
6 hi?

7 A. I think it was just that they were out here
8 to become familiar with the plant itself. And probably
9 as a courtesy I was introduced to them.

10 Q. Did you have any kind of professional
11 exchange with them, or was it more just being polite and
12 saying hello and being friendly?

13 A. I don't recall that I did, no.

14 Q. Were you involved in any of the technical
15 or professional discussions that your bosses were having
16 with Mr. Hoyle and Mr. Irish?

17 A. I don't recall that I was, no.

18 Q. I think you told me that later on after you
19 became the plant industrial hygienist some of the
20 radiation monitors were used to collect industrial
21 hygiene samples. Is that something you ever did while
22 you were a radiation monitor?

23 A. No.

24 Q. You stuck strictly with measuring ionizing
25 radiation?

1 A. The only contact that we would have with
2 the industrial hygienists, if they had a problem, they
3 might borrow one of my radiation monitors. And to help
4 them out, I would carry the equipment or something like
5 this. But as far as being part of it, no.

6 Q. Are you a certified industrial hygienist?

7 A. I was, yes. It's expired now.

8 Q. But you've retired. So ---

9 A. (Interrupting) Yes.

10 Q. When did you become certified?

11 A. 1969.

12 Q. And was that by examination?

13 A. Yes, sir.

14 Q. And in the comprehensive practice?

15 A. Yes, sir.

16 Q. Were there any other certified industrial
17 hygienists who were Dow employees at Rocky Flats?

18 A. I was the first, but the others
19 eventually -- I think almost all of them became
20 certified. I know John Handschy was. This again was
21 after Dow left. I think I was the only one when Dow was
22 there probably.

23 Q. Would you know if Mr. Irish or Mr. Hoyle

24 became certified?

25 A. It seems to me like they were I want to say

1 "grandfathered." I think they are on the list.

2 Q. After you became the plant industrial
3 hygienist and while it was Dow, being the operator and
4 being your employer, did you meet any other industrial
5 hygiene personnel who were working somewhere else for
6 Dow?

7 A. Yes.

8 Q. Can you remember any of those people for
9 me?

10 A. Larry Silverstein.

11 Q. I'm sorry?

12 A. Larry Silverstein.

13 Q. Harry?

14 A. Larry.

15 Q. Larry.

16 A. Ed Schneider, Arnie Schaffer, Charlie
17 Powell, Jack Peterson. And there was some woman in the
18 group, but I can't remember what her name was at the
19 time.

20 Q. I understand that Mr. Hoyle worked at
21 Midland. He was located at Midland?

22 A. Yes.

23 Q. Was Mr. Irish at Midland as far as you

24 knew?

25 A. Yes.

- 1 Q. How about Mr. Silverstein?
- 2 A. Yes.
- 3 Q. Midland?
- 4 A. Yes.
- 5 Q. Mr. Schneider?
- 6 A. Yes.
- 7 Q. Mr. Schaffer?
- 8 A. Yes.
- 9 Q. Mr. Powell?
- 10 A. Yeah.
- 11 Q. And Mr. Peterson?
- 12 A. Yes.
- 13 Q. And the lady whose name we don't have, she
- 14 was also from Midland?
- 15 A. Yes.
- 16 Q. Did you ever come to meet any of the
- 17 industrial hygienists for Dow if there were any from any
- 18 other locations?
- 19 A. No, I don't think so.
- 20 Q. What would have been happening between you
- 21 and these industrial hygienists at Midland while you
- 22 were a Dow employee at Rocky Flats?
- 23 A. They were - were mainly available to help

24 me if I needed help.

25 Q. Would it be accurate then to call them a

1 resource you could go to?

2 A. Yes.

3 Q. They were available for consultation?

4 A. Yes, sir.

5 Q. Was there a program as you understood it

6 within Dow that allowed for a circulation of industrial

7 hygiene information among the industrial hygienists?

8 A. I don't recall that there was.

9 Q. There was no program that you remember

10 where Mr. Hoyle or someone in his staff in Midland would

11 send you bulletins or periodic memoranda saying, "Here

12 is what's going on other places. Here are things to

13 look at"?

14 A. I don't recall any formal program that way.

15 Q. You yourself and I guess later on your

16 staff would have been doing industrial hygiene survey

17 work?

18 A. Yes, sir.

19 Q. Did you reduce your surveys to writing?

20 A. To a great extent, yes.

21 Q. And would you have circulated those survey

22 reports outside of Rocky Flats?

23 A. No.

24 Q. Why was that?

25 A. I don't know who we would have circulated

1 them to.

2 Q. For instance to Mr. Hoyle?

3 A. No.

4 Q. You didn't see any reason to send him your
5 work?

6 A. No.

7 Q. How about Mr. Hoyle or some of the other
8 industrial hygienists at Dow, would you have ever been
9 given copies of their survey work that they did at other
10 locations?

11 A. I don't recall that we ever had any.

12 Q. Were there any periodic meetings that
13 you-all would have as a group, industrial hygiene group,
14 get together and exchange ideas, exchange technical
15 information, coordinate programs ---

16 A. (Interrupting) With Dow?

17 Q. Yes, sir.

18 A. No.

19 Q. Well, it sounds like - and tell me if this
20 is wrong - that you-all were pretty much out there by
21 yourselves and did what you needed to do; and the folks
22 at Midland were there, but if you didn't call, they sort
23 of stayed away and minded their own business?

24 A. That's pretty much the way it was.

25 Q. Now, being a government contractor, I take

1 it that from time to time there would be folks from the
2 government coming in looking over your shoulder?

3 A. Yes.

4 Q. Were there industrial hygienists from the
5 government who were involved with the Rocky Flats
6 operation while it was being operated by Dow?

7 A. Yes.

8 Q. Do you recall any of those folks?

9 A. George Carroll is one name that comes to
10 mind.

11 Q. Know him well.

12 A. Pardon?

13 Q. I know him well.

14 A. Do you?

15 Q. Yes, sir. A classmate of mine.

16 A. There was some others. Jerry Shaykin - he
17 used to come up. He was more of a sanitarian, but he
18 was involved in industrial hygiene.

19 Q. Could you spell his name for us.

20 A. S-h-a-y-k-i-n.

21 Q. And was he also in Albuquerque with
22 Mr. Carroll?

23 A. Yes. He was -- He's been retired quite a

24 while. He may have been before George. I don't

25 remember if they overlapped or not. There were a couple

1 of others. I can't think of their names right offhand.

2 Reinert - Bruce Reinert.

3 Q. Is that R-h ---

4 A. (Interrupting) R-e-i-n-e-r-t, I think.

5 Q. And was Mr. Reinert also out of Albuquerque
6 with D.O.E.?

7 A. Yes, And there was another one. I can't
8 remember what his name was. He was there for a short
9 time, but I can't tell you his name right now.

10 Q. Did the Department of Energy tell you how
11 to do your job or ---

12 A. (Interrupting) Yes.

13 Q. --- did they come in and look over your
14 shoulder and see if you were doing it right?

15 A. Both.

16 Q. So, you had both an independent activity
17 and some direction from D.O.E.?

18 A. Yes, sir.

19 Q. Now, it's my understanding that the
20 Department of Energy had something to do with your
21 operations for at least a period of time at Rocky Flats;
22 is that right?

23 A. Yes.

24 Q. Did the Atomic Energy Commission ever have
25 anything to do with Rocky Flats to your knowledge?

1 A. Yes.

2 Q. Were there people from the Atomic Energy
3 Commission who had to do with health matters such as
4 industrial hygiene that you dealt with?

5 A. Yes.

6 Q. Would you recall any of those names?

7 A. Harold Grow was the one back in the '50's
8 and probably the '60's.

9 Q. Could you spell his last name.

10 A. G-r-o-w, I think.

11 Q. Where was Mr. Grow stationed?

12 A. He was at Rocky Flats.

13 Q. So, he was actually permanently assigned as
14 an Atomic Energy Commission, A.E.C. employee at Rocky
15 Flats?

16 A. Yes, sir.

17 Q. What is your understanding of his job?

18 A. I am not too sure. They seemed to handle
19 construction safety. This is just the impression I got
20 back then. They then were available if we needed some
21 information usually from D.O.E. We could go through
22 them and get it quicker then directly. Just an overall
23 health and safety overview.

24 Q. Anyone else that you can recall from

25 A.E.C.?

1 A. Jim Stearns, S-t-e-a-r-n-s, I think; and

2 Gary Leitz. I don't know if it's L-e-i-t-z or

3 L-i-e-t-z. I think it's L-e-i-t-z.

4 Q. Now, was there a time when the Atomic

5 Energy Commission had oversight of Rocky Flats and then

6 it became D.O.E.'s oversight, or was it joint?

7 A. It was A.E.C. originally, and they became

8 ERDA. And ERDA became D.O.E.

9 Q. While it was the Atomic Energy Commission,

10 would you have ever come across the name Merrill

11 Isenbud?

12 A. I've heard the name. I don't know him.

13 I'm not familiar with him, but I have heard the name.

14 Q. You don't recall having met him?

15 A. No.

16 Q. When it came time to determine a sampling

17 regime for evaluating health hazards say at Rocky Flats,

18 who would have the primary decision-making authority in

19 that regard; would that be you or would that be the

20 government's oversight?

21 A. If it were radioactive material, that would

22 be the health physics group. If it were nonradioactive

23 material, I guess it would have been mine.

24 Q. So, whoever the government oversight

25 industrial hygienist was, would that person come in and

1 say, "Okay, Mr. Hill, this year you are going to take 6
2 samples for this material in this location, and you are
3 going to take 15 samples for this material in that
4 location"? Or would you make those decisions yourself?

5 A. They would give us guidance. I don't think
6 they would be that specific. But they'd say, "I think
7 you ought to look into this or look into that." But as
8 far as giving us very specific instructions, I don't
9 recall that they did that.

10 Q. So, the day-to-day activities were
11 basically in your and Dow's control?

12 A. Yes, sir.

13 Q. When it came time to setting practices -
14 work practices, which were in the safety and health area
15 such as respiratory protection, personal protective
16 equipment, clothing, that sort of thing, who would make
17 the call for that kind of protection?

18 A. We -- We would make the decision I think,
19 but they had to concur with it.

20 Q. And was it a matter ---

21 A. (Interrupting) If we wanted to change
22 something that was in place, we usually had to check
23 with them and make sure they agreed with it.

24 Q. One of the things this lawsuit deals with
25 is asbestos. And I'm sure that from your early days of

1 working in industrial hygiene you recognized that
2 asbestos had the potential to cause certain health
3 effects.

4 A. I don't know if you would say early days or
5 not. I don't recall when we became aware of it.

6 Q. When do you recall at Rocky Flats you
7 having a time more or less fixed in your mind that
8 asbestos became a health issue?

9 A. I don't know. I don't recall when we might
10 have become aware of it. We didn't have any asbestos
11 problems. And I don't know -- I can't set a specific
12 date as to when we said, "Oh, asbestos could be
13 harmful."

14 Q. You say you didn't have any asbestos
15 problems. Do you recall taking air samples for
16 asbestos?

17 A. Not in the early days. We may have in -
18 oh, later on.

19 Q. Later on being?

20 A. Oh, in the '70's maybe, late '70's. But I
21 don't remember ever having - even thought probably about
22 asbestos in the early days out there.

23 Q. And by the "early days," you mean before

24 the late '70's?

25 A. I'm talking '60's, early '70's, '50's.

1 Q. Was Rocky Flats a facility that was covered
2 by the OSHA standards as you understood it?

3 A. By the what standards?

4 Q. OSHA, Occupational Safety and Health
5 Administration.

6 A. Yes, we were -- We were required to abide
7 by those unless there was a more restrictive control.

8 Q. Was that from the beginning, or was that by
9 executive order later on?

10 A. Here again, I don't remember when this came
11 in. All I remember is it seems forever that we were to
12 abide by acceptable standards let's put it that way,
13 common standards. If there was a more restrictive
14 standard, then we were required to go by that.

15 Q. Were you the person, being the plant
16 industrial hygienist, who would have been involved in
17 setting or reviewing at least practices for personal
18 protective equipment for employees at Rocky Flats?

19 A. For nonradioactive protection mainly, yes.

20 Q. And if we are talking about asbestos, that
21 would fall under the category of nonradioactive?

22 A. If it was there, yeah.

23 Q. Do you know if the thermal insulation

24 materials that were used on the boilers and steam pipes

25 contained asbestos?

1 A. Not with certainty. I don't know. Some of
2 them may have. Some may not.

3 Q. Do you have any recollection of ever having
4 that question put to you or ever thinking of that
5 question and getting an answer to it?

6 A. No, I don't recall.

7 Q. So, in all the time that you were at Rocky
8 Flats, would it be accurate to say that you don't ever
9 remember anybody taking an asbestos air sample when
10 somebody was handling thermal insulation materials?

11 A. I don't recall that we did.

12 Q. Would you remember what the practices were
13 for the pipefitters when they were handling thermal
14 insulation material as far as personal protective
15 equipment goes?

16 A. I -- You know, I really don't recall them
17 ever handling it.

18 Q. You told me earlier that it would have been
19 their job to handle it.

20 A. It would have if there had been work to do.
21 But I can't think of a specific instance where they were
22 working with it.

23 Q. Are you saying that you can't think of any

24 time when they would have ever done it, or you can't

25 remember ever seeing them do it?

1 A. I can't remember ever knowing that they
2 were doing it or seeing it. Either way you want to put
3 it, yeah.

4 Q. Do you ever recall having any conversations
5 was Mr. Hoyle or anybody else out at Dow's operations
6 you told me about earlier about the need for people
7 handling thermal insulation products to wear respiratory
8 protection?

9 A. No, I don't recall the subject ever coming
10 up with it.

11 Q. Do you ever recall having any conversations
12 with any of Dow's industrial hygienists about asbestos
13 and health hazards at all?

14 A. No.

15 Q. Did you ever become aware that in the
16 1950's Mr. Peterson and Mr. Hoyle had done air sampling
17 for people handling thermal insulation materials at
18 Midland and any of the results of that work?

19 A. I don't remember ever hearing of it, no.

20 Q. When you became the plant industrial
21 hygienist, did you become aware that there were
22 threshold limit values established by the American
23 Conference of Governmental Industrial Hygienists?

24 A. Yes, sir.

25 Q. Had you known about those T.L.V.'s earlier

1 than 1961, or can you recall?

2 A. I don't -- I don't remember.

3 Q. But shortly after you became the plant
4 industrial hygienist, you are certain you became aware
5 of T.L.V.'s?

6 A. Yes, sir.

7 Q. Would you recall that one group of T.L.V.'s
8 dealt with mineral dusts?

9 A. Vaguely.

10 Q. And, of course, asbestos is one of the
11 mineral dusts listed there. You would know that now I'm
12 sure.

13 A. I would now, yes.

14 Q. Was asbestos used at Rocky Flats before
15 1975 in any way to your knowledge, either as a part of a
16 material or asbestos in its need for ---

17 A. (Interrupting) We had as I recall two uses.
18 One was asbestos blankets that the fire department had.
19 The other was asbestos gloves they used for handling hot
20 metal. Those are the only two that I can think of
21 offhand that we had.

22 Q. Were there analytical chemical labs at
23 Rocky Flats?

24 A. Yes, sir.

25 Q. Would you know one way or the other if

1 asbestos was used as a filtering agent in the
2 laboratory?

3 A. No, I don't know for certain one way or the
4 other.

5 Q. Having been trained in Zoology, I take it
6 you were required to take some chemistry courses?

7 A. Yes.

8 Q. Do you ever recall using these porcelain
9 funnels in laboratory courses where you would lay down
10 an asbestos blanket and use asbestos as a filtering
11 agent?

12 A. No, I don't remember that.

13 Q. Would you know one way or the other if that
14 procedure was ever done at Rocky Flats?

15 A. I wouldn't know, no, sir.

16 Q. Would you know if there was any maintenance
17 facility for analytical instruments at Rocky Flats -
18 analytical instruments used in the analytical
19 laboratories?

20 A. Yes.

21 Q. There was such an installation?

22 A. Instrument shop.

23 Q. Yes, sir.

24 A. Uh-huh.

25 Q. Would that instrument shop repair things

1 like gas chromatographs?

2 A. I don't know if they would or not.

3 Q. Would you know one way or the other if at

4 Rocky Flats there was any transite type material used?

5 Do you know what I mean by transite?

6 A. We had transite panels.

7 Q. And those transite panels, were they

8 something that would have been handled by carpenters?

9 A. Well, they would have. I think most of it

10 that I was aware of was walls or building that was put

11 up when they were constructed. I don't recall if

12 maintenance worked with them or not. They could have.

13 Q. Wouldn't you expect from time to time that

14 people would have to cut holes in those transite panels

15 to run piping ---

16 A. (Interrupting) It's possible.

17 Q. What about for roofing; was transite

18 material ever used for roofing at Rocky Flats that you

19 recall?

20 A. I don't recall that it was.

21 Q. Were you aware that transite material

22 contained asbestos?

23 A. Yes.

24 Q. And would that go back to your early days

25 as plant industrial hygienist, or can you recall?

1 A. No, I don't think so. But I don't really
2 know when it - when I became aware of it.

3 Q. Would you remember if anyone ever did any
4 air sampling for particulate material while cutting
5 transite - I mean at Rocky Flats, air sampling at Rocky
6 Flats?

7 A. I don't recall if we did or not.

8 Q. Based on your experience, can you tell me
9 what kind of fiber concentrations one would expect when
10 cutting transite with power tools?

11 A. No.

12 Q. Would you have any recollection of having
13 any knowledge about what kind of fiber concentrations
14 could be expected when removing thermal insulation
15 containing asbestos?

16 A. No.

17 Q. While you were at Rocky Flats and a Dow
18 employee, did you participate in any either trade
19 association activities or consensus standard setting
20 organization activities?

21 A. No.

22 Q. So, you never were on an A.S.A. or an ANSI
23 standard subcommittee?

24 A. No.

25 Q. Never had anything to do with the Chemical

1 Manufacturer Association or the older Manufacturing
2 Chemists Association activities?

3 A. No.

4 Q. Nothing like that at all?

5 A. No.

6 Q. Did you yourself teach any short courses in
7 industrial hygiene outside of Rocky Flats?

8 A. The only thing I taught was a one-session
9 course at the community college on solvents. I taught
10 that two or three times. But that I think that is the
11 only one off site.

12 Q. Was that a full semester course or a short
13 course?

14 A. It was a full semester industrial hygiene
15 course, and they had guests come in and teach the
16 different parts of it.

17 Q. So, you were one of the guest speakers?

18 A. Yeah.

19 Q. And your subject was solvents?

20 A. Yes.

21 Q. And how many sessions would you take to
22 cover the subject of solvents?

23 A. Just one.

24 Q. And that would be approximately how long a
25 session?

1 A. Let me take that back. The session was I
2 think maybe two and a half hours. It was an evening
3 class. And then the class would come out to the plant
4 and tour our industrial hygiene facilities and look at
5 our instrumentation and stuff like that for another two
6 or three hours and maybe the next class period.

7 Q. And about what time period would you recall
8 having participated at the community college and
9 teaching the session on solvents?

10 A. Probably late '70's.

11 MR. ALMQUIST: This might be a
12 good place to take a short break if
13 you are getting ready to shift gears.

14 MR. HOBSON: Sure.

15

16 (A SHORT RECESS WAS TAKEN.)

17

18 (By Mr. Hobson)

19 Q. We are back after the break, sir. When you
20 first got out to Rocky Flats working for Dow, what kind
21 of library was available to you for reference?

22 A. They had a plant library in the
23 administration building as I recall. It wasn't too

24 large. I think to the best of my knowledge the previous

25 industrial hygienists had collected some -- We had like

1 I said some of the A.I.H. journals that somebody had
2 subscribed to. Other than that, there may have been a
3 couple of industrial hygiene books, Sax or somebody like
4 that that we had.

5 Q. Did you have a copy of Patty's, the early
6 edition?

7 A. I think we had Patty's. I don't know
8 when - what edition it was or when we had it. But the
9 name of the book is familiar.

10 Q. In 1961 after you took over as plant
11 industrial hygienist, I take it you became more familiar
12 with that library as far as industrial hygiene texts
13 were there?

14 A. Yeah, I guess so.

15 Q. Do you recall if you had any publications
16 from any of the trade associations, or the -- For
17 instance, the National Safety Council, did you have
18 their industrial hygiene textbook?

19 A. I don't remember one from the N.S.C., no.

20 Q. Did you get publications from the National
21 Safety Council at Rocky Flats? Did you get the
22 National Safety News, the magazine?

23 A. I didn't, no.

24 Q. Did others at the plant?

25 A. I don't know. We had an industrial safety

1 department, which was separate from me. And if it came
2 to anybody, it would come to them I think.

3 Q. And you don't remember one way or the other
4 seeing the National Safety News out there?

5 A. I don't remember seeing one, no.

6 Q. What about publications of the Industrial
7 Hygiene Foundation, did you recall seeing any of those
8 out there?

9 A. The name is familiar, but I can't remember
10 any specific things that I may have seen.

11 Q. Do you have any knowledge one way or the
12 other as to whether or not Dow participated in the
13 Industrial Hygiene Foundation?

14 A. I just don't remember, no.

15 Q. The Industrial Hygiene Foundation published
16 something called Digests. That was a publication of
17 abstracts from various articles published around the
18 country and around the world. Do you ever recall seeing
19 the Industrial Hygiene Foundation Digests?

20 A. No, I'm not familiar with it at all.

21 Q. Did you ever find any of the National
22 Safety Council's safety data sheets that you recall out
23 at Rocky Flats while it was Dow?

24 A. Safety data sheets? I don't recall

25 specifically that we did.

1 Q. The Manufacturing Chemists Association at
2 one time published a similar type chemical data sheet
3 for certain materials. Would you ever remember seeing
4 those?

5 A. We had chemical safety data sheets. Where
6 they came from, I don't know. I don't recall what - who
7 published them.

8 Q. Do you recall seeing any publications from
9 the American Petroleum Institute?

10 A. No.

11 Q. Do you recall seeing a publication by a
12 W. C. Hueper, H-u-e-p-e-r, called "Occupational Tumors
13 and Allied Diseases" or something similar to that?

14 A. No.

15 Q. In your work -- And back again talking like
16 you did about the early years, prior to the late 1970's,
17 were you aware as an industrial hygienist that certain
18 chemicals could cause cancer in workers?

19 A. Yes, I guess so.

20 Q. What was your impression of what kind of
21 chemicals could cause cancer in workers in the early
22 years prior to the late '70's?

23 A. I expect the radioactive materials would

24 come to mind first. Other than that, I can't name any

25 just offhand.

- 1 Q. Was there an on-site physician at Rocky
2 Flats?
- 3 A. On site?
- 4 Q. Yes.
- 5 A. Yes.
- 6 Q. Was this physician also a Dow employee as
7 far as you knew?
- 8 A. Yes.
- 9 Q. Who would the physicians have been that you
10 recall and about what time period?
- 11 A. There was a Dr. Peterson. I think he was
12 the first one that I recall. He was there I think when
13 I went to work out there. And I can't tell you how long
14 he stayed. There was a Dr. Guzak, and I can't even tell
15 you which order they were in.
- 16 Q. Could you spell that.
- 17 A. Guzak. G-u-z-a-k. There was a Dr. Hylton;
18 Dr. Moore, M-o-o-r-e. And the one that is there now, I
19 can't think of his name. Joe something.
- 20 Q. Would you recall the first name of any of
21 the other physicians: Peterson, Guzak, Hylton or Moore?
- 22 A. Stephen Guzak, I think.
- 23 Q. S-t-e-p-h-e-n or ---

24 A. (Interrupting) I don't know. Bill Hylton,

25 I think that's H-y-l-t-o-n. I'm not sure.

1 Q. Moore?

2 A. Bill Moore.

3 Q. And Dr. Peterson - would you recall his
4 first name?

5 A. No, I don't.

6 Q. What was your understanding of the role the
7 physicians played at Rocky Flats when they were there
8 for Dow?

9 A. Well, I guess I don't understand what you
10 mean.

11 Q. What was their job as you understood it?

12 A. Doctors. To take care of the - any
13 problems that came up healthwise with the employees.

14 Q. Would they be involved with the industrial
15 hygiene activity that you later took over as plant
16 industrial hygienist? Did you coordinate with them?

17 A. Yes, sir.

18 Q. Did that include things like monitoring
19 employees periodically to see if they had any kind of
20 occupational diseases?

21 A. This was done on occasion for radioactive
22 materials routinely, for beryllium routinely, for
23 anything else on an as-needed basis I guess you could

24 say. If we were concerned that somebody may have been
25 exposed, we would contact medical and they would do the

1 checking.

2 Q. Was it more the instance that you would go
3 to medical with a problem or would medical come to you
4 and tell you this is what needs to be done?

5 A. It worked both ways. We would tell them if
6 we thought we had a problem. If somebody came up and
7 said I may have done this or may have done that, they
8 would usually tell us. I don't think -- There was no
9 formal written exchange. There was -- We would tell
10 them. They would tell us.

11 Q. Now, your concerns about beryllium, and I
12 guess we talked a little bit about them earlier, but
13 that would be for the condition of berylliosis?

14 A. Yes.

15 Q. And that's considered a pneumoconiosis?

16 A. I don't know. I guess.

17 Q. Was there a monitoring program for
18 workers - a health monitoring program for workers who
19 worked with beryllium and had potential exposure?

20 A. Yes.

21 Q. And how far back in time did that go to
22 your knowledge?

23 A. To my knowledge there was some in place

24 when we started working with beryllium in the late

25 '50's. And as we progressed, I think it got more

1 specific and covered a wider area.

2 Q. Would that include a chest X ray of the
3 workers?

4 A. Yes.

5 Q. What about any of the other pneumoconiosis;
6 are you ever aware of chest X rays being given to people
7 who had potential exposure to any of the dusts that
8 could cause any of the other pneumoconioses?

9 A. No.

10 Q. Never for silica? Never for asbestos? You
11 don't ever remember chest X rays being given for
12 potential exposures for those materials?

13 A. No.

14 Q. Did you work with any toxicologists?

15 A. No.

16 Q. What was your understanding of the reason
17 for having the employees have periodic health
18 evaluations in those employees who were working with
19 beryllium? Why would you want to do that?

20 A. I guess I don't quite understand your --
21 See, we did this for all the people - periodic
22 physicals - since they were working with material that
23 could cause some health problems if it got out of hand.

24 Q. As an industrial hygienist, why would you
25 recommend such a thing?

1 A. I guess just common sense to me. I don't
2 know. I don't know - don't know quite what you mean I
3 guess. It's -- I guess you could call it a backup to
4 what we were doing.

5 Q. And what were you doing that this backup
6 was a part of?

7 A. For beryllium?

8 Q. Yes, sir.

9 A. Air sampling, beryllium surveys, this sort
10 of thing to control the dust.

11 Q. How frequently would you be doing air
12 sampling for beryllium?

13 A. Continuously.

14 Q. Every day?

15 A. Every day.

16 Q. What was the reason for having to do
17 beryllium sampling every day?

18 A. We wanted to find out if we had any
19 problems. If there was a problem, we could correct it.

20 Q. Were you sampling the same operation every
21 day?

22 A. Yes.

23 Q. What was the operation? And again, I don't

24 want to get into any government secrets.

25 A. Most of it was machining.

- 1 Q. Would you be doing essentially the same
2 kind of machining day after day?
- 3 A. Yes.
- 4 Q. And yet you continued to sample?
- 5 A. Yes, sir.
- 6 Q. Every day?
- 7 A. Yes, sir.
- 8 Q. Did the results seem to have great
9 variation from day-to-day?
- 10 A. No.
- 11 Q. Were the results typically within what you
12 thought were acceptable levels?
- 13 A. Yes.
- 14 Q. But you still sampled every day?
- 15 A. Yes.
- 16 Q. Would that be because you wanted to make
17 certain that with a material as hazardous as beryllium
18 was, no one was going to be overexposed any longer than
19 was absolutely necessary?
- 20 A. Yes, sir.
- 21 Q. To your knowledge does beryllium cause
22 cancer?
- 23 A. To my knowledge, no.

24 Q. It causes the lung disease of berylliosis?

25 A. Yes, sir.

1 Q. And then the medical monitoring activities
2 were - that was a follow up to the air sampling you were
3 doing or a backup I think you said?

4 A. Yes.

5 Q. Well, if you were taking air samples and
6 you were documenting the exposures every day that
7 employees had, would it be fair to say then that you
8 weren't sure that the levels that you thought were
9 acceptable were low enough to make sure no one ever got
10 the disease?

11 A. No, I don't think I would say that.

12 Q. Well, what would you say? Why would the
13 physical examinations have been necessary if the
14 exposure levels were always low?

15 A. Well, everybody on the plant site got
16 routine physicals. For beryllium workers, plutonium
17 workers, uranium workers, they did a little extra just
18 in case I guess you could say.

19 Q. Just in case the acceptable levels weren't
20 adequate?

21 A. Yeah.

22 Q. Did you get any -- Well, let me try it this
23 way, Mr. Hill. We've taken depositions in this case,

24 and one of the ones we have taken is Mr. Hoyle's

25 deposition. Have you been told that?

1 A. Yes.

2 Q. Have you seen his deposition?

3 A. No.

4 Q. How about any of the exhibits to his
5 deposition?

6 A. No.

7 Q. Have you been told that anybody else has
8 been deposed in this litigation besides Mr. Hoyle?

9 A. I guess they were going to take another one
10 next week. But I think that's the only one that I know
11 of.

12 Q. This is an exhibit from Mr. Hoyle's
13 deposition that I've got here. It's Exhibit 1. And it
14 several pages. But one of the parts of Exhibit 1 to
15 Mr. Hoyle's deposition where it starts on page - it's
16 stamp numbered 000003, is a document that has as its
17 heading the Biochemical Research Department, The Dow
18 Chemical Company, Midland, Michigan, Data Sheet of
19 Properties, Health Hazards and Precautions for Safe
20 Handling of Materials. And it appears to be a form, and
21 it's several pages. Have you ever seen that form
22 before? (Tendering)
23 A. (Reviewing) Yes.

24 Q. What occasion would you have had to see

25 that form?

1 A. We had these on file down at the plant - a
2 file of them for different materials.

3 Q. What time period would we be talking about,
4 sir?

5 A. I don't know.

6 Q. Could it be back in the early '60's?

7 A. I don't remember at all.

8 Q. That particular one that you are looking at
9 there, which is for asbestos 7-M, I think it goes back
10 to 1958. It's dated on the next day, I believe - maybe
11 two pages.

12 A. Yeah.

13 Q. But would you recall seeing this form at
14 the plant in the '60's at least?

15 A. I couldn't say when I first saw them.

16 MR. ALMQUIST: Are you talking
17 about this particular form on - or
18 the ---

19 MR. HOBSON: (Interrupting) The
20 form. The format for the form.

21 MR. ALMQUIST: The format of the
22 form. Okay. Fine.

23 (By Mr. Hobson)

24 Q. What, sir, did you understand to be the -
25 this group, the research chemical or whatever it is

1 there at the top ---

2 A. (Interrupting) Chemical research?

3 Q. Yes, sir. What did you understand their
4 activity to be?

5 A. They were doing as far as I recall research
6 on Dow products I think aimed more probably at the
7 toxicity of the materials or the possible toxicity of
8 the materials.

9 Q. Can you recall about when you became
10 familiar with the existence of this group and its work
11 at Dow?

12 A. Well, I was familiar with it in 1962.
13 Before then I don't know.

14 Q. Did something happen in '62 that gave you
15 this awareness?

16 A. I was in Midland with their group in the
17 Fall of '62.

18 Q. What was that occasion?

19 A. They had me go up there to - I think it was
20 at Harold Hoyle's instigation - probably to see what
21 they had; how they could help us if we needed help; what
22 they had; what was available if we needed it in the way
23 of information and this sort of thing.

24 Q. Sort of an orientation program?

25 A. Yeah.

1 Q. And Mr. Hoyle would have been meeting with
2 you then and taking you around and showing you their
3 capabilities and what kinds of activities they had taken
4 on in the past?

5 A. Actually I spent most of the time with
6 those industrial hygienists because they went out and
7 did their - their field work.

8 Q. And that was Mr. Silverstein and all those
9 you told me about earlier?

10 A. Yes, sir.

11 Q. You say that when they went out and did
12 their field work, you are talking about actually going
13 into the Dow plants in the Midland area where they were
14 taking air samples and doing surveys?

15 A. Yeah, I don't remember if they were taking
16 air samples. They could have been. But whatever came
17 up to help train me.

18 Q. And how long did you stay up there for that
19 orientation?

20 A. Three weeks.

21 Q. You don't remember anything coming up in
22 that three-week period that dealt with asbestos?

23 A. I don't remember the word ever coming up,

24 no.

25 Q. This particular form that we are looking at

1 here from Mr. Hoyle's deposition, did you have any
2 particular name for it? I mean I want to make sure we
3 use something that we are communicating with.

4 A. I'm trying to think. We did have a term
5 for it, and I can't tell you what it was right now.
6 Chemical Data Safety Sheet. That doesn't sound right.

7 Q. The current terminology would be a Material
8 Safety Data Sheet.

9 A. Material Data Safety Sheet is what -
10 probably what we called it.

11 Q. You have visited the facility that was
12 preparing these forms?

13 A. Yes.

14 Q. But you just don't recall ever seeing the
15 form in 1962?

16 A. I don't recall when I did first see it.

17 Q. Now, dealing with one of these forms that
18 covered asbestos or an asbestos-containing product, do
19 you ever remember seeing one for those subjects?

20 A. No.

21 Q. What was your understanding of how these
22 Material Data Safety Sheets was to be circulated?

23 A. I don't know if there was a set

24 circulation. If we needed a data sheet on a specific
25 compound, we could call Harold; and he would send it to

1 us. Whether we were on a distribution list, I don't
2 know. I know we had a file of these. But I don't know
3 where they came from or how we got them.

4 Q. And after you became the plant industrial
5 hygienist, did you have anything to do with keeping up
6 that file?

7 A. Yes.

8 Q. Would you from time to time yourself have
9 added to it?

10 A. Yes, sir.

11 Q. How would that come about? Would you call
12 Mr. Hoyle up and say, "Send me what you got on this
13 material"; and he would send it to you, and you would
14 put it in the file?

15 A. We could call him, or there were other
16 companies that I think were putting them out at the
17 time. I don't think they were all Dow.

18 Q. So, you had a file of these forms that came
19 not only from Dow but from other suppliers to Dow?

20 A. Right. Yes, sir.

21 Q. Do you ever remember getting such a form
22 for any of the thermal insulation materials?

23 A. No.

24 Q. Would these forms -- From time to time do
25 you recall any of them ever being sent to you without

1 you specifically having to ask for them?

2 A. I don't recall that we ever did.

3 Q. This particular form deals with material
4 that is listed there as asbestos 7-M, I believe. There
5 is information on that. And if you would like to take
6 time to read it specifically, Mr. Hill. That talks
7 about the health hazards related to that product. Since
8 you are I think at least somewhat familiar with that
9 form, can you find that section for me and tell me what
10 that form relates to you about the health hazards of
11 this particular product from 1958. (Tendering)

12 A. (Reviewing) Either my eyes are tired or
13 this is lousy print, but it's hard to read.

14 Q. I agree.

15 MR. ALMQUIST: Well, Herschel,
16 he's not seen this document before.
17 And I mean I think it's really
18 unfair to make him try to read over it
19 today and figure out what it's
20 about and answer questions about it.

21 If he had some familiarity with
22 it, it would be a different matter I
23 think. Plus it's a lengthy document

24 and difficult for the witness to read.

25 And I think under those circumstances

1 that I'm going to object to this line
2 of questions. And in addition to
3 that, what the document says the
4 document says. It speaks for itself.

5 MR. HOBSON: I understand that.
6 I'm asking Mr. Hill as a long-term Dow
7 employee who had been familiar with
8 these documents at the time what his
9 interpretation of this particular one
10 would be.

11 (By Mr. Hobson)

12 Q. And if you have one, Mr. Hill. And if you
13 don't, that's okay, too.

14 A. I guess I don't know what you mean by
15 "interpretation."

16 Q. Well, sir, Mr. Almquist has said "the
17 document says what it says." And all of us can sit back
18 and read it. What I'm trying to find out, sir, is you
19 as a one-time Dow industrial hygienist, I would like to
20 know what information it imparts to you; how you
21 interpret that information.

22 And in this particular case, I'm asking
23 what health hazard information do you find on this

24 two-page document about this particular product?

25 A. Okay. Now, what was the question, again?

1 Q. Yes, sir. I'm asking about this particular
2 data sheet for the material that is listed as asbestos
3 7-M, and asking you if you can tell me what kind of
4 health hazards regarding that product this particular
5 form conveys to you.

6 A. Well, just going by this, I guess I would
7 say ---

8 MR. ALMQUIST: (Interrupting) Let
9 me interpose -- I think what he's
10 asking you is: Does it convey
11 anything to you more than what is
12 written there on the page? Is that
13 what you are asking, Herschel?
14 Because if you are just asking him
15 what it says, then he's going to read
16 it back to you.

17 MR. HOBSON: I'm asking what it
18 means to him.

19 (By Mr. Hobson)

20 Q. What does it mean to you about the health
21 hazards of this material, Mr. Hoyle - I mean, Mr. Hill,
22 that you would utilize this in your work at Dow?

23 A. If we had had an exposure - let's say a

24 continuous exposure, not one here, one there, definite

25 controls would be necessary. For occasionally -- We

1 didn't have any occasional daily contacts with asbestos.
2 We might have minor contacts or no contacts. And for
3 this, no problem. If we had daily contacts or a gross
4 spill of powdered asbestos or something, yes.

5 Q. And what would that indicate to you for
6 continuous exposure as far as protection required for
7 the - for the other categories you mentioned; this
8 continuous exposure ---

9 A. (Interrupting) Gross contact.

10 Q. Gross.

11 A. Or occasional daily contacts.

12 Q. Occasional daily.

13 A. Exposure to dusts or mists or inhalation.

14 Q. And what would ---

15 A. (Interrupting) We would use the respiratory
16 protection appropriate to the possible exposure.

17 Q. And is there anything in this document
18 about this particular material, asbestos 7-M, that would
19 indicate to you that respiratory protection would be
20 required when handling this product occasionally?

21 A. Well, it depends on -- This says occasional
22 daily contacts. Now, if occasional means daily, then
23 proper respiratory protection would have been required.

24 But occasional like we had, no.

25 Q. And how would you characterize exposures

1 like you had?

2 A. Minor contact.

3 Q. Minor. Is minor ---

4 A. (Interrupting) If any at all.

5 Q. Is minor contact addressed by this
6 particular form as far as respiratory protection goes?

7 A. Yes.

8 Q. And what does it provide for minor contact
9 as you understand it?

10 A. No respiratory protection.

11 Q. And which part of the form is that
12 indicated in?

13 A. That's under the dusts and mists.

14 Q. And just so I'm clear now, what you've done
15 is you've given me your best interpretation of the
16 information conveyed by this document about this
17 material to you?

18 A. Yes.

19 Q. May I borrow it back for a moment,
20 Mr. Hill?

21 A. (Tendering)

22 Q. (Reviewing) Thank you. On the first page
23 of this document under Toxic Properties, Inhalation,

24 Dust or Mist it says, "Dusty or misty atmosphere may
25 cause serious systemic injury."

1 And again, this refers to this material,
2 asbestos 7-M, which is defined as a - at least here
3 under structural formula or composition - very short
4 fiber asbestos.

5 Is that information that you would have
6 learned during your work at Dow, that very short fiber
7 asbestos material - that exposure to dusty or misty
8 atmospheres may cause serious systemic injury?

9 A. Yes.

10 Q. Can you put that in a time perspective for
11 me at all?

12 A. No.

13 Q. This particular sheet is written in 1958.

14 Do you think you would have known that in 1958?

15 A. No.

16 Q. How about around the mid-'60's?

17 A. I really can't say.

18 Q. Does the term Central Research Index mean
19 anything to you, Mr. Hill?

20 A. No.

21 Q. In some of these documents that were used
22 in Mr. Hoyle's deposition, there is reference made that
23 there is a Central Research Index, and then it talks

24 about a Western Division Central Research Index. Does

25 that mean anything to you?

1 A. That doesn't sound familiar to me.

2 Q. Did you even use the Western Division as a
3 terminology while you were at Dow?

4 A. No.

5 Q. Does the term C.R.I. mean anything to you?

6 A. No.

7 Q. Would you know a gentleman or perhaps a
8 lady named R. H. Boundy, B-o-u-n-d-y?

9 A. No.

10 Q. How about an R. A. Erhart, E-r-h-a-r-t?

11 A. It isn't familiar, no.

12 Q. Dr. H. H. Gay, G-a-y?

13 A. The name is familiar. I think he was at
14 Midland at one time, wasn't he - an M.D.?

15 Q. It indicates that he was the medical
16 department doctor, Midland division.

17 A. I think so.

18 Q. Would you recall if you met Dr. Gay?

19 A. I don't recall that I ever did.

20 Q. And it shows the safety department, Midland
21 division, a Mr. W. L. Tisdale. Do you recognize that
22 name?

23 A. No.

24 Q. You told me that I think it was 1964 - I'm

25 sorry - 1962 you went to Midland for an orientation

1 meeting.

2 A. Yes.

3 Q. Did you go to Midland after that ever?

4 A. No.

5 Q. That you recall?

6 A. No.

7 Q. That was your only trip?

8 A. Yes.

9 Q. And is it correct that you don't recall

10 having any meetings of Dow's industrial hygienists from

11 time to time to talk about your common activities?

12 A. No, I never had any meetings.

13 Q. To the deposition here today you brought

14 one item I think that is responsive to the Subpoena; is

15 that right?

16 A. Yes, sir.

17 Q. And I take it in looking at the Subpoena

18 you made a diligent search and determined that this was

19 the only thing you had that was responsive?

20 A. Yes, sir.

21 Q. We've marked this as Plaintiff's Exhibit

22 661128 Dow. And let me show this to you, Mr. Hill, and

23 ask you if you would identify it for us for the record,

24 sir. (Tendering)

25 A. (Reviewing) This is a paper I wrote on our

1 Rocky Flats respirator fitting program. Co-author S. E.
2 Hammond was my boss at the time.

3 Q. And what was Mr. Hammond's position when
4 you wrote that in 1966 I think it was?

5 A. He was manager of the health physics
6 laboratories at Rocky Flats.

7 Q. Were you asked to prepare this report by
8 someone?

9 A. I don't recall that I was.

10 Q. Can you tell me how it ended up being
11 prepared?

12 A. It ended up being prepared, and I presented
13 it at the Western Industrial Safety Meeting in Los
14 Angeles I think in '68 or '69, and also at the
15 Industrial Hygiene Convention, A.I.H.A. convention in
16 Denver in 1969 I think.

17 Q. I might have heard that paper come to think
18 of it.

19 A. We had a -- We had a symposium of four or
20 five different people.

21 Q. What was the distribution of the published
22 document?

23 A. I don't think there was any distribution

24 outside the plant. It went into the plant library, and

25 that's -- As far as I know, that's as far as it went.

1 Q. Did you essentially read the paper at the
2 presentations that you just told us about? And the text
3 that's in this printed document is what you presented?

4 A. Yes, sir.

5 Q. The time period that you presented this
6 particular article - and you, in fact, wrote it in 1966
7 I believe - were you familiar with the ANSI, American
8 National Standards Institute's documents that dealt with
9 respiratory protection?

10 A. I think so.

11 Q. How is it that you learned to do fit
12 testing of respirators?

13 A. The -- Somebody up the line decided we
14 should have a respirator fitting program. And
15 industrial hygiene was appointed to do it. We did some
16 visiting with Mine Safety Appliances when we went back
17 to Pittsburgh. We worked closely with Ed Hyatt at Los
18 Alamos that had I think a respirator fitting program
19 going at the time. And this was kind of patterned after
20 his, I think.

21 Q. Did you know Ed Hyatt?

22 A. Yes.

23 Q. Who was it at Mine Safety Appliances that

24 you worked with?

25 A. Jack Leach who was the local

1 representative. I'm trying to think of the Pittsburgh
2 representative. I can't tell you his name just offhand.
3 We went back and visited with the Pittsburgh facility
4 and also as I recall visited the Bureau of Mines. They
5 had a testing program at Pittsburgh at the time.

6 Q. Do you remember a Wade Miller?

7 A. The name is familiar, but I couldn't tell
8 you that's who we saw. I've heard the name. My main
9 contact was the district representative that used to
10 come out here from M.S.A. And I can't tell you right
11 now what his name is.

12 Q. So, that was somebody intermediate between
13 Mr. Leach and the Pittsburgh offices of MSA?

14 A. Yes.

15 Q. And was where their district office
16 located?

17 A. Here.

18 Q. The one that you dealt with that was
19 between Mr. Leach and Pittsburgh. You say "here" being
20 Boulder?

21 A. Jack Leach was stationed in Denver.

22 Q. In Denver.

23 A. And he was our primary contact. And then

24 the one from Pittsburgh I think was Jack Leach's boss.

25 He was probably district sales manager, but he used to

1 come out and see us once in a while. Jack Leach was out
2 quite often.

3 Q. Now, you used I think what was generally
4 referred to as irritant smoke to do fit testing for
5 respirators. How did you learn to do that?

6 A. I think that probably came from Ed Hyatt.

7 Q. Did you ever understand that to be a new
8 technique at the time, or something that had been done
9 before?

10 A. Well, I don't know what you would call new.
11 It had been done before, but I don't know how long it
12 had been done.

13 Q. What was the reasoning behind doing the
14 respirator fit testing that you wrote about here in
15 1966? What was your goal?

16 A. Our goal was to get - I guess to get the
17 best fit. We had - what, three different brands of
18 respirators. And some people could wear one. Some
19 could wear another and get a better fit. So, we wanted
20 to test them and see and recommend which one gave them
21 the most protection.

22 Q. Was it a matter of picking one respirator
23 and having everybody use it, or were you giving people a

24 choice so that they got the best fit of the three?

25 A. We tested all three on each individual.

1 Q. And you'd tell the person which one you
2 thought gave them the best fit?

3 A. Yes.

4 Q. And that's the one they would then use from
5 that point on?

6 A. Yes, sir.

7 Q. Would you retest them later?

8 A. Yes, we retested them. Plus eventually
9 this evolved into a chamber using a quantitative fit
10 where we used D.O.P. and actually measured the
11 penetration into the respirator.

12 Q. Do you remember about what time it was you
13 actually went to quantitative fit testing?

14 A. No, I can't.

15 Q. Would it have been in the '60's or the
16 '70's? Can you get me that close?

17 A. Probably mid-'70's.

18 Q. Would it be fair to say that you had better
19 protection of the employees from inhalation of dusts
20 after you did this fit testing program than before?

21 A. That was the aim of the program, yes.

22 Q. And you think you accomplished that I take
23 it?

24 A. Yes.

25 Q. In fact, as I quickly reviewed your

1 document, you found some people that got better

2 protection from one respirator than another.

3 A. Yes, sir.

4 Q. And, so, by recommending them to use the

5 one which gave them better protection, you would reduce

6 their exposures?

7 A. Yes, sir.

8 Q. And would you also agree with me that had

9 you not done this program, those people's exposures

10 would have continued to be higher than they were because

11 they did benefit from your program?

12 A. I really can't say. I don't know.

13 Q. Well, you know their respiratory protection

14 got better after you did the program?

15 A. I think so.

16 Q. And would you agree, sir, that doing fit

17 testing of respirators is a part of - a necessary part

18 of any good respiratory protection program?

19 A. I think so.

20 Q. And if you don't have that component to

21 your respiratory protection program, you are really

22 taking an unnecessary risk?

23 A. I suppose you could say that.

24 Q. I noticed in your paper that you mentioned

25 that there were some women who went through the program.

1 And that the women, having smaller faces, had
2 particularly difficult problems in fitting respirators.

3 A. Yes, sir.

4 Q. How did you address that? Practically how
5 did you solve that problem?

6 A. I guess it just came back to the one that
7 seemed to fit them the best. Eventually I think we
8 expanded the number of respirator types we had so that
9 we did have -- Some did have smaller facepieces than the
10 others.

11 Q. And eventually the manufacturers started
12 making respirators with different size facepieces to
13 accommodate people with small faces such as women?

14 A. They started making them - if that was why,
15 I don't know; but, yes.

16 Q. In part of your training program in which
17 you were using these half face respirators with
18 particulate cartridges, how would you tell an employee -
19 how would you train an employee to know when to change
20 his filter?

21 A. The general instructions were that you used
22 a respirator once and returned it for cleaning and
23 testing and servicing.

24 Q. Once being once a day?

25 A. A day. If you didn't use the respirator,

1 once a week.

2 Q. So, would that have been true in what time
3 period, sir?

4 A. Pardon?

5 Q. What time period would that procedure have
6 been in effect at Rocky Flats?

7 A. I don't know.

8 Q. Was it there when you came?

9 A. I think it was kind of a general practice.
10 Whether it was formalized or not, I don't know.

11 Q. And later it was formalized by ---

12 A. (Interrupting) Yes.

13 Q. --- industrial hygiene?

14 A. Industrial hygiene, health physics.

15 Q. So, if an employee had worked at - could
16 require the use of a respirator, one was issued to him?

17 A. Yes.

18 Q. And if it turned out that that employee
19 needed to use his respirator any time during the day,
20 that at the end of that workday, that respirator was
21 returned and it was serviced?

22 A. Yes.

23 Q. And if the employee never used the

24 respirator during a week, even though it had been issued

25 to him, he still returned it for service at the end of

1 the week?

2 A. Yes, sir.

3 Q. And then when that respirator went in for
4 service, whether it was used one day or not at all,
5 would it get new filters?

6 A. The filters were reused if they were still
7 serviceable.

8 Q. Who would make that determination, and how
9 was it done?

10 A. Originally I think they reused it.
11 Eventually it came to the point where they were tested
12 with D.O.P. to make sure they were working before they
13 were put back in the mask.

14 Q. Was there a test done to determine the head
15 loss across the filter to see how plugged it was?

16 A. I think at times they were checked, yes.
17 Now, this evolved - and I can't tell you when it
18 started - but they were disassembled, the heads were
19 checked for resistance and leakage, the facepieces were
20 cleaned, and then they were reassembled and put back out
21 for use.

22 Q. I take it that your greatest familiarity
23 with this program came after you became the plant

24 industrial hygienist in '61?

25 A. Yes.

1 Q. In that time period shortly after you
2 became the plant industrial hygienist, would you tell us
3 what your maintenance practices for respirators were at
4 that time as best you recall.

5 A. They were returned to the laundry - plant
6 laundry; the facepieces were washed; the filters were
7 monitored for radioactive contamination; they were
8 sterilized, the filters were sterilized in an autoclave;
9 the units were reassembled for use.

10 Q. And shortly after you became the plant
11 industrial hygienist, was it your understanding that
12 this procedure of - if the respirator was used at all
13 during the day, it was returned that day; and if it
14 wasn't used at all during the week, it was returned at
15 the end of the week - came into place?

16 A. I don't know when that was put into place.
17 But this was standard practice in the times that I
18 remember. But when it started, I don't know.

19 Q. How would you determine, Mr. Hill, which
20 jobs were going to have respirators issued to them?

21 A. Everybody that went into a plutonium area
22 had to carry a respirator with them. On other
23 operations, I guess our familiarity with the operation

24 and the possibility that they would need a respirator
25 came into play. There were certain operations where

1 they were required. If you were changing a glove box,
2 glove, respirators were required in the area, for
3 instance.

4 But it was kind of a case by case -- Health
5 physics would determine what respiratory protection was
6 needed and when for radioactive material. If it were
7 beryllium, I would probably decide it or one of the
8 industrial hygienists.

9 Q. And you say it would depend some on your
10 familiarity with the work. How would you become
11 familiar with the work?

12 A. From past operations. If there was any
13 question, respiratory protection was required until we
14 were sure there was no problem.

15 Q. And would part of that past operations
16 involve air sampling?

17 A. Yeah.

18 Q. So, you would go out and do an observation,
19 do air sampling; and if you thought there was any
20 possibility of a problem, a respirator would be issued?

21 A. Yes.

22 Q. Was that because of your great concern that
23 radioactive materials being inhaled could cause cancer

24 in workers?

25 A. I don't know if it was so much the cancer,

1 but there was concern about inhaling radioactive
2 material.

3 Q. And certainly one of the major risk factors
4 you knew about then for inhaling radioactive materials
5 was cancer?

6 A. Yes, sir. Well, one. Now, for instance,
7 depleted uranium, I'm not sure if that's cancer causing.

8 Q. Now, you said that the same thing would be
9 done for beryllium operations; right?

10 A. Yes, sir.

11 Q. And there again, would you do the same
12 thing, go out and do an observation, do air sampling; if
13 there was any possibility of a dust exposure, issue
14 respirators to the people doing that work?

15 A. We would do whatever needed to be done to
16 insure they didn't need them. If it was a new
17 operation, they would wear respirators until we were
18 sure that there was no problem by air sampling or
19 whatever.

20 Q. And that was because you were aware that
21 breathing the beryllium dust could cause permanent lung
22 damage in people breathing such dust?

23 A. Yes.

24 Q. Do you recall who it was that suggested

25 that you do your respirator fit testing program that you

1 reported on in 1966?

2 A. No, I don't know where it came from. It
3 came from up above. It could have come from D.O.E. It
4 could have come from Dow.

5 Q. Did you do any work on respiratory
6 protection that was not published in such a form as the
7 exhibit here to your deposition?

8 A. Over the years, yes.

9 Q. Did you ever do any research or work in
10 looking at filter penetration?

11 A. I don't remember doing anything
12 specifically that way, no.

13 Q. What kinds of filters - filtering media
14 were in use at Rocky Flats while it was Dow's operation?

15 A. I don't know what may have been in the
16 filters that we used. They were standard particulate
17 filters.

18 Q. Were they -- You are familiar, are you not,
19 that there is different - that there are different
20 filters for respirators for particulates. There is
21 pneumoconiosis producing. There is high efficiency.
22 There is nuisance dust. There are different kinds of
23 filters made for respirators, are there not?

24 A. Yes.

25 Q. Which kinds of filters would you have been

1 using at Rocky Flats?

2 A. We used only high efficiency.

3 Q. Only high efficiency.

4 A. That's the only ones we allowed.

5 Q. When you say "That's the only ones we
6 allowed," are you talking about "we" being Dow?

7 A. Dow, industrial hygiene, health physics.
8 That's the only kind that was ever used there as far as
9 I know.

10 MR. BEASON: Sir, I didn't
11 hear what kind you said.

12 A. High efficiency.

13 (By Mr. Hobson)

14 Q. In your exhibit that you brought, Mr. Hill,
15 it says on the second page that it's printed in the
16 U.S.A.; price \$1.00, "Available from the Clearinghouse
17 for Federal, Scientific and Technical Information,
18 National Bureau of Standards, U.S. Department of
19 Commerce, Springfield, Virginia 22151." What is your
20 understanding of how this got to the folks in
21 Springfield, Virginia?

22 A. I don't know. I would guess maybe D.O.E.,
23 A.E.C., whatever it was then. Everything that came out

24 of Rocky Flats, since we were a government contractor,

25 may have ended up there.

1 Q. Is it your understanding then that your
2 work that you put in this form in 1966 then was for the
3 price of \$1.00, available from the Federal Government?

4 A. If it says so, I expect it was.

5 Q. Do you understand, sir, that this agency,
6 the Clearinghouse for Federal, Scientific - the
7 Clearinghouse for Federal, Scientific and Technical
8 Information is now what's called N.T.I.S., National
9 Technical Information Services?

10 A. No, I'm not familiar with the thing at all.

11 Q. Do you recall if you were provided at Rocky
12 Flats with similar documents that were compiled from
13 other U.S. government sponsored work?

14 A. I think some were available from our plant
15 library. You could get them on order.

16 Q. How would you get a list of what was
17 available?

18 A. Seems to me like there was a list of
19 government publications that used to come out. And I
20 can't tell you what it was or where it came from. But
21 it seems to me like there used to be a catalog that
22 would be circulated.

23 Q. Is this one of those top secret things that

24 only you could get?

25 A. No.

1 Q. This is something generally available to
2 anyone who wanted to have a list of government
3 publications?

4 A. I think so. I vaguely recall that these
5 were circulated. You could order what you wanted. I
6 think the plant library circulated them around the
7 plant.

8 Q. Mr. Hill, do you remember circulating your
9 paper, "Rocky Flats Respirator-Fitting Program" within
10 Dow?

11 A. I don't recall that we did.

12 Q. You don't know that Mr. Hoyle ever got a
13 copy of it?

14 A. I don't know.

15 Q. Do you recall having any conversations with
16 anyone from Dow such as Mr. Hoyle, about what other Dow
17 locations were doing as far as respiratory protection
18 programs were concerned?

19 A. I don't recall any.

20 Q. Based on what you know now looking back, do
21 you think that you and Dow at Rocky Flats were the
22 leader of the pack as far as the cutting edge of what
23 was going on in respiratory protection programs, or was

24 everybody about the same?

25 A. I don't think I'm that familiar with what

1 was going on around the country.

2 Q. You just don't know what Dow was doing
3 elsewhere one way or the other?

4 A. No, I don't.

5 Q. Dow had other professional industrial
6 hygienists at the same time you were at Rocky Flats
7 writing your 1966 paper, did they not?

8 A. Yes, sir.

9 Q. Would you expect those folks at the other
10 Dow facilities being competent professional industrial
11 hygienists to be keeping up with the literature and
12 keeping up with what was going on in respiratory
13 protection programs?

14 A. Yes.

15 Q. Did you ever happen to visit any of the Dow
16 facilities in Texas?

17 A. No.

18 Q. Do you recall that Mine Safety Appliances
19 got a copy of your "Rocky Flats Respirator-Fitting
20 Program" paper?

21 A. I don't know for certain, no.

22 Q. Do you recall talking about it - the
23 results, that is, with Mr. Leach or the folks back in

24 Pittsburgh?

25 A. I don't recall any specific instance, no.

1 Q. Even though you may not recall a specific
2 conversation, do you remember in general that you were
3 talking about your work and how it was progressing and
4 what you were finding with the MSA folks?

5 A. I suspect we did, but I don't recall
6 specifically that we did.

7 Q. Now, Mine Safety Appliances, of course,
8 always had a presence at the American Industrial Hygiene
9 Association meetings in the '60's, did they not?

10 A. Yes.

11 Q. And would, in fact, go there and market
12 respirators and attend sessions and even put on
13 marketing programs for industrial hygienists about their
14 products, wouldn't they?

15 A. Yeah.

16 Q. That would have been true in 1969 when you
17 presented your paper in Denver as well, would it not?

18 A. Yes, sir.

19 Q. I noticed that one of the respirators that
20 is listed here in your paper is the MSA Comfo. That
21 respirator was subsequently changed in design to your
22 paper in 1966, was it not?

23 A. I don't know. It was changed, but when I

24 don't know.

25 Q. But it was after 1966?

1 A. I don't know.

2 Q. The -- Were you using the Custom Comfo II
3 in 1966?

4 A. We were using it, but I don't know when it
5 came out.

6 Q. Do you have any knowledge one way or the
7 other whether or not MSA utilized any of your work in
8 the design of their products?

9 A. Yes, they did.

10 Q. How do you know that?

11 A. I know a couple of things they did to the
12 respirator that we had asked them to do.

13 Q. What would that be, sir?

14 A. One was color code the filter purple so it
15 would indicate it was a high-efficiency filter. And
16 another one I know of is they changed the color of the
17 O-ring under the filter to white so we could make sure
18 it was in there. It was noticeable if it was gone.
19 They could have done other things. Those two stand out
20 in my mind.

21 Q. I noticed that the color of the O-ring is
22 mentioned in your paper. I didn't see the color coding
23 of the filters mentioned in your paper.

24 A. I don't know if that was before or after I

25 I wrote the paper, but it was done eventually.

1 Q. Did the other respirator manufacturers that
2 you mentioned here, American Optical and Willson, do the
3 same thing as far as the coloring of the O-rings?

4 A. I don't recall if they did or not.

5 Q. And what about color coding the filter?

6 A. I don't know if they did or not. Some of
7 them -- I think one was color coded on the label. One
8 of them had a big label on the front of it. I think it
9 might have been the Willson. I'm not sure. It was
10 already color coded. The other one made by -- I can't
11 remember which were which now. But one of them was
12 color coded anyway.

13 Q. Also listed here is the Welsh and Acme as
14 manufacturers. Would their O-rings have been changed to
15 a color?

16 A. I don't recall.

17 Q. What's the problem with not having an
18 O-ring?

19 A. The filter doesn't seal.

20 Q. And what happens if the filter doesn't
21 seal?

22 A. You don't get the protection.

23 Q. You breathe the hazardous dust?

24 A. It can leak around the edge of the filter.

25 Q. Resulting in breathing of the hazardous

1 dust?

2 A. It could.

3 Q. Did you from time to time find that indeed
4 O-rings did come out and didn't get replaced?

5 A. I don't remember any instances where they
6 did. We thought they could.

7 Q. You wanted to make sure that ---

8 A. (Interrupting) Anything we could do to
9 insure safety, we did, yes, sir.

10 Q. Did you have any contacts with the other
11 manufacturers that provided respirators that are the
12 subject of your 1966 paper, American Optical, Willson,
13 Welsh or Acme?

14 A. Yes.

15 Q. Who did you have contact with at those
16 companies?

17 A. Acme. I'm trying to think of his name.
18 It's the same as a paint. They had district
19 representatives that we were in contact with.

20 Q. Was it Glidden?

21 A. Glidden, yes. It was Acme. I can't recall
22 offhand who Willson was represented by. Bob Merkle
23 incidentally was the MSA contact in Pittsburgh. Is

24 American Optical in that list?

25 Q. Yes, sir.

1 A. I had his name on the tip of my tongue. I
2 can't tell you what it was now. I can't tell you who
3 the A.O. rep was. I can see him, but I can't tell you
4 his name.

5 Q. Do they have an office locally, American
6 Optical?

7 A. I think he worked out of Denver, but I'm
8 not sure.

9 Q. Again, that would be in the early to
10 mid-'60's?

11 A. Yes. Most of those representatives were
12 with them a long time.

13 Q. Was it your understanding that the
14 high-efficiency filters could also be used for
15 protection against pneumoconiosis-producing dusts?

16 A. Yes.

17 Q. Why is it, Mr. Hill, that you elected to go
18 with just high-efficiency filters for air-purifying
19 respirators?

20 A. You mean rather than use high efficiency
21 and others?

22 Q. Yes, sir.

23 A. Because we wanted any respirator that was

24 used on plant site to be approved for use with

25 radioactive materials.

1 Q. Would it be also true that if you are using
2 high-efficiency filters for your air-purifying
3 respirators, that you would get better purification of
4 the air than you would for a pneumoconiosis or a lesser
5 category of air filter?

6 A. Say that again would you.

7 Q. Yes, sir. High efficiency is in essence
8 the best particulate filtering respirator cartridge you
9 can buy; right?

10 A. Yes.

11 Q. And, so, if you would have used
12 pneumoconiosis producing - protecting type cartridges or
13 nuisance dust cartridges, they would offer less in the
14 way of purification efficiency?

15 A. Yes.

16 Q. And, so, by going to high efficiency, you
17 would provide the best protection for all hazards that
18 was available?

19 A. Yes.

20 Q. Including the pneumoconiosis hazard?

21 A. Yes.

22 Q. Didn't you consider that the cost of using
23 the high-efficiency filters for protection against

24 pneumoconiosis dusts was more than you wanted to pay?

25 A. No.

1 Q. That never -- The cost of the filters never
2 entered into the picture?

3 A. Not as far as I know, no.

4 Q. Wouldn't it be your impression then that as
5 far as the weighing of the additional cost of the filter
6 against the extra protection of the worker, it was not a
7 significant effect at all - or a significant factor?

8 A. It was not significant in the fact that a
9 very large majority of these were used for protection
10 from radioactive material, and not an awful lot of them
11 were used on other materials.

12 Q. But in the case where it was for another
13 material, the additional cost of the filter would not be
14 of consequence to you at Dow?

15 A. I don't know what that may have been; what
16 that cost difference was.

17 Q. It wasn't enough to get you to change your
18 program, though?

19 A. No.

20 Q. I asked earlier about changes that MSA made
21 based on your work. Did MSA make input to you about how
22 to do this work at Rocky Flats while you were at Dow?

23 A. They did insofar as we went back and looked

24 at some of their testing equipment and how they did

25 things to get some idea what kind of equipment we

1 needed.

2 Q. So, this is when you went back to
3 Pittsburgh and visited Mine Safety Appliances and met
4 with Mr. Merkle and those people back there?

5 A. Yes.

6 Q. And what did you do when you made that
7 trip? What do you remember seeing and doing?

8 A. I remember seeing some of what I would call
9 mannequin heads that they tested their respiratory
10 equipment on. I don't remember too much else. Seems to
11 me like the Bureau of Mines had about the same
12 equipment.

13 Q. This would have been about what time
14 period?

15 A. Well, it's before we started this. I'm
16 guessing early '60's, but I don't know.

17 Q. I think your paper was 1966, was it not?

18 A. The paper was '66, but we started the
19 program several years before that.

20 Q. So, '64 or slightly earlier ---

21 A. (Interrupting) Earlier than '64. I would
22 guess '61 or '62.

23 Q. And that's about when you would have made

24 your trip to Pittsburgh to MSA?

25 A. Yes.

1 MR. HOBSON: We need to change
2 our tape.

3

4 (A SHORT RECESS WAS TAKEN.)

5

6 (By Mr. Hobson)

7 Q. Sir, I wanted to ask you a few questions
8 about your 1966 paper, "Rocky Flats Respirator-Fitting
9 Program." Would you explain to me what you intended to
10 convey by Figure 4 of your paper, please, sir.

11 A. I think that's a tabulation of the number
12 of individuals that would receive a satisfactory fit
13 from any one given brand of respirator. The areas refer
14 to the areas where we tested.

15 Q. And by determining a satisfactory fit test,
16 you mean as you determined using the irritant smoke -
17 is that how you determined whether it was a satisfactory
18 fit test or not using the irritant smoke as described in
19 the paper?

20 A. Yes.

21 Q. And if I understand what you did there is
22 basically you would take one of these employees, let's
23 say, you mentioned here plantwide. These people would

24 work throughout the plant then; correct?

25 A. Yes, sir.

1 Q. And you would give them, the first instance
2 here, an American Optical respirator. They would then
3 put that respirator on; right?

4 A. Yes.

5 Q. You would take irritant smoke that is
6 generated by a Mine Safety Appliances special tube for
7 that purpose to generate an irritant smoke?

8 A. Yes.

9 Q. And blow that smoke around the face of the
10 person wearing the respirator?

11 A. Yes.

12 Q. And if the respirator didn't fit properly,
13 the irritant smoke then would penetrate the area between
14 the respirator facepiece and the face ---

15 A. (Interrupting) Yes.

16 Q. --- of the person?

17 A. Yes, sir.

18 Q. And because this is an irritant smoke, they
19 would cough or gag or in some way let you know pretty
20 fast that some of the smoke was leaking in?

21 A. Yes.

22 Q. And you call that a qualitative fit test?

23 A. Yes.

24 Q. Now, if I look at this table, Figure 4 of
25 the respirator fittings, then for the plantwide people

1 when you issued all of them an American Optical
2 dual-cartridge half-faced respirator that you describe
3 here in your paper, 57 percent of those people got a
4 satisfactory fit test as determined by your smoke tube;
5 is that right?

6 A. Is that percent?

7 Q. I don't know. I was going to ask you.

8 A. Yeah. "Percent obtaining satisfactory
9 fit."

10 Q. So, 57 percent of the people got a
11 satisfactory fit with the American Optical. I guess
12 that means then that 43 percent could not get a
13 satisfactory fit test with the American Optical
14 respirator?

15 A. Yes, sir.

16 Q. And if we go on down this list for
17 plantwide, with the MSA, 80 percent of the people who
18 put on an MSA and you challenged them with the irritant
19 smoke, 80 percent of those folks didn't sense any smoke
20 inside their respirator?

21 A. Right.

22 Q. But 20 percent did?

23 A. Yes.

24 Q. And then Willson, it would be 69 percent

25 according to your table that got a satisfactory fit.

1 And 31 percent then - or I guess it would be 41 percent
2 did not? 31. I got it right the first time.

3 A. Yeah.

4 Q. And then you would go -- Now, the plutonium
5 area, these are -- This a different group of workers
6 than the plantwide workers; is that right?

7 A. Yes.

8 Q. It's not a subset. It's not that the
9 plutonium area workers were also plantwide workers?

10 A. To the best of my knowledge plantwide
11 workers for kept separate from plutonium and uranium.

12 Q. And, so, if we take all of the workers that
13 you did these challenges to, using the different
14 respirators, you actually evaluated these respirators on
15 something over 2,000 people at Rocky Flats?

16 A. I don't remember the exact number. It
17 could be.

18 Q. I think that's what your abstract here says
19 in the beginning. The abstract -- This experience is
20 reviewed of fitting in the field over 2,000 workers with
21 several different types of half-mask respirators.

22 A. Okay.

23 Q. And you did this work yourself, did you

24 not?

25 A. I think I did it all, yes.

1 Q. And this is a photocopy of - looking here
2 at Figure 2 - is that your picture?

3 A. That's me.

4 Q. So, if you didn't do it all, at least you
5 did a substantial amount of it?

6 A. Yes.

7 Q. Was there anything unusual that you were
8 able to determine about your 2,000 workers as far as
9 them being able to wear these different respirators and
10 challenging them with smoke? Was there anything that
11 told you your 2,000 workers had different face shapes or
12 different characteristics than basically any other 2,000
13 workers that would be encountered in the working
14 environment?

15 A. No, I don't think we did.

16 Q. Were you aware before you did this study
17 that -- For instance, we look here at the American
18 Optical respirator; for the plantwide group you had 57
19 percent satisfactory; plutonium area workers, 65 percent
20 satisfactory; uranium area workers, 48 percent
21 satisfactory.

22 Were you aware before you did this study
23 that the American Optical respirator would in essence

24 not get a suitable fitting for at least 30 percent of

25 the people who wore it?

1 A. No.

2 Q. And I think -- Would the same be true then
3 for MSA, Willson, Acme and Welsh, until you actually did
4 this study, you were unaware that there was 10, 20
5 percent or more of the workers who could not get a
6 satisfactory fit test as tested by the irritant smoke
7 method?

8 A. I wasn't aware that people wouldn't get a
9 good fit, yes.

10 Q. I'm sorry?

11 A. I don't know how you worded -- We were not
12 aware that there would be people - how many people could
13 not wear a given mask.

14 Q. And then if you look here -- If you would,
15 sir, would you explain to me what you mean by the
16 category "All Three Types." And then in parentheses,
17 you have A.O., MSA and Willson. What does that category
18 mean, sir?

19 A. To the best of my memory we started out the
20 testing program with those original three respirators.
21 The others may not have been on the market when we
22 started it. But they came on the market later; so, we
23 expanded the program to include those last two.

24 Q. All right, sir.

25 A. I think the Welsh and the Acme were fairly

1 new on the market at the time.

2 Q. So, that category then where you have "All
3 Three Types," A.O., MSA and Willson - for instance, the
4 plantwide workers, 29, that means that 29 percent of the
5 plantwide worker group could get a satisfactory fit test
6 on all three respirators. Is that what it means?

7 A. Ask me that again.

8 Q. Yes, sir. That category there where you
9 have -- You see 29 under the plantwide workers, and it
10 says for all three, A.O., MSA and Willson; does that
11 mean that 29 percent of the plantwide worker group could
12 get a satisfactory fit with each one of those
13 respirators?

14 A. Yes.

15 Q. And, so, if we look back up at the numbers
16 up above there, obviously you had some workers who got a
17 better fit with one respirator than others?

18 A. Yes.

19 Q. But only 29 percent of the plantwide
20 workers got a satisfactory fit with all three
21 respirators?

22 A. Yes.

23 Q. Now, the next entry "None of the above" -

24 for instance, under the plantwide, that's 0.7. So,
25 would it be accurate to say that after you tried the

1 American Optical, Mine Safety Appliances, the Willson,
2 the Acme and the Welsh, all five of those, that there
3 were .7 percent of the plantwide workers who just
4 couldn't get a fit with any of those respirators?

5 A. Yes.

6 Q. And we could make that same analogy for
7 each one of other worker groups?

8 A. I think so.

9 Q. Now, the irritant smoke challenge that you
10 gave these people, I think you told me earlier that's
11 not something you developed; that's something that you
12 learned from I think you said MSA; is that right?

13 A. I don't remember if it came from MSA or Ed
14 Hyatt.

15 Q. But it came from one of those two groups?

16 A. From one of those two I think.

17 Q. Did you discuss with MSA or American
18 Optical or Willson or Acme or Welsh representatives the
19 fact that this was the result you got with their
20 respirator?

21 A. I don't recall if we had any direct contact
22 with them or not.

23 Q. Did they express surprise to you?

24 MR. HANCOCK: I'm going to object
25 to the form of the question. He just

1 said that he didn't recall if they had
2 any conversations.

3 A. I don't recall even talking to them about
4 it. I could have, but I don't recall it.

5 (By Mr. Hobson)

6 Q. At any point in time before you did your
7 study in 19 - that you report in 1966, did any of the
8 manufacturers come to you and tell you that there is
9 something about respirators, that they don't fit
10 everybody and you ought to do this qualitative fit
11 testing to make sure a respirator fits a given person?

12 A. I don't recall anything like that, no.

13 Q. It would be logical then that if you had
14 known that you had to do qualitative fit testing in
15 order to assure a good fit, you would have been doing it
16 far before 1963 or '64 whenever you started this
17 research program?

18 A. I don't know. That wouldn't have been up
19 to me. So, I can't really say.

20 Q. Would you agree with me, Mr. Hill, that if
21 you would have recognized that this could have been a
22 problem, this fit testing of respirators, that you as a
23 Dow employee and someone who cared about the health of

24 your workers, you certainly would have taken any

25 reasonable steps necessary to make sure that this

1 equipment fitted these people and it was adequate to do
2 the job as best you could do your work, wouldn't you?

3 A. I guess that would be the common sense
4 approach to it.

5 Q. And that would have been, as far as you
6 understood, Dow Chemical's approach to the problem as
7 well, wouldn't it?

8 A. Not necessarily. We really didn't work for
9 Dow that much. We worked for D.O.E. And we went by
10 their standards, not Dow's. Dow was available if we
11 needed help. But most of our work, we were directed by
12 D.O.E., A.E.C., whatever it was. "These are the
13 standards. These are the things you do." How you do
14 them is pretty much up to you I guess.

15 But we did very little at Dow's direction.
16 It was D.O.E., A.E.C., that we were working for. We
17 answered to them, not to Dow.

18 Q. Certainly I would think that you found
19 Mr. Hoyle to be a professional and competent industrial
20 hygienist, did you not?

21 A. Yes.

22 Q. And wouldn't you expect based on your
23 relationship with Mr. Hoyle that had he been aware that

- 24 respirators needed to be fit tested in order to assure
- 25 that you could get adequate protection, he would have

1 taken any steps necessary to accomplish that, wouldn't
2 he?

3 A. I can't ---

4 MR. HANCOCK: (Interrupting) I
5 object to the form of the question as
6 it calls for speculation on the part
7 of this witness.

8 MR. HOBSON: Did you get his
9 answer?

10 THE REPORTER: No, I didn't.
11 (By Mr. Hobson)

12 Q. I'm sorry. Would you give us your answer.

13 A. I don't know what he would have done. I
14 can't speak for Harold.

15 Q. Did you ever learn one way or the other if
16 Dow at any of its facilities did qualitative fit testing
17 with respirators like you did at Rocky Flats?

18 A. I have no idea whether they did or not.

19 Q. Did you meet other Dow industrial
20 hygienists when you went to American Industrial Hygiene
21 Association meetings?

22 A. I don't remember meeting any other than
23 these that I have listed that I met when I was in

24 Midland. I don't recall any from any other Dow

25 plant.

1 Q. Would you recall if anyone from Dow
2 attended your presentation that you made in 1969 of this
3 paper at the American Industrial Hygiene conference
4 in ---

5 A. (Interrupting) I don't know. No, I don't
6 know.

7 MR. HOBSON: Well, that concludes
8 my questions in the area of
9 asbestos. Does anybody else want to
10 ask any questions in the area of
11 asbestos?

12

13 EXAMINATION BY MR. BLANKS:

14 Q. Good afternoon, Mr. Hill.

15 A. Good afternoon.

16 Q. I'm Joe Blanks, and I also represent some
17 Plaintiffs in these lawsuits.

18 Did you have a chance to visit with Dow's
19 attorneys before your deposition, sir?

20 A. Yes.

21 Q. What kind of things did they talk to you
22 about?

23 MR. ALMQUIST: I'm going to

24 instruct him not to answer those

25 questions as being part of a

1 privileged communication between
2 attorney and client.

3 (By Mr. Blanks)

4 Q. I think you told us earlier you haven't
5 hired these gentlemen to represent you, sir. Have you
6 hired them since lunchtime to represent you in this
7 deposition?

8 MR. ALMQUIST: Mr. Blanks,
9 as we went through this - have gone
10 through this before in other
11 depositions, you can have a running
12 objection and -- But I'm not going to
13 allow him to answer any questions
14 concerning communications that he has
15 had with us - Mr. Stuart and myself.

16 (By Mr. Blanks)

17 Q. My question, sir, was: You haven't hired
18 these gentlemen as your attorneys, have you, sir?

19 A. No.

20 Q. And, so, they don't represent you here
21 today, do they?

22 MR. ALMQUIST: Well, we are
23 representing him here today as I

24 indicated in the deposition earlier

25 on.

1 MR. BLANKS: I'm sorry,
2 Mr. Almquist. I don't understand
3 that. He under oath has denied that
4 you represent him. So, I don't know
5 that you can just unilaterally declare
6 that.

7 MR. ALMQUIST: He is a former
8 employee of Dow. He's being
9 questioned about matters that arose
10 during his employment at Dow. In
11 preparation for the deposition,
12 Mr. Stuart of Dow and I have
13 discussed it with him. We are Dow's
14 attorneys, and it's privileged
15 communications.

16 (By Mr. Blanks)

17 Q. So, I was asking you, sir, what topics they
18 had talked with you about. And Mr. Almquist - as you've
19 heard him speak ---

20 MR. ALMQUIST: (Interrupting) I'm
21 going to instruct him not to answer
22 those questions.

23 (By Mr. Blanks)

24 Q. So, you are going to follow his

25 instructions and not answer questions I put to you, sir?

1 Would that be the case?

2 A. Yes, sir.

3 Q. And you are not paying them any money to be
4 here today and represent you, are you?

5 A. No.

6 Q. And who did you meet with - Mr. Almquist
7 and the other gentleman there?

8 A. Yes, sir.

9 Q. And how many times have you visited with
10 them about your testimony, do you know?

11 A. Twice.

12 Q. And how long - for how long a period?

13 MR. ALMQUIST: We are getting
14 into -- When we start getting into
15 length of time again, I'm going to
16 instruct him not to answer that.

17 MR. BLANKS: Well, certify that
18 question and the earlier one, please.

19 And we will take this up with the
20 Court, Mr. Almquist.

21 (By Mr. Blanks)

22 Q. You are not acting as a consultant to Dow
23 chemical in connection with any of this litigation,

24 are you, sir? They are not paying you to consult with

25 them and give your expert opinions on anything, are

1 they?

2 A. They are paying me for my time. I have
3 asked to be paid for my time.

4 Q. Yes, sir. But you are not serving as a
5 consultant to them on industrial hygiene matters in
6 connection with any of this litigation, are you?

7 A. I wouldn't say I am, no.

8 Q. They haven't asked you to, have they?

9 A. No.

10 Q. Have you ever testified before, Mr. Hill?

11 A. I'm trying to think. A couple of
12 compensation cases, but I don't recall that I ever
13 really got on the stand. I think they may have been
14 settled before we went down to the hearings, but I may
15 have testified in one.

16 Q. Pertaining to things up here at Rocky
17 Flats?

18 A. Yes.

19 Q. And that would be the only time that you
20 can remember?

21 A. That I can remember, yeah.

22 Q. Have you ever worked for Dow in connection
23 with any kind of litigation?

24 A. No.

25 Q. Have you given any depositions in any - in

1 a lawsuit that involved Dow?

2 A. No.

3 Q. Did you serve on any committees at the

4 A.I.H.A. during your years of membership?

5 A. No.

6 Q. What years do you remember belonging; what

7 was the span of time?

8 A. From '61 to '84. '62, maybe. Probably

9 '62.

10 Q. And this article that you were kind enough

11 to bring today about the respirator program, was that

12 the only article you've published?

13 A. There is one other.

14 Q. What was the other one about?

15 A. Beryllium control at Rocky Flats.

16 Q. Did this perhaps discuss the industrial

17 hygiene control measures that you put in place and

18 oversaw there ---

19 A. (Interrupting) Yes.

20 Q. --- to prevent the exposure to the

21 beryllium dust?

22 A. Yes.

23 Q. Where was that published?

24 A. The same as this one. It's a - what they

25 call a Rocky Flats report.

1 Q. Do you recall about when?

2 A. Probably about the same time as this one,
3 the late '60's.

4 Q. What kind of dust control measures were you
5 using to deal with the beryllium dust hazard?

6 A. Primarily ventilation control. Some of the
7 operations were done with coolant to reduce dust.

8 Q. So, you were using fluids to help reduce
9 dust?

10 A. On some operations, yes.

11 Q. And then ventilation at the source of the
12 dust creation?

13 A. Yes.

14 Q. And I think you told us most of the dust
15 generation had to do with the machining of the beryllium
16 parts and ---

17 A. (Interrupting) Yes.

18 Q. --- products? So, would you enclose the
19 cutting area and then exhaust from there; or how would
20 that work?

21 A. Yes, we had local exhausts at each
22 operation. Putting -- Most of the operations were
23 almost totally enclosed while the machine was running.

24 Q. And what did this machining amount to? I

25 mean was it cutting tools and grinding, or what was the

1 nature of it?

2 A. Mainly cutting. Machining a part from a
3 blank.

4 Q. If you hadn't enclosed the cutting area,
5 the dust would have gotten just into the environment in
6 the workshop?

7 A. Yes.

8 Q. Then you would have had a dust problem in
9 the whole workplace I suppose?

10 A. Yes, sir.

11 Q. So, the most efficient way of controlling
12 that was to deal with it directly at the source I
13 gather?

14 A. Yes.

15 Q. And then the exhaust fans would take the
16 collected dust to - what, to some filter and exhaust it?

17 A. It took it through a cyclone separator to
18 remove the larger chips and then through a filtration
19 system.

20 Q. And exhausted it outside of the building?

21 A. Yes, sir.

22 Q. Now, it was in this same work area that you
23 would do daily air sampling for beryllium dust I

24 believe?

25 A. Yes.

1 Q. And was this like area monitoring, or were
2 you monitoring the individual workmen as well?

3 A. When you say "area monitoring," we had air
4 samples on the walls of the building - of the room. But
5 most of the air samples were an airhead mounted right on
6 the lathe itself as close as we could get it to the
7 operation without being in the operator's way.

8 Q. I see. So, you didn't have dust collectors
9 on the individual workmen themselves; you had it right
10 in there ---

11 A. (Interrupting) Normally we didn't.

12 Q. Was it necessary to provide these workers
13 with respiratory protection, too.

14 A. Normally we didn't, no.

15 Q. In other words, you were able to - and
16 actually set out to control the dust where it was being
17 created so that you wouldn't have to protect the worker
18 from breathing it out of the air?

19 A. Yes.

20 Q. So, what were the circumstances that called
21 for respiratory protection from dust in the plants? Is
22 that where you couldn't control it by any other means?

23 A. Yes. I can remember one operation -- We

24 also cast beryllium. And when we cleaned out the molds,

25 there was just no way that you could control the dust.

1 This required respiratory protection any time they were
2 doing that or if they cleaned out the casting furnaces.
3 It's kind of nonroutine, but operations that were
4 performed fairly often.

5 Q. Was this in sort of a foundry at the plant?

6 A. One part of the building was a foundry with
7 casting furnaces. Another part of the building was a
8 machine shop.

9 Q. I see. So, you actually did have a real
10 foundry there at Rocky Flats for doing these beryllium
11 castings?

12 A. Yes, sir.

13 Q. Would you tell us what particular kind of
14 dust exposures or potential dust hazards you find in the
15 kind of foundry operation that you had there. You
16 mentioned the cleaning out of the furnaces.

17 A. That was about all. These were vacuuming
18 ducts and furnaces which were completely enclosed during
19 the casting operation. They put it in a charge of
20 uranium. It could have been chips or solid; melt them
21 and pour them into a mold; let them cool; open the
22 furnace and remove the casting.

23 Q. And, then, how do you have a dust problem

24 that would require respirators when you are taking a

25 piece out of the - out of the mold?

1 A. Not taking - not taking a piece out of the
2 mold. When you clean up the mold to reuse it.

3 Q. Okay.

4 A. It was wire brushed or something on the
5 inside, and then vacuumed out to get any residue out;
6 and then they reused the mold.

7 Q. So, it was inevitable there that you'd have
8 airborne dust created in the cleaning of the mold?

9 A. Yeah.

10 Q. And I suppose it was impractical to
11 actually capture that dust with a ventilation or exhaust
12 system, and thus you had to use respirators?

13 A. Yeah. We did have a local exhaust system
14 there, but it didn't always catch all the dust that was
15 released. So, as a precaution, they wore respirators
16 when they did that.

17 Q. Did you do any air sampling for dust in the
18 foundry area?

19 A. Yes, sir.

20 Q. Was this something you did routinely just
21 like you would do in the machining area just to be
22 sure?

23 A. Yes.

24 Q. And the reason again was just to know

25 exactly what levels of dust were put in the - in the

1 work area that the men might be exposed to?

2 A. The reason we sampled routinely and
3 constantly was to make sure our control equipment - the
4 ventilation stuff was working right. If something
5 happened to the ventilation system, a duct or something
6 got plugged up, we would know it and could correct it.

7 Q. So, it was a means of testing the workings
8 of your other control measures?

9 A. That essentially is the main thing we were
10 doing, yes.

11 Q. And only by actually sampling and gathering
12 data and looking at it would you really know if you had
13 a problem that needed attention; correct?

14 A. Right.

15 Q. And by the same token, I guess that would
16 also be the way you would know whether or not you needed
17 to put a respirator on a person working in that area?

18 A. This would make us aware of any operations
19 that might be a problem, yes.

20 Q. If I understand you then, generally the
21 respirator on the man was kind of the last resort in
22 terms of dust protection? Your goal was to try and nip
23 it in the bud at the source and would fall back on the

- 24 respirator only when you couldn't - you've done
- 25 everything else you could do to control it and you

1 couldn't do any more except protect the man on his
2 face?

3 A. Yes. Respirators were not to be used for
4 routine protection. We depended on the ventilation and
5 other controls.

6 Q. And what are some of the reasons that, you
7 know, in a practical real world work environment that
8 you knew that you couldn't or didn't want to rely on the
9 respirators as your first line of defense from dust
10 prevention? What kind of problems go with respirators
11 that make them not your best choice for your first
12 control?

13 MR. KNABESCHUH: Object to the
14 form of the question. That implies
15 that something was wrong with the
16 respirator.

17 THE WITNESS: Pardon?

18 MR. KNABESCHUH: I object to the
19 form of the question because he's
20 assuming that there was something
21 wrong with the respirator and that's
22 why you would use it as a last resort.

23 A. It's accepted practice that you don't use

24 respiratory protection as your first line of defense.

25 We always operated on that premise.

1 (By Mr. Blanks)

2 Q. I mean the general rule, the men - given
3 everything else being equal - would just as soon not
4 have to wear one; correct?

5 A. I think that's right.

6 Q. They weren't comfortable and were difficult
7 to breathe through; certainly more difficult than not
8 having one; right?

9 A. I'm sorry.

10 MR. HANCOCK: Object to the form
11 of the question. Assumes facts not in
12 evidence.

13 (By Mr. Blanks)

14 Q. It was certainly harder to breathe through
15 a filter than to breathe just through your nose?

16 A. Yeah, that's probably true.

17 Q. And, so, as part of your routine industrial
18 hygiene program then to deal with the dust in the - in
19 your plant that could cause lung diseases, you did air
20 sampling daily, both around the machining and in the
21 foundry and watched for any variations that would
22 suggest a problem with the goal of being sure that you
23 were protecting the workers from breathing these

24 materials that could be harmful to them?

25 A. True.

1 Q. Now, beryllium dust doesn't to your
2 knowledge cause or is believed to cause any kind of
3 cancer, does it?

4 A. To the best of my knowledge, no.

5 Q. So, it just causes like a lung fibrosis
6 or ---

7 A. (Interrupting) Yeah. I don't know how you
8 would exactly describe the effects of it.

9 Q. But even without the concern that it might
10 be a carcinogen, Dow was still concerned enough to take
11 these industrial hygiene precautions to protect the men
12 from breathing even small amounts of it?

13 A. This again wasn't Dow necessarily. This
14 was -- D.O.E. prescribed what we did more.

15 Q. Now, D.O.E. was the owner - the Department
16 of Energy you are saying was the owner of the plant
17 there; right?

18 A. Right.

19 Q. And they prescribed kind of the safety
20 rules and the overall safety program for your people who
21 were contractors to D.O.E.?

22 A. Right. The overall safety program, the
23 standards we would follow, the procedures we followed to

24 a certain extent.

25 Q. They were specified by the owner of the

1 plant?

2 A. Yes.

3 Q. That is the government?

4 A. Yes, sir.

5 Q. And Dow's employees, who were really -- I

6 guess Dow was working as a contractor for the

7 government - for the plant owner; right?

8 A. Yes, sir.

9 Q. And, so, its employees there then were

10 getting the benefit of the safety program that the plant

11 owner set up and specified and required you-all to

12 follow; correct?

13 A. Yes, sir.

14 Q. Would they make inspections sometimes to

15 see that you were, in fact, you know, following the

16 safety rules that D.O.E. set?

17 A. Yes, sir.

18 Q. And it certainly was customary for you to

19 cooperate with them and to take the benefit of the

20 advice and the guidance that the government that owned

21 the plant gave to you; right?

22 A. Yes, sir.

23 Q. Now, was it your thought then that

- 24 certainly the people that owned the facility perhaps
- 25 knew a little bit more about some of the hazards that

1 existed there in the processes and the work that was
2 being done than maybe Dow did at the outset?

3 A. I would say at the outset -- This plant was
4 unique in the country, and I suspect that's true.

5 Q. Does your article on beryllium dust
6 control - it does talk about the same things we have
7 been discussing for the last several minutes, the
8 control measures, the sampling in order to evaluate the
9 hazards, the respirator program and so forth?

10 A. I haven't seen the article for years; but
11 as far as I recall, yes.

12 Q. And you were the author of it?

13 A. I was co-author with S. E. Hammond, who was
14 co-author on this article, too. He was my boss.

15 Q. I see. Did he actually have you write it?
16 I have heard that happens sometimes.

17 A. Some of it, but he was involved with it,
18 too.

19 Q. But in any event, the article did reflect
20 the best knowledge that you and he and I guess Dow had
21 at that time about dust control as you describe it in
22 the article?

23 A. Well, you keep bringing Dow in. And I

24 don't -- They weren't involved in is. We used Dow as a
25 resource. If we needed help, we called them. But for

1 most of our day-to-day operations, we were under D.O.E.
2 control. We followed their standards. We answered to
3 them.

4 Q. But by the same token, the people in
5 Midland, for instance, were available to you as a
6 resource to provide information and advice. And the
7 information that you had and the expertise you developed
8 in that Dow operation at Rocky Flats would also have
9 been available to others in the Dow company who might
10 want it or need it; correct?

11 A. It would have been available, yes.

12 Q. And you certainly weren't keeping these
13 reports or studies secret from them, were you?

14 A. No.

15 Q. And I mean the probability is pretty high,
16 isn't it, that, in fact, you did send out or your boss
17 probably sent on a copy of that report to his superiors
18 up in Midland?

19 A. I don't know if they did or not.

20 Q. At least if for no other reason than to
21 make the two of you look a little better?

22 A. I can't say what happened to them.

23 Q. Did you know Mr. V. K. Rowe?

24 A. I think I met him while I was up there.

25 Q. Do you recollect he was up there in

1 Midland?

2 A. When I was, yes.

3 Q. Do you know any more about him than that?

4 A. No. I think he's a toxicologist. I've

5 heard his name mentioned since then, but I can't tell

6 you in what context.

7 Q. As far as you can remember, he didn't give

8 you any help with any particular problems while you were

9 at Rocky Flats?

10 A. I don't recall that he did.

11 Q. And he never came down there to visit that

12 you can remember?

13 A. I don't remember that he did, no.

14 Q. After you became the industrial hygienist,

15 did you have visits to you by Mr. Hoyle or any of his

16 peers from Midland?

17 A. I can remember Harold Hoyle being there,

18 and I can remember Don Irish; but that was after I

19 was -- I think at least Harold Hoyle was there after I

20 was the industrial hygienist. But I don't remember that

21 Don Irish was.

22 Q. And what was Mr. Irish; was he an

23 industrial hygienist or a toxicologist or a doctor; do

24 you recall?

25 A. It was Dr. Irish. I think he was a Ph.D.

1 He was in the biochemical research labs at that time.

2 Q. This would have been back in the '60's?

3 A. '50's or '60's.

4 Q. And Mr. Hoyle at that time was just one of
5 the higher-ups at the biochemical research lab as you
6 remember?

7 A. As I recall he was the manager of the
8 industrial hygiene group up there.

9 Q. I see. To your understanding was the - was
10 the Dow industrial hygiene group sort of located in the
11 biochemical research laboratory in Midland? Was that
12 where their main office was?

13 A. Yes, sir.

14 Q. And that's as far back as you can remember
15 that that would have been so?

16 A. As far back as I know, yes.

17 Q. And to your understanding the industrial
18 hygiene group reported to the head of the biochemical
19 research lab?

20 A. I think so.

21 Q. Now, I think you said that you had medical
22 doctors in your plant, inferring from that that there
23 were medical doctors probably in other Dow plants; and

24 indeed that there was a medical department with Dow.

25 Would that part be true?

1 A. That I don't know. I'm not that familiar
2 with other Dow operations. The only one I'm familiar
3 with at all is Midland. And they did have M.D.'s on the
4 staff there; but what they did, I don't know.

5 Q. But your medical -- I'm sorry. Your
6 industrial hygiene group or department at Rocky Flats
7 did not report to the medical department, did it?

8 A. Our medical group at Rocky Flats reported
9 to D.O.E., just the same as we did eventually.

10 Q. But if we look in the du Pont -- I mean --
11 I'm sorry. If we look at the Dow organizational scheme,
12 was industrial hygiene part of the medical department or
13 was it independent from it?

14 A. You are confusing me. Are you talking
15 about Rocky Flats or ---

16 Q. (Interrupting) Yes, sir.

17 A. --- Dow or Midland?

18 Q. Well, let's take Rocky Flats first. Your
19 industrial hygiene department was independent from the
20 doctor there; you didn't report to the doctor, did you?

21 A. We didn't report to the doctor. Our
22 group -- The medical department and the other health and
23 safety groups reported to one man in the Dow

24 organization at Rocky Flats.

25 Q. And his title was?

1 A. Director of Health and Safety or something
2 similar to that. It changed in time.

3 Q. Sure. And then presumably he reported to
4 somebody higher up in Dow with a similar job title of
5 health and safety?

6 A. Well, our director reported to the plant
7 manager. Now, what his relationship was with Midland, I
8 don't know.

9 Q. And at Midland you don't know then whether
10 or not the industrial hygiene group was under the
11 medical group or independent from them or how that fit
12 together, do you?

13 A. No.

14 Q. Well, I don't either. That's why I was
15 asking. Would you tell us just a little bit about your
16 library there at Rocky Flats. You mentioned that you
17 had some resources. What sort of materials did you have
18 available to you there?

19 A. That's a long time ago.

20 Q. Just the best you can do.

21 A. We had Sax. Can somebody tell me the title
22 of his book? Dangerous Properties of Industrial
23 Materials. Is that Sax? There was another one similar

24 to that. And it seems like Chemical Rubber Company put

25 it out. Industrial hygiene journals. Material Safety

1 Data Sheets.

2 Q. You had like chemical abstracts or the
3 C.R.C.? Did you already mention that one?

4 A. Chemical Rubber Company. I can't think
5 just offhand what we had.

6 Q. Public Health Reports?

7 A. Not consistently. And in later years we
8 got the - oh, the Code of Federal Regulations. What's
9 the -- It's basically after OSHA and them came in. It
10 would be circulated through all of the health and safety
11 groups to see if there was anything there that concerned
12 any of our groups. OSHA regulations and in later years
13 NIOSH publications.

14 Q. What kind of materials did you go looking
15 for when you had to train yourself as an industrial
16 hygienist? And I don't mean to mischaracterize that,
17 but I gather that you kind of got thrown into the fire
18 there and had to learn in a hurry.

19 A. As I mentioned, beryllium was the biggest.
20 That was the day-in and day-out thing, and other things
21 as they came up. We might have degreasers in the
22 maintenance shop that we wanted to keep an eye on.
23 Solvents, reagents in the laboratories. Although those

24 were small, small amounts were pretty well contained in

25 hoods, chemical hoods, this sort of thing. Noise

1 problems, illumination. Just about anything that would
2 normally come up.

3 Q. I think I miss -- I did a poor job of
4 asking the question. Let me try again. I was wondering
5 not what sort of problems you were forced to deal with
6 all of a sudden, but rather what you did to try and
7 educate yourself in order to handle your new job, you
8 know, when you became the industrial hygienist.

9 A. Well, that's hard to say. That's a long
10 time ago. I guess if I had to say if a problem came up,
11 we looked around to see what we had in the way of
12 literature on it and what we should do about it. Take
13 them one at a time as they came.

14 Q. So, you were dealing sort of - learning on
15 the job with specific problems as they arose, seeking
16 out the resources and the literature that would bear on
17 that and ---

18 A. (Interrupting) Yeah. I had eight years of
19 experience in health physics. And there is close
20 correlation between the two as far as I'm concerned.
21 And we were pretty well aware being in health physics of
22 the operations around the plant site, what was going on
23 before I went into industrial hygiene. So, it wasn't

24 like somebody coming in from the outside and saying,

25 "Here, learn all this."

1 Q. Sure. And how long did you spend in
2 Midland around '62 when you went up there to be trained
3 and oriented to the Dow industrial hygiene program?

4 A. Three weeks.

5 Q. So, they -- The folks up there that were
6 taking you around were trying to give you kind of a cram
7 course in that period and show you the nature of
8 problems you'd face and the kind of resources that you
9 could use to deal with them?

10 A. Yeah.

11 Q. And did you get some practical training in
12 doing sampling and monitoring and such as that?

13 A. Oh, not really hands on. I spent mainly
14 most of the three weeks with the industrial hygienists
15 there when they would go out to do something. But as
16 far as actually doing it, no.

17 Q. Did these gentlemen seem to you to be
18 pretty competent and capable from the perspective of
19 what you were then, just a novice?

20 A. Yes.

21 Q. And were they as you observed equipped by
22 training and experience and I guess with equipment to
23 deal with like dust problems that they would encounter

24 in Dow facilities?

25 A. I'm not sure if any dust problems came up

1 while I was there. So, I can't really say.

2 Q. Had you had experience sampling for dusts
3 like the beryllium dust before you went to Midland in
4 '62?

5 A. Some experience in sampling for radioactive
6 materials, yes.

7 Q. But not for just the plain beryllium dust?

8 A. Yes, beryllium dust.

9 Q. That, too?

10 A. Yes.

11 Q. And somebody at Rocky Flats had taught you
12 about doing that; so, you didn't need to be taught in
13 Midland?

14 A. I guess you could say that I had picked it
15 up whether I was taught or just from watching somebody
16 else.

17 Q. Did they have like an industrial hygiene
18 laboratory at Midland? Do you remember seeing that?

19 A. Yeah, they had several of them.

20 Q. Several of them?

21 A. They had four or five different labs out
22 there.

23 Q. Did you have any kind of an industrial

24 hygiene lab at Rocky Flats?

25 A. They didn't when I started. We developed

1 one over a period of time.

2 Q. Was this again something you had to sort of
3 put together on your own, or did you have the benefit of
4 suggestions and advice from higher up in the
5 corporation?

6 A. Both. We put it together largely
7 ourselves. But if we had any problems or needed some
8 suggestions, we would call Harold and ask him how to do
9 this.

10 Q. And he certainly knew how to do it I
11 suppose?

12 A. Yeah. If he didn't, one of his people did.

13 Q. How big a work force did you have at Rocky
14 Flats? I mean over 2,000 people was it?

15 A. It varied. When I went out there, I was
16 about No. 900. And I think at one time it may have
17 gotten up to over 7,000. So, it kind of varied up and
18 down.

19 Q. We talked about asbestos at the Rocky Flats
20 facility. You haven't thought since Mr. Hobson visited
21 with you about that of any other instances of your
22 encountering asbestos materials at Rocky Flats, have
23 you, other than the ones we have talked about this

24 morning?

25 A. I can't think of any others.

1 Q. And as far as you know, you didn't have any
2 encounter with it or industrial hygiene aspects of
3 dealing with it when you were at Midland or elsewhere?

4 A. I don't think it ever came up while I was
5 there.

6 Q. Was it ever a topic of your discussions
7 with the representatives of the respirator companies
8 that we spoke of today?

9 A. No. Bear in mind -- Bear in mind on our
10 respirator program, this was aimed at plutonium. We
11 figured if we had a respirator we could use in a
12 plutonium area, we could use it for any other material
13 we may have - any other particulate material on the
14 plant site. And this is what it was aimed at. We
15 weren't thinking of beryllium. We weren't thinking of
16 uranium; of course, not asbestos.

17 Q. Yes, sir.

18 A. We were looking at plutonium. This is the
19 one we were concerned about controlling. And if we
20 could do that with a respirator, then we could use that
21 respirator anywhere else on the plant site. If we got a
22 respirator without a high-efficiency filter anywhere on
23 the plant site, chances are that could show up in the

24 plutonium area. And this is why we stayed strictly with
25 the high-efficiency filter. I kept a respirator in my

1 desk. If I wanted to go to the plutonium area, I took
2 it with me. I could take it into the uranium area if I
3 needed to.

4 Q. Or anywhere else in the plant?

5 A. Anywhere else that there could be
6 particulate airborne material. So, our whole program
7 was aimed at plutonium. The rest of the stuff was -
8 just fell underneath. It was there, but we had the
9 protection for it.

10 Q. That was your highest risk material there
11 you thought?

12 A. Yeah.

13 Q. And it was in the form of a dust, was it?
14 Is that accurate to say that?

15 A. Yes.

16 Q. But even though the beryllium dust, for
17 instance, posed a relatively much lower risk to health
18 than say plutonium, you still went to some fairly good
19 lengths to protect the workers from breathing the
20 beryllium dust?

21 A. Yes.

22 Q. Do you recall ever knowing of any
23 asbestos-containing products which Dow manufactured at

24 anytime, sir?

25 A. I don't recall knowing of any.

1 Q. I gathered - and not meaning to be
2 disrespectful, but you were somewhat out of the main
3 stream out here at Rocky Flats given the nature of the
4 facility and the special relationship that the company
5 had there with the Department of Energy?

6 A. That's true.

7 Q. You discussed earlier the medical
8 monitoring program with respect to some of the more
9 serious health risks that you expected to have to deal
10 with at Rocky Flats, and the fact that you did chest
11 X rays for people who had exposure to some of the toxic
12 dusts, including the beryllium I presume.

13 What was the policy there about sending
14 people who had bad films, films suggesting that they had
15 a dust disease of the lung back into a potentially dusty
16 work environment? Would you transfer them to some
17 cleaner work?

18 A. I don't know, and I don't remember that
19 that ever came up.

20 Q. You don't recall ever having reports to you
21 of people with bad films?

22 A. I can't say for sure. I just don't know
23 that there were any. There could have been, but I don't

24 know.

25 Q. So, you don't know even whether there was a

1 policy about reassigning workers that showed signs
2 perhaps of pneumoconiosis?

3 A. No. There were -- There were procedures on
4 radiation exposures where people could be restricted
5 from radiation areas. But on these others, I don't know
6 if it ever came up.

7 Q. So, if they had evidence that they had
8 excessive radiation exposure, then they would be
9 reassigned to an area where they would be sure to have
10 far less exposures than before?

11 A. Yes.

12 Q. Is that the idea?

13 A. Yes, sir.

14 Q. So that they wouldn't get enough total
15 exposure to cause a disease or an illness; correct?

16 A. Yes.

17 Q. And would that same principle make sense to
18 you in dealing with a dust disease?

19 A. Oh, I guess it wouldn't be up to me. This
20 would be a medical decision.

21 Q. Yes, sir. But it's an industrial hygiene
22 principle. And it would make sense that if a man had
23 been overexposed to dust, that you as an industrial

- 24 hygienist would want to then make sure that in his
- 25 future work that he had very minimal dust exposure; is

1 that correct?

2 A. I guess that would be common sense, yes.

3 Q. Did you understand as you learned more
4 about industrial hygiene that the main important part of
5 your job was really the prevention of occupational
6 diseases?

7 A. Yes.

8 Q. And that the fundamental way that you would
9 prevent the occupational disease was by preventing the
10 exposure to the toxic material that could cause the
11 disease; correct?

12 A. True.

13 Q. Was it Dow's policy in the Rocky Flats
14 plant to warn or instruct the people working there about
15 the potential health hazards of the materials that they
16 were working with on a daily basis?

17 A. It was the policy. I don't know if it came
18 from Dow or D.O.E.; but it was plant policy that, yes,
19 people were told.

20 Q. So that, for instance, you made the
21 individual worker aware about what could happen if he
22 had too much exposure to various substances?

23 A. Yes, sir.

24 Q. And one of the reasons for that I suppose

25 would be to help him to understand the need for say

1 taking the precautions that you prescribed or for using
2 the respirator when you said to use it; correct?

3 A. I would suspect so, yes.

4 Q. Do you know of any studies that were done
5 of Dow employees that looked for occupational diseases
6 whether they were epidemiology studies or mortality
7 studies, morbidity studies?

8 A. I'm not familiar with any.

9 Q. What year was it you ceased to be a Dow
10 employee? Was that '75 did you say?

11 A. '75.

12 Q. What special efforts did you have to take
13 to comply with the Walsh-Healey Act at Rocky Flats? Do
14 you know?

15 A. I can't even remember what it was. What
16 was it?

17 Q. Well, I think we could fairly call it the
18 predecessor of the Occupational Safety and Health Act in
19 that it dealt with those issues. But I think it was
20 directed toward government contractors specifically as
21 opposed to all employers.

22 A. I don't recall the act specifically. We
23 were always under D.O.E., and they specified what

24 standards we would follow in health and safety.

25 Q. So, to the extent that there was special

1 requirements in that act, you don't know what they were;
2 but presumably D.O.E. was enforcing them?

3 A. Yeah.

4 Q. Did it strike you as odd that the owner of
5 the plant where you were working as the employee of a
6 contractor would be making the safety rules for you and
7 your fellow workers?

8 A. Say that again.

9 Q. Did you find it peculiar that it was the
10 plant owner as opposed to your employer who was
11 primarily responsible for determining safety standards
12 that were going to be followed there for men like
13 yourself who were just employees of a contractor?

14 A. No. I guess it was the way of life. I
15 really hadn't thought about it.

16 Q. And did you tell us earlier that you recall
17 no document or instruction or information that you got
18 from Dow, whether it was from Midland or Mr. Hoyle's
19 department or anybody else, that told you about the
20 known or suspected health hazards of asbestos?

21 A. I don't remember specifically getting any
22 information like that, no.

23 Q. Did you ever get any such information from

24 Rockwell after 1975 when you became their employee?

25 A. I don't recall if we did, no.

1 Q. Do you recall what kind of dust levels you
2 were measuring in the foundry area in connection with
3 the mold cleaning?

4 A. Not just offhand I can't, no.

5 Q. Do you remember the kind of equipment you
6 used to do your air sampling in the foundry area?

7 A. We had a central vacuum system.

8 Q. Yes, sir.

9 A. With air sampling heads with - I think it
10 was Whatman 41 filter papers on it. It pulled air
11 through the filter all day. And then those were
12 analyzed in the labs for beryllium.

13 Q. And how did you express these - the results
14 of this analysis in terms of concentration of so many
15 particles per cubic foot or c.c. of air or how did you
16 ...

17 A. Micrograms per cubic meter.

18 Q. So, you expressed it in terms of weight or
19 volume?

20 A. Volume.

21 Q. What were the main feared health effects of
22 the plutonium that you knew of while you were at Rocky
23 Flats?

24 A. I don't know what the main ones would have
25 been. They were concerned about lung exposure, kidney

- 1 exposure with inhalation. Inhalation was the problem.
2 There was some external radiation exposures, but I think
3 they were more concerned with inhalation.
- 4 Q. And the fear was that the inhaled plutonium
5 particles would cause cancer in the worker?
- 6 A. I guess it was cancer. I wasn't really
7 that familiar with it.
- 8 Q. But for whatever reason, the plutonium was
9 known then to be shall we say much more toxic than the
10 other materials that your folks worked with at Rocky
11 Flats?
- 12 A. I think you could say, yeah.
- 13 Q. And it was for that reason that the extra
14 precautions were taken and the best filters were used
15 with the respirators and you were very careful in your
16 medical monitoring?
- 17 A. I think that's the primary reason, yes.
- 18 Q. Would it make sense to you to take those
19 same kind of precautions in dealing with other known or
20 suspected carcinogens that you encounter in the
21 workplace? That would be the reasonable thing to do,
22 wouldn't it?
- 23 A. I guess it would depend on the

- 24 circumstances and the amount involved and all that sort
- 25 of thing, yes, as to what precautions you would take.

1 Q. And again, you as an industrial hygienist
2 would have determined the circumstances by actually
3 measuring, sampling, monitoring and observing the
4 conditions?

5 A. Yes.

6 Q. In other words, basing your decisions, your
7 judgments on objective data obtained in the field in the
8 actual workplace?

9 A. Yeah.

10 Q. Did you have any inspections of your plant
11 there by people from insurance companies that you can
12 remember, risk assessments or health and safety audits
13 or inspections?

14 A. No, not that I recall.

15 Q. Do you recall that Dow had any particular
16 insurer during those years?

17 A. They had a Workmen's Comp. insurer, but I
18 can't tell you ---

19 Q. (Interrupting) You don't remember who?

20 A. Pardon?

21 Q. You don't remember who it was?

22 A. No, I sure can't.

23 Q. Let me just ask you about a few names. And

24 I apologize in advance if you've already spoken to some

25 of them. But these are some folks that I think were

1 with Dow at one time or another, and I just wonder if
2 you knew them or what they did. How about Dale
3 Bakowski?

4 A. Yes, I know Dale.

5 Q. Was he working out here in this area, in
6 Rocky Flats?

7 A. Yes.

8 Q. Did you mention him earlier as being at the
9 plant with you?

10 A. No.

11 Q. It slipped my memory if you did.

12 A. No. He was in the labs. He wasn't in the
13 industrial hygiene group.

14 Q. Working in the labs at Rocky Flats?

15 A. Yes, sir.

16 Q. Do you remember him as a member of the
17 A.I.H.A., though, along with you during that period?

18 A. Yeah.

19 Q. He was - what, a chemist?

20 A. Yes.

21 Q. But not an industrial hygienist as such?

22 A. No.

23 Q. Did he spend most of his career out here in

24 Colorado?

25 A. Yes.

- 1 Q. At this plant?
- 2 A. Yes.
- 3 Q. How about R. H. Boundy, B-o-u-n-d-y, from
- 4 Midland?
- 5 A. That name I have heard from the olden days,
- 6 but I never met him. I don't know what he did or
- 7 anything.
- 8 Q. How about Roy Degesero.
- 9 A. That isn't familiar.
- 10 Q. I believe we have mentioned Dr. R. A.
- 11 Erhart from Coatings Technical Service. Does that ring
- 12 a bell.
- 13 A. What it is again?
- 14 Q. Roy -- I'm sorry. Dr. R. A. Erhart or
- 15 Erhart.
- 16 A. That name isn't familiar to me.
- 17 Q. Do you know what Coatings Technical Service
- 18 is?
- 19 A. No.
- 20 Q. How about Dr. H. H. Gay?
- 21 A. I have heard the name as he was one of the
- 22 physicians at Midland.
- 23 Q. You didn't meet him?

24 A. Didn't meet him that I recall.

25 Q. Ferrell David Hobbs?

- 1 A. Yes, I know Ferrell.
- 2 Q. Would you tell us about Mr. Hobbs.
- 3 A. He I think was a chemist at the plant, and
- 4 then he came into the environmental group for a while.
- 5 And then he left and I think went with Dow to Memphis or
- 6 Nashville or somewhere for a while, and then he came
- 7 back out to the plant. I think he came back after I
- 8 left.
- 9 Q. Returned to Rocky Flats?
- 10 A. I think he's in their environmental group.
- 11 Q. Now, did Dow resume running that plant
- 12 after Rockwell - Rockwell's contract ended?
- 13 A. Oh, no.
- 14 Q. No?
- 15 A. No.
- 16 Q. So, you think that Mr. Hobbs came back to
- 17 Rocky Flats as an employee of ---
- 18 A. (Interrupting) Rockwell.
- 19 Q. Rockwell. Do you know Bruce Horbath,
- 20 H-o-r-b-a-t-h? Horbath.
- 21 A. No, I don't think so.
- 22 Q. We spoke of doctor -- Was it Dr. Irish?
- 23 A. Dr. Irish.

24 Q. Was it Donald Irish?

25 A. Uh-huh.

1 Q. Do you know if that gentleman is still
2 living?

3 A. No, I don't.

4 Q. Was he -- Would you say he was old when you
5 knew him ---

6 A. (Interrupting) He was old when I knew him,
7 yes.

8 Q. --- in the '60's?

9 A. Yes.

10 Q. How about Wilbert Kittinger?

11 A. Yeah, I know Wilbert.

12 Q. What can you tell us about him?

13 A. He was a health physicist at the plant. I
14 think he was probably my first boss out there the first
15 year I was there. And he left and I think went with Dow
16 to someplace in California or stayed with Dow. I don't
17 know if he left before Rockwell came or when Rockwell
18 came. The last I heard he was still in Walnut Creek or
19 Pleasanton or somewhere out there. I don't know where.

20 Q. And his background was as a health
21 physicist?

22 A. He was a health physicist at the plant.
23 And I think he was probably an engineer of some kind,

24 but I just don't recall.

25 Q. How about was Basil K. Leon?

1 A. No.

2 Q. Don McCollister, Donald ---

3 A. (Interrupting) I have heard the name. But
4 I didn't know him.

5 Q. Kenneth Olson, Kenneth J. Olson from the
6 biochemical research lab in ---

7 A. (Interrupting) It seems like there might
8 have been a toxicologist by that name when I was up
9 there. I may have met him, but I really can't say I
10 know him.

11 Q. How about Edward A. Putzier?

12 A. He was my boss most of the time I was out
13 at the plant.

14 Q. That's P-u-t-z-i-e-r.

15 A. Right.

16 Q. Does that sound right? Is he still living?

17 A. Yeah.

18 Q. Out in this area?

19 A. Yeah, in Boulder.

20 Q. And what was his background or his
21 professional training?

22 A. He was a -- He was a health physicist. I
23 think he had a degree in physics and then went through a

- 24 fellowship program at Rochester, was it, back in the
- 25 early '50's, late '40's in health physics.

1 Q. And to your understanding spent most of his
2 career at this facility in the Boulder area?

3 A. He was here from - before I was - probably
4 1952, and retired a couple of years before I did.

5 Q. I think you mentioned Arnold Schaffer
6 earlier.

7 A. Yes.

8 Q. Could you tell us any more about him. Did
9 you know him from Midland?

10 A. He was one of the industrial hygienists
11 that was there. I don't know what his background was or
12 anything.

13 Q. How old would you estimate him to be then
14 or now?

15 A. I would guess he would be in his 60's, but
16 I don't really remember. It seems like he might have
17 been a little younger than I am, but I don't know.

18 Q. And did you mention Edward Schneider as
19 somebody that you knew from Midland?

20 A. Yes, he was an industrial hygienist when I
21 was there.

22 Q. Had he been with the company long to your
23 recollection?

24 A. I don't know.

25 Q. Do you know where he went, or is he still

1 with the company or was he when you left?

2 A. I don't know that either. We didn't have
3 much contact with Midland after Rockwell came in.

4 Q. And Lawrence Silverstein you mentioned.

5 A. I knew him, yes.

6 Q. He was trained as an industrial hygienist,
7 too, wasn't he?

8 A. He was I think primarily a health
9 physicist, but he was in our industrial hygiene group up
10 there.

11 Q. I see. Did you stay in touch with him over
12 the years?

13 A. No.

14 Q. How about John Staudt, S-t-a-u-d-t?

15 A. The name isn't familiar.

16 Q. Ted Torkelson?

17 A. Ted was in our biochemical research lab. I
18 don't know if I met him, but the name is familiar.

19 Q. And Mark Wolf from Midland.

20 A. That's another one I think was in their
21 labs, but I don't remember if I met him or not.

22 Q. How many folks worked up at that lab to
23 your recollection? Would you say it was -- I know you

24 are going to have to make an estimate, and it's going to

25 be rough. But in the '60's when you went there, how big

1 a place was it?

2 A. I don't know. The group I was with as I
3 mentioned I think had six or seven industrial
4 hygienists. And then I can think of four or five in the
5 toxicology group. I don't know how many beyond that -
6 if they had technical people, technicians in there or
7 just what the deal was. The only ones I know are
8 probably the ones I have met, and we have named most of
9 those I think.

10 Q. And there were several laboratories in the
11 facility I guess?

12 A. It was a fairly good-sized building, yes.

13 Q. Do you have any idea how long it had - the
14 biomedical research lab had been in existence?

15 A. No.

16 Q. Let me just try another half dozen names on
17 you here. Did you know a John A. Jones from your years
18 in the Industrial Hygiene Association?

19 A. The name isn't familiar.

20 Q. How about a William Revoir or -
21 R-e-v-o-i-r?

22 A. He was one of the respirator company
23 representatives, but I can't tell you which one now.

24 Q. Is this a man you would have met in dealing
25 with respirator companies or in just going to A.I.H.A.

1 meetings or both?

2 A. Well, both. But I think he was the area
3 sales representative or something like Jack Leach was
4 for MSA.

5 Q. I see.

6 A. And the name is familiar. And he was with
7 one of the respirator companies, but I can't remember
8 which one.

9 Q. I see. But apparently you met him
10 somewhere along the way?

11 A. Yeah.

12 Q. How about Mr. Yurgilas, Y-u-r-g-i-l-a-s,
13 Yurgilas?

14 A. It isn't familiar.

15 Q. That sounds like one you would remember,
16 huh? I have a few more here, but you are doing great.

17 As long as you will bear with me, we'll struggle on.

18 How about Eldrid Barnard?

19 A. The name isn't familiar.

20 Q. Robert Grubb?

21 A. No.

22 Q. I'm telling you these would all be
23 industrial hygienists from somewhere in your last years

24 with Dow that you might have known from the association.

25 W. Julian Carter?

- 1 A. No.
- 2 Q. Harry Kotabish or Kotabish?
- 3 A. No.
- 4 Q. Charles Ethridge?
- 5 A. No.
- 6 Q. Gene Flumerfelt?
- 7 A. No.
- 8 Q. Bob or Robert Haller or Haller?
- 9 A. No, I don't think so.
- 10 Q. Did you mention a Mr. Merkle earlier,
- 11 Merkle?
- 12 A. Bob Merkle.
- 13 Q. It's Bob Merkle? Robert?
- 14 A. Yeah.
- 15 Q. And he was with ---
- 16 A. (Interrupting) I think it was MSA.
- 17 Q. --- MSA in Pittsburgh?
- 18 A. Yeah.
- 19 Q. So, you knew him over the course of some
- 20 years?
- 21 A. Yes.
- 22 Q. Was he an elderly gentleman at the time you
- 23 were doing your respirator work, or was he more a

24 contemporary ---

25 A. (Interrupting) I would say contemporary,

1 but I don't - wouldn't swear to it.

2 Q. Did you maintain any kind of contact with
3 him up until your retirement? I presume that you would
4 still have been dealing with the same vendors even after
5 you became a Rockwell employee.

6 A. Our main -- Our main contact with like MSA
7 was Jack Leach, who was in the Denver area. And once in
8 a while Merkle would come out, and the two of them would
9 come out to the plant and see if we needed anything, if
10 we could help them, if they could help us, this sort of
11 thing. The other respirator companies did the same
12 thing. Different people would be out occasionally.

13 Q. So, they would actually come even from
14 Pittsburgh to visit your facility here and meet with you
15 face to face and talk about problems, products, what
16 have you?

17 A. Yeah.

18 Q. But you didn't even have to invite them to
19 come out; sometimes they'd just show up as a sales
20 call ---

21 A. (Interrupting) I don't think ...

22 Q. --- a courtesy call?

23 A. I don't think we did.

24 Q. You didn't invite them?

25 A. No.

1 Q. And did they have anything helpful to
2 offer to you when they would make these visits, or was
3 it just really more in the nature of a sales pitch?

4 A. It was -- It was I think just a contact.
5 And if they had anything new in the way of respiratory
6 protection, they would let us know about it. It wasn't
7 necessarily a sales pitch, but I think they did keep us
8 up to date on what was available, not only on
9 respirators but their other safety equipment.

10 Q. And they would actually I suppose get you
11 to take them around the plant and look at the work
12 conditions or the uses being - that were being made of
13 their products and the conditions under which the men
14 wearing the respirators might be working, too, wouldn't
15 they?

16 A. No.

17 Q. You never let them see? It was a secret?

18 A. You couldn't.

19 Q. Oh, is that right?

20 A. Yeah.

21 Q. How about George Morsh; do you recall that
22 name?

23 A. No.

24 Q. Richard Swift?

25 A. No.

1 Q. Joseph Zatec or Zatec?

2 A. The name is slightly familiar, but I can't
3 tell you who he is.

4 MR. BLANKS: Well, I think that's
5 all I'm going to ask you in the realm
6 that touches on asbestos. And these
7 other people, every single one of them
8 get an opportunity to interrogate you.

9 MR. ALMQUIST: Well, I think I'm
10 going to choose to save what
11 questions, if I have any, for the end.
12 I want you-all to get through with
13 everything you have to ask him, and
14 then we will ask ours.

15 MR. BLANKS: Well, I'm passing
16 the witness on this topic to anybody
17 else that wants to touch it, which is
18 the way we have been doing them;
19 unless you want to do it differently.

20 MR. ALMQUIST: I indicated to you
21 that when you-all are completely
22 through with everything, I may have
23 a few questions for him then but not

24 until then.

25 MR. BLANKS: Well, how about

1 anybody else?

2 MR. BEASON: You-all are just
3 finishing asbestos right now?

4 MR. BLANKS: Well, that's what I
5 was suggesting. Mr. Almquist is
6 asking us to go on and finish, finish.
7 I'm happy to cooperate with him as
8 always. And despite the fact that he
9 wrongly instructs witnesses not to
10 answer fair questions - but we will
11 deal with that at another time and
12 place.

13 MR. ALMQUIST: I don't want to
14 pay for the speech.

15 MR. BLANKS: It was a short
16 speech. And let me say for the
17 record, that Mr. Almquist is a fine
18 attorney and one of my good friends.
19 I'm passing the witness. It would
20 appear that they have no questions.
21 So, Mr. Hobson, if you would like to
22 go ahead.

23

24 RE-EXAMINATION BY MR. HOBSON:

25 Q. I would like to finish in the area of

1 asbestos for me, which is just a couple of quick
2 questions that I forgot earlier. Did you ever use the
3 Bausch & Lomb dust counter out here at Rocky Flats?

4 A. I am not familiar with it by that name
5 anyway.

6 Q. I understand it's a portable instrument
7 that you could use to draw a dust sampling into it. It
8 has a microscope type of device built onto it. You have
9 not used that kind of instrument before?

10 A. I'm not familiar with it, no.

11 Q. Did you have midget impingers at your
12 disposal to use for dust sampling at Rocky Flats?

13 A. Yes.

14 Q. And would that have been true in the 1961
15 time period when you first came into industrial hygiene?

16 A. I don't think we had midget ones that
17 early. I don't know when they came along. And I don't
18 recall if they were that early.

19 Q. Did you have the full size impingers before
20 you had the midget impingers?

21 A. Yes, sir.

22 Q. And I take it you were familiar with how to
23 do dust counts using the impinger technique?

24 A. Yeah, I think we could.

25 Q. Did you yourself utilize the impingers for

1 doing dust counts?

2 A. I can vaguely recall taking some samples
3 with them. What we used them for, I don't remember.
4 But I can recall having them and using them on occasion.

5 Q. Would all of the air samples you would have
6 taken at Rocky Flats have been recorded somewhere and
7 kept in writing?

8 A. Yes, sir.

9 Q. To your knowledge was there any kind of a
10 program to periodically destroy or purge old information
11 kept in writing like that for air sampling?

12 A. Not for air sampling, no.

13 Q. When you left out there, everything that
14 had been done in the way of air sampling, the written
15 results still existed?

16 A. Yes.

17 Q. If you had a threshold limit value of 5
18 regardless of what the unit of measure was to deal with,
19 and you went out and did a sampling regime and you found
20 the concentration to be 4.9, what kind of a comfort
21 index would that give you as an industrial hygienist
22 about the exposure limits?

23 A. Our general policy was to keep things as

24 low as possible. And if it approached the T.L.V. or

25 whatever you want to call it, we figured it was -

1 something should be done to correct it.

2 Q. And you felt that was prudent practice?

3 A. Yes, sir.

4 Q. Would that be the procedures that you were
5 following back as early as in the early 1960's when you
6 first came into the industrial hygiene program?

7 A. For as long as I can recall we were doing
8 it that way, yes.

9 Q. Wouldn't that even be before you actually
10 got to be an industrial hygienist while you were doing
11 health physics?

12 A. I think so.

13 MR. HOBSON: That's all I have in
14 the way of asbestos. If that
15 generated any more questions for
16 anybody -- I will pass the witness.
17 And that wipes out asbestos.

18 MR. ALMQUIST: No, it doesn't.

19 MR. HOBSON: Except for any
20 questions you-all might have. I beg
21 your pardon.

22 MR. ALMQUIST: I am going to save
23 mine until the end. I don't want to

24 go back and ask two or three piecemeal

25 questions because it's not going to

1 be that long.

2 MR. HOBSON: That's fine. Anyone

3 else on the subject?

4

5 RE-EXAMINATION BY MR. BLANKS:

6 Q. A few more, Mr. Hill. Did you have any

7 abrasive blasting work at Rocky Flats?

8 A. Yes.

9 Q. And what was - what was that done on and

10 why?

11 A. I am not sure what it was done on. I

12 remember we had some abrasive blasting - I guess I would

13 call them dry boxes.

14 MR. POFF: Excuse me. What

15 did you call those boxes?

16 THE WITNESS: Pardon?

17 MR. POFF: What did you

18 call those boxes?

19 THE WITNESS: Well, I called it a

20 dry box. A total enclosure where you

21 put the part in, sandblast it inside

22 the container and then took it out

23 again.

24 A. And I can recall fairly early they had

25 those I think in the tool and die shop where they might

1 clean up the product. There were a few scattered around
2 the plant site; the same type of thing for cleaning
3 parts and this sort of thing.

4 I think in later years I can recall two
5 which were done in the same room, but they were not
6 contained in a hood where they sandblasted - seems to me
7 like it was steel plates; or the paint shop had a
8 chamber where they could blast stuff before they painted
9 the metal.

10 (By Mr. Blanks)

11 Q. Then sand was the abrasive typically used?

12 A. Sand was used in some of them. Some of
13 them used blast shot, depending here again on what
14 D.O.E. told them to do. If it was part of the product,
15 they specified what was used on it.

16 Q. So, some of this blasting in an enclosure
17 was done on the product which was being manufactured
18 there. Did I understand you correctly?

19 A. Some of it was on the product. Some was on
20 say tools and dies that they were making in the tool and
21 die shop for use on the plant site.

22 Q. So, some on the products, some on the tools
23 that you used and then some in the paint shop. And was

24 the paint shop blasting done inside a blast booth or

25 room, or was it ---

- 1 A. (Interrupting) Room.
- 2 Q. So, it was a totally enclosed room?
- 3 A. Yes.
- 4 Q. With exhaust ventilation?
- 5 A. Yeah.
- 6 Q. What kind of protection did the workers
- 7 have from breathing the dust when they worked in that
- 8 room?
- 9 A. They had a breathing air hood that covered
- 10 their head and shoulders that had an outside supply of
- 11 air.
- 12 Q. A supplied-air hood?
- 13 A. Yes.
- 14 Q. Plus an exhaust ventilation of the room
- 15 itself I presume?
- 16 A. I don't know if it was an exhaust
- 17 ventilation or a recirc. that filtered out the dust and
- 18 returned the air. I think there may have been a little
- 19 of both. I don't recall for sure.
- 20 Q. But in any event, there was a mechanical
- 21 evacuation of the dusty air from the room and a
- 22 replacement ---
- 23 A. (Interrupting) As I recall it had a grated

24 floor, and the air moved down into the floor. And it

25 carried everything down and then out. It wasn't an

1 updraft hood or a backdraft, but everything went down
2 and out.

3 Q. Now, was there any blasting done at your
4 facility that wasn't done inside an enclosure?

5 A. There was one - one operation for a while
6 in the later years, but I can't tell you when, where
7 they blasted steel plates outside.

8 Q. So, that was done out of doors?

9 A. Yes.

10 Q. And what kind of respiratory protection did
11 you have the blasters wear?

12 A. They had a breathing air compressor and a
13 hood.

14 Q. So, again, they had a supplied-air hood?

15 A. Right.

16 Q. And they were using sand to blast the steel
17 plate I assume?

18 A. Yes, sir.

19 Q. And this sandblasting was going on when you
20 started your work there back in the '50's I assume?

21 A. I think some of the enclosed - a couple of
22 those operations may have been. When they started, I
23 don't know.

24 Q. Okay.

25 A. The two that I recall in the paint shop and

1 the plates I think started much later, probably in the
2 late '70's.

3 Q. Did you do any air sampling for silica dust
4 at Rocky Flats at any time?

5 A. I don't recall that we did.

6 Q. How frequently would the blasting out of
7 doors take place if you can estimate?

8 A. It was fairly continuous for a period of
9 time. And I won't say how long because I don't
10 remember.

11 Q. By the time - or early on in your
12 industrial hygiene years you certainly were made aware
13 of the disease of silicosis, weren't you?

14 A. I was familiar with it. When, I don't
15 know.

16 Q. Plus you understood the need to protect the
17 people doing the blasting with air-supplied hoods ---

18 A. (Interrupting) Yes.

19 Q. --- to keep them from breathing the silica
20 dust?

21 A. Yeah.

22 Q. Do you remember getting any kind of
23 Material Safety Data Sheet or toxicology sheet or the

- 24 like from Midland or anywhere else, from the Biomedical
- 25 Research Lab, for instance, concerning silica health

1 hazards?

2 A. I don't recall specifically anything, no.

3 Q. Was it the case, though, that you didn't
4 need to have such a thing to know that silicosis was a
5 hazard to protect the men from?

6 A. We had the information. Where it came
7 from, I can't tell you.

8 Q. At no time did you permit men to blast
9 using just a hood with a wire screen and no air supply,
10 did you?

11 A. Not that I recall we ever did.

12 Q. Do you recall ever seeing any such of a
13 hood even out there at the facility?

14 A. No.

15 Q. Would you have considered that appropriate
16 protection for a man blasting either out of doors or in
17 one of those enclosed blast booths?

18 A. No, I don't think so.

19 Q. Was it also the case that the medical
20 monitoring looked - including the chest X rays looking
21 for lung diseases, was done as to the painters who would
22 be doing the sandblasting?

23 A. It included everybody on the plant site at

24 least in later years. And I don't remember when it

25 started. But everybody was subject to periodic

1 physicals.

2 Q. Including the chest X rays?

3 A. I think -- Yes. That would depend again on

4 your ---

5 Q. (Interrupting) Job?

6 A. --- occupational classification, yeah.

7 Q. So, if your job was one where you could

8 have dust exposure in the course of your job, then your

9 exam would include a chest X ray that would be read by a

10 qualified radiologist to look for ---

11 A. (Interrupting) Well, I don't know how

12 medical did it; but it would be involved, yes.

13 Q. And was it also the case that you - like

14 with the beryllium and the plutonium and the other toxic

15 materials that you were working with at this Dow

16 installation, that you warned the sandblasters about the

17 dangers of breathing the silica dust?

18 MR. ALMQUIST: I want to make

19 it clear that if he's talking about

20 the later years, it would have been

21 Rockwell when the sandblasting

22 operations were going on and not

23 during the Dow period of time.

24 (By Mr. Blanks)

25 Q. Did you lose the question in there?

1 A. Yes.

2 Q. Well, you told us it was the policy there
3 and certainly the proper practice and good practice to
4 inform - fully inform the workers about the health
5 hazards known and suspected of the toxic materials that
6 they were working with and that you were trying to
7 protect them from. Would that have included silica?

8 A. Yes, sir.

9 Q. Do you remember if the people using
10 air-supplied hoods to sandblast also had to wear a
11 mechanical filter respirator under the hood?

12 A. As I recall they didn't.

13 Q. Do you remember ever considering any
14 alternative abrasives to use in place of sand?

15 A. I think at times they may have considered
16 like steel shot or glass beads or something like that.
17 But for the most part, it was just silica sand.

18 Q. Did you have any kind of tumblers -
19 tumbling devices in the foundry dealing with the
20 castings?

21 A. I don't recall any.

22 Q. Was there any blasting done in the foundry
23 to clean the castings?

24 A. No.

25 Q. Or to clean the molds?

1 A. I don't think so.

2 Q. What kind of material did they use for the
3 molds? Did they use sand for the molds, or were they
4 metal or ...

5 A. Graphite.

6 Q. Graphite molds. And the only - the only
7 material that was cast in the foundry was the beryllium?

8 A. In later years. In earlier years it was a
9 depleted uranium casting facility.

10 Q. Depleted uranium castings?

11 A. Yeah.

12 Q. You just melt it down into a liquid and
13 cast it? Was that the way it worked?

14 A. Yes, sir.

15 Q. Did you ever in any of your work life do
16 any work in or around a steel foundry or a brass
17 foundry?

18 A. No.

19 Q. And didn't have occasion to visit any while
20 you were up in Midland ---

21 A. (Interrupting) No.

22 Q. --- with the industrial hygiene people?

23 A. No, not that I recall.

24 MR. BLANKS: I think that's all.

25 I pass the witness again to the sand

1 people. Would you like to take a
2 break or carry on, sir?

3 THE WITNESS: Yeah, I could use a
4 break.

5

6 (A BRIEF RECESS WAS TAKEN.)

7

8 MR. HOBSON: Are you-all ready to
9 start again? Before we begin on the
10 next part, I want to attach as Exhibit
11 No. 1 to the deposition the Notice for
12 the deposition today.

13

14 (EXHIBIT NO. 1 WAS MARKED FOR
15 IDENTIFICATION. SAME WILL BE FOUND AT THE
16 CONCLUSION OF THE DEPOSITION.)

17

18 RE-EXAMINATION BY MR. HOBSON:

19 Q. Mr. Hill, did you ever serve in the
20 military?

21 A. Yes.

22 Q. What branch, sir?

23 A. Navy.

24 Q. Were you -- What was your job in the Navy?

25 A. Radioman.

1 Q. That had nothing to do with health and
2 safety?

3 A. No.

4 Q. May I ask, sir, your date of birth.

5 A. April 26, 1925.

6 Q. Thank you. You told us earlier that some
7 of the work that you did at Rocky Flats while you were a
8 Dow employee involved solvents.

9 A. Yes.

10 Q. And I think that you told me one of the
11 early problems or at least early work activities that
12 you addressed after you became the plant industrial
13 hygienist involved solvents.

14 A. Yes, sir.

15 Q. Did any of those solvents involve solvents
16 that were either benzene or solvents that contained
17 benzene?

18 A. No.

19 Q. They were all chlorinated solvents?

20 A. Chlorinated or the freons.

21 Q. As part of your work and training that's
22 led up to you becoming an industrial hygienist, did you
23 learn about benzene and its health hazards?

24 A. I don't recall that the term ever came up

25 out there.

1 Q. Let me ask you: I take it that from time to
2 time you would visit with the physicians, the various
3 physicians that were at the Rocky Flats location over
4 the years?

5 A. Yeah.

6 Q. Do you recognize the Journal of the
7 American Medical Association?

8 A. Yes.

9 Q. I have got an editorial, which has been
10 marked in a previous deposition as Plaintiff's Exhibit
11 441125JAMA. And this is an editorial - it's one page,
12 Mr. Hill, from the Journal of the American Medical
13 Association, November 25, 1944, on environmental cancer.
14 And let me just show that to you. (Tendering)

15 A. (Reviewing)

16 Q. I realize that you weren't in the field in
17 1944, at least not this field. You probably were in
18 another field at that time, maybe the field of battle;
19 but do you ever recall learning about the environmental
20 carcinogens that are addressed in this 1944 JAMA
21 editorial from either the physicians that you worked
22 with, from reference manuals, from reference journals
23 that you found at Rocky Flats while you were a Dow

24 employee or otherwise?

25 A. What was the question on this?

1 Q. Very clever. Put off the answer so long we
2 have all forgotten the question. The question is,
3 Mr. Hill, this article on environmental cancer from the
4 1944 Journal of the American Medical Association relates
5 several known and suspected carcinogens. And what I am
6 wondering is: Did you ever learn this information from
7 any source, either the medical doctors, from your
8 resources at - there at Dow, Rocky Flats or otherwise
9 the contents of this 1944 editorial on carcinogens?

10 A. You mean the editorial itself?

11 Q. No, sir, the contents about the chemicals
12 that are listed there as ----

13 A. (Interrupting) I am ---

14 MR. ALMQUIST: (Interrupting)

15 Before you answer it, let me just make
16 an objection to the form of the
17 question. And that is that it's -
18 it's a question that I think has
19 multiple parts in terms of asking
20 about different substances and lumping
21 them all together in a single
22 question. I think that the form of
23 the question should address the

24 individual substances that are

25 referenced in that rather than

1 lumping them all together into a
2 single question.

3 MR. HOBSON: I will be happy to
4 do that. Thank you, sir.

5 (By Mr. Hobson)

6 Q. Mr. Hill, in reviewing now the November 25,
7 1944, Journal of the American Medical Association's
8 editorial, do you recall learning from any source,
9 whether it be the physicians at Dow, whether it be the
10 reference books that you had in the library or
11 otherwise - and I'm talking up until 1975 when Dow was
12 no longer at Rocky Flats - that arsenic was a
13 carcinogen?

14 A. I don't think I was aware of that, no.

15 Q. Were you ever aware that chromates caused
16 cancer in humans or was suspected of causing cancer?

17 A. No.

18 Q. Were you ever aware that nickel carbonyl
19 caused cancer?

20 A. I don't believe so.

21 Q. Were you aware that radium could cause
22 cancer?

23 A. Yes.

24 Q. Were you ever aware that mesothorium could

25 could cancer?

1 A. Yes.

2 Q. For the benefit of all of us, tell us what
3 you understand mesothorium to be.

4 A. I think Mesothorium is another name for one
5 of the BK chains of uranium, but I can't tell you what
6 that other name is.

7 Q. Were you ever aware before 1975 that
8 asbestos was known or suspected to cause cancer?

9 A. I was aware. I can't tell you when it was.

10 Q. Were you ever aware that crude and
11 processed mineral oils were capable of causing cancer?

12 A. I think I heard that somewhere. But when
13 and where, I don't know.

14 Q. That would be before 1975 you think?

15 A. It could have been, but I really don't
16 know.

17 Q. Were you ever aware that aromatic amino
18 compounds such as aniline, naphthylamine and benzidine
19 could cause human cancer?

20 A. Somewhere along the line, yes; but when, I
21 don't know.

22 Q. Were you ever aware that benzene could
23 cause cancer?

24 A. I don't think so.

25 Q. And that would be up to 1975 or throughout

1 your professional career?

2 A. Up through 1975 anyway.

3 Q. Did you ever have occasion to investigate
4 the use of solvents? Did you ever have the opportunity
5 or occasion while you were at Rocky Flats as an employee
6 of Dow to investigate whether or not there was any
7 benzene in any of the solvents used at the facility?

8 A. I don't think we ever did. I don't think
9 the subject ever came up that I recall.

10 Q. Would you be aware that in the 1950's and
11 '60's that there were biological monitoring programs
12 that were recommended for workers who had regular
13 exposure to benzene?

14 A. No.

15 Q. Are you familiar with a term called
16 polynuclear aromatic hydrocarbons?

17 A. Vaguely.

18 Q. And did your work at the Dow Rocky
19 Mountain - or Rocky Flats facility ever involve any of
20 the P.A.H.'s or polynuclear aromatic hydrocarbons?

21 A. In later years I -- You are talking about
22 polychlorinated biphenyls, things like that?

23 Q. Well, sir, I was thinking more in terms of

24 benzoalphapylene, anthracene.

25 A. None of those have come up out there, no.

1 Q. But you had some experience with PCB's?

2 A. We had PCB's in transformers. It was
3 contained. We very seldom ran into it.

4 Q. Did you ever have any products or uses of
5 materials that were like pitches or tars, that sort of
6 thing, at Rocky Flats that you recall?

7 A. No.

8 Q. Would you be aware of any uses of high
9 boiling aromatic oils?

10 A. I can't think of any just offhand.

11 Q. That's not a material that you have come
12 across in your professional career I take it?

13 A. No.

14 Q. Are you familiar with the term
15 nitrosamines?

16 A. Vaguely.

17 Q. Did any of your work at the Rocky Flats
18 facility deal with nitrosamines?

19 A. None that I recall.

20 MR. HOBSON: I think that's all I
21 have, Mr. Hill. I appreciate your
22 patience with me, sir.

23

24 EXAMINATION BY MR. ALMQUIST:

25 Q. Mr. Hill, I have just a few questions for

1 you I think to kind of clear up some of the items that
2 we have talked about earlier today. And let's go back
3 to the Rocky Flats facility where you worked. We have
4 had bits and pieces of information about it, but can you
5 give us kind of an overview of exactly what was involved
6 in this plant; what its purpose was and what you did out
7 there.

8 A. Yeah, the primary purpose of the plant,
9 which was owned by A.E.C. or D.O.E., was to manufacture
10 triggers for atomic bombs for the Department of Defense
11 as part of the defense posture of the country. And this
12 could include purification of plutonium, uranium
13 chemically, recovery of chips and this sort of thing
14 chemically; foundry operations where they recast the
15 radioactive materials, machining the materials, shipping
16 them out.

17 Q. And Mr. Hobson adverted to this earlier,
18 but much of what went on out there, was that - that was
19 considered to be top secret-type work?

20 A. Yes.

21 Q. Under the close control of the government?

22 A. Right.

23 Q. Now, to your knowledge did Dow operate any

24 other facilities like this anywhere else in the country?

25 A. Not to my knowledge.

1 Q. In the article that we spent quite a bit of
2 time on this morning, the respirator-fitting program
3 article, you start talking about using half-mask
4 respirators for protection from toxic particulates. In
5 terms of this plant, what were you talking about when
6 you were talking about toxic particulates?

7 A. Primarily plutonium.

8 Q. Back when you were addressing these issues
9 with respect to plutonium, can you tell us what the
10 T.L.V. was for plutonium?

11 A. The number that comes to mind is 9
12 disintegrations per minute per cubic meter of air.

13 Q. And can you help us understand what 9
14 disintegrations per minute might mean?

15 A. The number again that comes to mind is a
16 microgram of plutonium disintegrates at the rate of
17 150,000 atoms per minute. So, 9 disintegrations per
18 minute would be 9 over 150,000 times one millionth of a
19 gram, whatever that may be. It's a pretty small piece
20 of plutonium.

21 Q. And what T.L.V. were you trying to meet
22 when you designed this respiratory fitting program?

23 A. Well, I don't understand what "T.L.V." you

24 mean.

25 Q. What level of exposure were you trying to

1 satisfy when it came to your respirator fitting program?

2 MR. HOBSON: I'm going to object

3 to the form of the question. It

4 assumes facts not in evidence.

5 A. I guess I still don't understand the

6 question.

7 (By Mr. Almquist)

8 Q. Well, in designing this program, what

9 substance was it that you were trying to protect the

10 worker from?

11 A. Plutonium was the - was the main criteria

12 we were looking at.

13 Q. Do you recall what the T.L.V. was for

14 beryllium?

15 A. When I was out there it was two micrograms

16 per cubic meter of air.

17 Q. And I believe you told us a little bit

18 earlier, but what was the purpose of going with the

19 high-efficiency filter in this program in the use of

20 respirators?

21 A. The main idea I think and the primary one

22 was to prevent any other type of respirator getting into

23 the plutonium area. We wanted only respiratory

24 protection that we could use for plutonium.

25 Q. And while you were operating this facility

1 and working out there, to whom were your main reporting
2 duties directed?

3 A. Mine personally or the department?

4 Q. The operators - as the operator of the
5 facility.

6 A. Everything from us went up to the plant
7 manager and then to D.O.E. was my understanding.

8 Q. And while Dow was working as the operator
9 of this facility, were there any comments, suggestions
10 or complaints by the D.O.E. concerning asbestos or any
11 asbestos-containing products?

12 A. I don't recall it ever coming up.

13 MR. HOBSON: I object to that as
14 hearsay.

15 MR. ALMQUIST: I believe that's
16 all the questions that I have.

17

18 RE-EXAMINATION BY MR. HOBSON:

19 Q. Mr. Hill, the respirator fit testing
20 program that you went through that you reported on in
21 your 1966 article, that same procedure would be used for
22 respirators for protection against any toxic dust, would
23 they not?

24 A. I suppose depending on the circumstances it
25 would be, yes.

1 Q. But if someone were interested in
2 evaluating respirator fit testing and they referred to
3 the American National Standards Institute's respiratory
4 protection guides, these very programs are set out for
5 respirator protection - respiratory protection programs
6 in general, are they not?

7 A. I don't know. I can't remember what the
8 ANSI standard said now or what was even in them.

9 Q. The procedure that you used with the
10 irritant smoke to check the respirator fit test,
11 certainly that irritant smoke was not plutonium?

12 A. No.

13 Q. It was in essence a substitute for some
14 material that you could use that the worker could
15 distinguish when his respirator leaked?

16 A. Yes.

17 Q. And the fact that the respirator leaked -
18 if it leaked and there was some other toxic dust in the
19 air, it would leak that toxic dust just like it would
20 leak plutonium or any other toxic dust?

21 A. Yes.

22 MR. HOBSON: That's all I have.

23 Thank you, sir. Anyone else have

24 any questions for Mr. Hill before we
25 finish? I appreciate your patience.

1 MR. ALMQUIST: That will conclude
2 the deposition.

3

4 (THE DEPOSITION WAS CONCLUDED.)

5

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1 THE STATE OF _____:

2 COUNTY OF _____:

3

4 I, JOHN E. HILL, hereby certify that I
 5 have read the foregoing transcript of my testimony given
 6 in the foregoing numbered and styled case, and that same
 7 is true and correct to the best of my knowledge and
 8 belief.

9 I further certify that any and all
 10 corrections have been made on a separate page and
 11 initialed by me.

12

13 This _____ day of _____, 1992

14

15

16 _____
 17 JOHN E. HILL

18 SWORN TO AND SUBSCRIBED BEFORE ME this
 19 _____ day of _____, 1992.

20

21 _____
 22 NOTARY PUBLIC

23

24

25

1 THE STATE OF TEXAS:
2 COUNTY OF JEFFERSON:

3

4 I, RICK SMITH, a Certified Shorthand
5 Reporter for the State of Texas, do hereby certify that
6 on September 24, 1992, I reported the deposition of John
7 E. Hill, during which deposition JOSEPH C. BLANKS,
8 attorney for PLAINTIFFS, requested that the following be
9 certified:

10

11 Page 111, Lines 17-19:

12 Q. "So, I was asking you, sir, what topics
13 they had talked with you about. And
14 Mr. Almquist - as you've heard him
15 speak ---"

16

17

18

19 WITNESS MY HAND AND SEAL OF OFFICE this

20 _____ day of _____, 1992

21

22

23

RICK SMITH, CSR

24

25

1 THE STATE OF TEXAS:
2 COUNTY OF JEFFERSON:

3

4 I, RICK SMITH, a Certified Shorthand
5 Reporter for the State of Texas, do hereby certify that
6 on September 24, 1992, I reported the deposition of John
7 E. Hill, during which deposition JOSEPH C. BLANKS,
8 attorney for PLAINTIFFS, requested that the following be
9 certified:

10

11 Page 112, Lines 9-12:

12 Q. "And how many times have you visited
13 with them about your testimony, do you
14 know?"

15 A. Twice.

16 Q. And how long - for how long a period?"

17

18

19

20 WITNESS MY HAND AND SEAL OF OFFICE this

21 _____ day of _____, 1992

22

23

24

RICK SMITH, CSR

25

1 STATE OF _____:

2 COUNTY OF _____:

3

4 I, RICK SMITH, a Certified Shorthand
 5 Reporter for the State of Texas, hereby certify pursuant
 6 to the Texas Rules of Civil Procedure and/or agreement
 7 of the parties present to the following:

8 That this deposition transcript is a true
 9 record of the testimony given by JOHN E. HILL, the
 10 Witness named herein, on September 24, 1992, after said
 11 witness was duly sworn by me.

12 SWORN TO AND SUBSCRIBED by me in Beaumont,
 13 Texas, on this the _____ day of
 14 _____, 1992.

15

16

17 _____

18 RICK SMITH, CSR

19 Certificate No. 2644

20 Expiration Date of Current

21 Certification: 12/31/93

22 Charlotte Smith Reporting, Inc.

23 235 Orleans, Kyle Building

24 Beaumont, Texas 77701

25 (409) 839-4407

NO. B-126,986

RUSSELL H. ALLEN, ET AL. § IN THE DISTRICT COURT OF
 §
 §
 §
vs. § JEFFERSON COUNTY, TEXAS
 §
 §
AMERICAN PETROFINA, INC., §
ET AL. § 60TH JUDICIAL DISTRICT

INSTANT ACCESS
TRANSCRIPTIONID

VIDEOTAPED DEPOSITION OF:
HAROLD ROBERT HOYLE
FEBRUARY 18, 1991
VOLUME I OF III

NO. A-134,614

FRENCH HICKS, ET UX IN THE DISTRICT COURT OF

vs. JEFFERSON COUNTY, T E X A S

BETHLEHEM STEEL CORPORATION,
ET AL. 58TH JUDICIAL DISTRICT

NO. E-t37,587

DELLA BAKER, ET AL.
vs.
CELOTEX CORPORATION, ET AL.
IN THE DISTRICT COURT OF
JEFFERSON COUNTY, TEXAS

172ND JUDICIAL DISTRICT

JOSEPH A. CLEBERT
GLORIA GOMEZ CLEBERT

vs.

SUIT NUMBER 38,744 DIV."B"

18TH JUDICIAL DISTRICT

PARISH OF IBERVILLE

MCCARTY CORPORATION, ET AL. STATE OF LOUISIANA

LORRAINE PEGGY WILLIAMS SUIT NUMBER 39,404 DIV "D"

18TH JUDICIAL DISTRICT vs.
PARISH OF IBERVILLE MCCARTY CORPORATION, ET AL. STATE OF LOUISIANA

SUPERIOR COURT OF THE STATE OF CALIFORNIA
COUNTY OF ALMEDA

DONALD J. SANDERS AND
WINNIE SANDERS,
Plaintiffs,

vs. CASE NO. 590826-0

FIBREBOARD CORP., ET AL.,
Defendants.

WINNIE SANDERS,
Plaintiff,

vs. CASE NO. 621950-3

PG&E, ET AL.,
Defendants.

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ALMEDA

BARBARA WHITFIELD, ET AL.,
Plaintiffs,

vs. CASE NO. 670704-4

FIBREBOARD CORP., ET AL.,
Defendants.

IN THE SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF SAN FRANCISCO

SYCBERT S. FAIRCHILD, ET AL.
Plaintiff,

vs. CASE NO. 925508

ABEX CORPORATION, ET AL.,
Defendants.

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1 VIDEOTAPED DEPOSITION OF HAROLD ROBERT

· HOYLE, called as a witness by Defendant Dow
3 Chemical Company, taken before Emanuel A.
4 Fontana, Jr., Certified Shorthand Reporter in and
· for the State of Texas, at the DeLand Hilton, 350
6 International Speedway Boulevard, DeLand,
7 Florida, on the 18th day of February, 1991,
8 beginning at 9:38 a.m., pursuant to Notice, the
· Texas, Louisiana and California Rules of Civil
10 Procedure, and the following stipulation and
11 waiver of counsel:

1 2

13

1 4

1 5

1 6

17 Mr. Herschel L. Hobson, of the Law
18 Offices of Herschel L. Hobson, 2190 Harrison,
19 Beaumont, Texas, 77701,, appearing for the Allen
20 Plaintiffs.

21

22 Mr. George R. Covert, of the law firm of
23 Messrs. Covert & Braud, P. O. Box 82080, Baton
24 Rouge, Louisiana, 70844-2080, appearing for the
25 Clebert and Williams Plaintiffs.

6

1 Ms. Denise Abrams, of the law firm of
· Messrs. Kazan, McClain, Edises & Simon, 171
3 Twelfth Street, Third Floor, Oakland, California,
4 94607, appearing for the Sanders Plaintiffs.

5

6 Ms. Sandra F. Clark, of the law firm of
7 Messrs. Mehaffy & Weber, 2615 Calder Avenue,
8 Beaumont, Texas, 77704, appearing for Defendant
9 Dow Chemical Company.

1 0
11 Mr. Duncan S. Stuart, In-House Counsel
12 for The Dow Chemical Company, 2030 Willard H. Dow
13 Center, Midland, Michigan, 48674, appearing for
14 Defendant The Dow Chemical Company.

1 5
16 Mr. Robert H. Hood, of the Hood Law
17 Firm, 172 Meeting Street, Charleston, South
18 Carolina, 29401, appearing for the CCR
19 Defendants.

2 0
21 Mr. J. Thad Heartfield, of the law firm
22 of Messrs. Benckenstein Oxford & Johnson, Third
23 Floor, First Interstate Bank Building, P. O.
24 Drawer 150, Beaumont, Texas, 77704, appearing for
25 Defendant M. H. Detrick Company.

7

1 Ms. Gail C. Jenkins, of the law firm of
· Messrs. Benckenstein, Norvell, Bernsen & Nathan,
3 2615 Calder, Sixth Floor, Beaumont, Texas, 77702,
4 appearing for Defendants Mobil Oil Corporation
· and Fina Oil & Chemical Company.

6
7 Mr. William E. Schweinle, Jr., of the
8 law firm of Messrs. Stubbeman, McRae, Sealy,
· Laughlin & Browder, Inc., 2400 NCNB Center, 700
10 Louisiana, Houston, Texas, 77002, appearing for
11 Defendants American Petroleum Institute, Texas
12 Chemical Council, Chemical Manufacturers
13 Association and National Petroleum Refiners
14 Association.

15
16 Mr. John J. Hainkell III, of the law
17 firm of Messrs. Lemle & Kelleher, 21st Floor,
18 Pan-American Life Center, 601 Poydras Street. New
19 Orleans, Louisiana, 70130-6097, appearing for
20 Owens-Corning Fiberglas Corporation.

21
22 Mr. J. Wiley George, of the law firm of
23 Messrs. Strasburger & Price, 4300 NCNB Plaza, 901
24 Main Street, Dallas, Texas, 75202, appearing for
25 Defendant The Travelers Insurance Company.

2 Ms. Kathy Kubach, of the law firm of
3 Messrs. Dunn, Kacal, Adams, Pappas & Law, 2929
4 Allen Parkway, Suite 2600, Houston" Texas, 77019,
· appearing for Defendants DuPont Corporation and

6 PPG Industries, Inc.

7

8 Mr. Kristopher E. Fernandez, of the law

· firm of Messrs. Blackwell & Walker, 777 South
10 Harbour Island Boulevard, Suite 780, Tampa,
11 Florida, 33602-5707, appearing for Defendant
12 Owens-Corning Fiberglas Corporation.
13

14 Ms. Katherine Armstrong, of the law firm
15 of Messrs. Shadden, Arps, Slate, Meagher & Flom,
16 919 Third Avenue, New York, New York, 10022,
17 appearing for Defendant Metropolitan Life
18 Insurance Company.

1 9

20 Mr. Thomas W. Duesler, of the law firm
21 of Messrs. Adams & Duesler, 550 Fannin, Suite
22 830, P. O. Box 7505, Beaumont, Texas, 77726-7505,
23 appearing for Defendants Badger Engineering
24 Corporation and Charter Oil Corporation.

2 5

9

1 Mr. James H. Powers, of the law firm of

· Messrs. Roberts, Markel, Folger & Powers, 1010
3 Twenty-Four Greenway Plaza, Houston, Texas,
4 77046, appearing for Defendant Aber Company.

5

6

7 Mr. Gary A. Bezet, of the law firm of
8 Messrs. Kean, Miller, Hawthorne, D'Armond,
· McCowan & Jarman, Twenty-Second Floor, One
10 American Place, Baton Rouge, Louisiana, 70421,
11 appearing for Defendant Exxon Corporation.

1 2

13

14 Mr. David W. Ledyard, of the law firm of
15 Messrs. Strong, Pipkin, Nelson & Bissell, San
16 Jacinto Building, Beaumont, Texas, 77701-3255,
17 appearing for Defendants Exxon Corporation and
18 Chevron Corporation.

1 9

2 0

21 Ms. Ann L. Burkey, of the Law Offices of
22 William M. Koziol, Rt. 22 and Kemper Dr., Long
23 Grove, Illinois, 60049-0001, appearing for
24 Defendant John Crane, Inc.

2 5

1 0

1 Mr. Christopher A. Conkling, USS-POSCO
· Industries, P. O. Box 471, 900 Loveridge Road,
3 Pittsburg, California, 94565, appearing for
4 Defendants USX Corooration and USS-POSCO
· Industries.

6
7
8 Mr. Peter Boyd Wells, III, of the law
· firm of Messrs. Wells, Peyton, Beard, Greenberg,
10 Hunt & Crawford, 550 Fannin, 6th Floor, Beaumont,
11 Texas, 77001, appearing for Defendants
12 Bridgestone/Firestone and Bethlehem Steel.

13
1 4
15 Mr. D. Allan Jones, of the law firm of
16 Messrs. Orgain, Bell & Tucker, 470 Orleans
17 Street, Beaumont, Texas, 77701, appearing for
18 Defendants Atlantic Richfield Company, Quantam
19 Chemical Company, Temple-Inland Forest Products
20 Corporation and Gulf States Utilities Company.

21
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1 IT IS STIPULATED and agreed by and
· between counsel for the respective parties hereto
3 that the deposition of the witness named in the
4 caption hereto may be taken at this time and
· place before the officer named in the caption
6 hereto; that said deposition, or any part
7 thereof, when so taken, may be used on the trial
8 of this case with the same force and effect as if
· the witness were present in court and testifying
10 in person;

11 THAT the necessity for preserving

12 objections at the time of taking is waived, and
13 that any and all legal objections to this
14 deposition, or any part thereof, may be urged at
15 the time same is sought to be offered in evidence
16 on the trial of this cause; except, however, that
17 objections to the form of the question and/or
18 responsiveness of the answer must be made at the
19 time of taking, or else such objections are
20 waived;

21 THAT the original of this deposition
22 shall be presented to Ms. Clark, who shall in
23 turn submit it to the witness for his examination
24 and signing, and thereafter, shall return same to
25 the officer taking this deposition;

1 2

1 THAT if the signed original is not
presented to Ms. Clark prior to the time of
trial, a copy may be used in lieu thereof.

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1 (Whereupon, Hoyle Exhibit Nos. 1, 2

. and 3 were marked for identification.)

3

4 THE VIDEOGRAPHER: The time is

. 9:38 a.m.

6 On the record.

7

8 HAROLD ROBERT HOYLE

. was called as a witness by Defendant Dow Chemical

10 Company and, being first duly sworn, testified as

11 follows:

1 2

13 MS. CLARK: I believe, at this

14 time, we're going to do appearances of counsel.

15 My name is Sandra Clark, and I'm here on behalf

16 of the Dow Chemical Company.

17 MR. STUART: My name is Duncan

18 Stuart. I am in-house counsel for the Dow

19 Chemical Company.

20 MR. HEARTFIELD: I'm Thad

21 Heartfield. I'm counsel for M. H. Detrick.

22 MS. JENKINS: I'm Gail Jenkins.

23 I'm counsel for Mobil oil Corporation and Fina

24 Oil and Chemical Company.

25 MR. SCHWEINLE: I am Bill

1 4

1 Schweinle. I'm counsel for the American

. Petroleum Institute, the Texas Chemical Council,

3 the Chemical Manufacturers Association, and the

4 National Petroleum and Refiners Association.

5 MR. HAINKEL: I'm John Hainkel,

6 counsel for Owens-Corning Fiberglas Corporation.

7 MR. HOOD: I'm Bobby Hood. I'm

8 counsel for CCR.

9 MS. KUBACH: I'm Kathy Kubach,
10 counsel for DuPont and PPG Industries.

11 MR. FERNANDEZ: I'm Kristopher
12 Fernandez and I'm with Owens-Corning Fiberglas,
13 on behalf of Owens-Corning.

14 MR. COVERT: I'm Gerry Covert in
15 the Louisiana cases, Clebert and Stewart.

16 MS. ABRAMS: Denise Abrams for
17 Plaintiffs, the Sanders, from California, in the
18 case of the Plaintiffs.

19 MS. ARMSTRONG: Kathy Armstrong for
20 Metropolitan Life Insurance Company.

21 MR. GEORGE: Wiley George for The
22 Travelers.

23 MR. HOBSON: Herschel Hobson,
24 representing the Plaintiffs in the Allen case.

25 MR. DUESLER: Tom Duesler, for

1 5

1 Badger Engineering and Charter Oil.

2 MR. POWERS: Jim Powers for the
3 Aber Company.

4 MR. BEZET: I'm Gary Bezet for
· Counsel Exxon in the Louisiana cases.

6 MR. LEDYARD: David Ledyard,
7 counsel for Exxon, Texaco, Chevron, and others in
8 the Allen case, and Exxon in the Louisiana

· cases .

10 MS. BURKEY: Ann Burkey for John

11 Crane, Inc.

12 MR. CONKLING: Chris Conkling for

13 USX Corporation and USS-POSCO Industries, in

14 connection with the Fairchild litigation in

15 California.

16 MR. WELLS: I'm Boyd Wells. I'm

17 representing Firestone in the Russell Allen case,

18 and Firestone and Bethlehem Steel in the French

19 Hicks case.

20 MR. JONES: I'm Allan Jones. I'm

21 here for a group of four Defendants in the Allen

22 case and for a group of -- a larger group of

23 Defendants in the Baker and Hicks cases.

24 MS. CLARK: Is that everybody?

25 THE VIDEOGRAPHER: Yes.

1 6

1 MS. CLARK: I believe, before we

· begin the deposition, that someone wanted to make
3 an objection on the record.

4 MS. ABRAMS: Denise Abrams for the

· Plaintiffs Sanders. I object to the use of this

6 witness in any capacity as an expert, and I also

7 object to his testifying regarding, either

a implicitly or explicitly, any documents that have

· not been provided to counsel.

10 I understand that the witness reviewed a

11 number of documents in a Michigan case, many of
12 which are currently under seal, and to my
13 knowledge, remain under seal, and I would ask
14 that those documents be provided to counsel prior
15 to cross-examination, so that we can have an
16 opportunity to know what he is relying on for his
17 information.

18 MR. COVERT: 1, too, would like to
19 make an objection, Gerry Covert. I would enter a
20 general objection, at this time, to any documents
21 other than those relating to the Dow facility
22 file-.

23 MR. HAINKEL: John Hainkel for
24 Owens-Corning Fiberglas. I'm only here in the
25 Clebert case.

1 7

1 MR. HOBSON: Is this noticed in

. French Hicks?

3 MS. CLARK: Yes. Is it noticed in
4 French Hicks, did you say?

. MR. HOBSON: Yes.

. MS. CLARK: Yes.

. MR. HOBSON: Have you got it?

. MS. CLARK: Do I have the notice?

. MR. JONES: That lady in the corner
10 has a copy.

11 MS. CLARK: We can get a -- we'll
12 get a copy of it. I don't have it with me right
13 now, but we'll get it to you this morning.

14 MS. JENKINS: Sandra, I assume, for
15 the record, that all of us are only making

16 appearances in the case in which our clients are
17 parties and were properly noticed. We probably
18 didn't specify that when we were going around the
19 room, but I want to make that clear.
20 MS. KURACH: I want to make that
21 clear for the record, too.
22 MR. STUART: It's noted.
23 MS. CLARK: Are we ready?
24 THE VIDEOGRAPHER: Yes, ma'am.
25

1 8

DIRECT EXAMINATION

QUESTIONS BY MS. CLARK:
3
4 Q. Mr. Hoyle, would you state your full
name, please?
6 A. My name is Harold Robert Hoyle.
7 Q. Mr. Hoyle, my name is Sandra Clark, and
8 we're here today to take your deposition
concerning your experience at Dow and your
10 experience as industrial hygienist.
11 Just as a way of introduction, would you
12 state your age, please, and tell us whether
13 you're married, and if you're married, how long
14 you were married, and that sort of thing?
15 A. Well, I'm seventy-nine years old. I am
16 married. My wife's name is Eleanor. We have two
17 children, one named John, and the other one named
18 Susan.
19 Q. I understand --
20 A. I've been married for --
21 Q. Go ahead.
22 A. -- not quite 50 years. We're going to
23 celebrate it on the 28th of March.
24 Q. Okay. Thank you.
25 Are you currently employed?

1 9

1 A. No.
2 Q. All right. Are you retired?
3 A. I'm retired.
4 Q. And when did you retire?
5 A. I retired at the -- my first day of
6 retirement was October 1st., 1976.
7 Q. Were you ever employed by the Dow
8 Chemical Company?
9 A. I was.

10 Q. And when were those years, please?
11 A. I was first employed by Dow in 1941, for
12 the summer. At the time, I was a schoolteacher.
13 I returned to Dow in 1942 for another summer
14 project, and I stayed on from that time on
15 Q. What position
16 A. -- until I retired.
17 Q. All right. What position did you hold
18 most of the time that you worked at Dow?
19 A. I was an industrial hygienist.
20 Q. Well, would you explain to the jury when
21 and how you became an industrial hygienist?
22 A. Yes. Before I became an industrial
23 hygienist, I was a safety engineer. And the
24 industrial hygiene activity at Dow was being
25 taken care of on a case-by-case basis by Dr.

20

1 Edgar Adams, who was head of the Toxicology
· Laboratory.
3 In 1948, there came a time when they
4 needed someone to work at industrial hygiene
· full-time, and my background was that of a
6 chemist working in safety, and industrial hygiene
7 was a specialized part of safety in that it had
8 to do with the recognizing and evaluating and
· controlling of health hazards in the work
10 environment.
11 Q. I was going to ask you that, basically
12 to explain to the jury what an industrial
13 hygienist is and what one does.
14 A. Well, as I've said, by definition,
15 was the science of recognizing, evaluating and
16 controlling health hazards in the work

17 environment,. And what we did was to go into th
18 workplace, observe@-- first find out what
19 chemicals and forms of energy were present in

-- -----

20 that workplace, then study the various jobs in
21 terms of levels of exposure which might e
22 the-various chemicals and forms of energy
23 And then decisionmaking depended
24 threshold limit values. Early on, when I first
25 become an industrial hygienist, we called them

2 1

1 concentration- -i
2 Q. All right. Well, I'll ask you about
3 that in just a minute, but --
4 A. M-h'm.
5 Q. -- what I did want to ask you, or just
6 point out that you became an industrial
7 hygienist, then, in 1948 or approximately 1948?
8 A. It was 1948, March, and I believe it was
9 the 8th day of March.
10 Q. And then how long did you keep that
11 position with Dow?
12 A. Until I retired, approximately 35 years.
13 Q. What were the goals and objectives of
14 industrial hygiene at Dow?
15 A. I think I -- it wasn't 35 years as an
16 industrial hygienist, because there was a period
17 of time when I was a safety engineer.
18 Q. All right.
19 A. So it was from 1948 until 1976. The --
20 the arithmetic wouldn't come out right.
21 Q. Okay. Well, it might if I did it, but
22 anyway.
23 So from 1948 to 1976, you were an
24 industrial hygienist?
25 A. M-hlm.

2 2

1 Q. What were the goals or objectives the
2 Industrial Hygiene Program at Dow?
3 A. Our purpose was to gather informa n

4 that would allow us to provide a safe, hea ful
5 work environment for Dow employees and furn h
6 information to Dow customers, so that they uld

7 use what they bought from us in a safe man
8 based on the data -- information we could
· furnish.

10 Q. All right.

11 A. And our other interest was in the public
12 in general, particularly concerning the
13 surrounding landscape around Dow operations, but
14 not -- but not limited to that.

15 Q. All right. How did the Industrial
16 Hygiene Program develop at Dow? You started to
17 tell us -- I believe, earlier you said that you
18 went to work with Dr. Adams; is that right?

19 A. Yes.

20 Q. And then how did it develop from there?

21 A. Well, I was a one-man Industrial Hygiene

22 Department for about six months, and then I was
23 joined by another man, Ed Schneider, and it
24 developed as the company grew, and as the
25 interest in controlling health hazards in the

2 3

1 work environment grew, generally.

2 Q. And where was your department located?

3 A. We were a part of the Biochemical
4 Research Laboratory. And the Biochemical
· Research Laboratory included several different
6 laboratories, of which one was toxicology.

7 When I first started, industrial hygiene
8 was not well separated from toxicology in the
· structure. Later on, it became separate.

10 Q. And this was -- what town was all this
11 located in?

12 A. I was -- I was in Midland, where --
13 which is the home of the Dow Chemical Company.

14 Q. Okay. In --

15 A. Midland, Michigan.

16 Q. In Midland, Michigan, not Midland,

17 Texas?

18 A. Not Midland, Texas.

19 Q. All right. So you fit into the program
20 as being the industrial hygienist; is that
21 correct?

22 A. I was the first full-time industrial
23 hygienist at Dow.

24 Q. What kind of did you have to
25 become an industrial St?

2 4

1 A. Well, at the time I became an industrial
· hygienist, and there was very little formal
3 training available in the United States, so my
4 training was that of a chemist. Many people
· doing industrial hygiene were engineers, although
6 there were quite a few chemists involved, and
7 quite a few biochemists. my training was that of
8 a chemist.

9 Q. All right. And you -- you had a college
10 degree in chemistry; is that correct?

11 A. Yes, I did.

12 Q. Where did you go to college?

13 A. Central Michigan University.

14 Q. All right.

15 A. And I had graduate training at the

16 University of Michigan.

17 Q. All right. In chemistry?

18 A. No. In education.

19 Q. All right. That's right.

20 What about other training that you had,

21 other than training on the job?

22 A. Well, there were,, from time to time,
23 seminars and short courses, I guess you might
24 call them. And when they were available, I
25 availed myself of them, and

2 5

1 Q. Do you have

2 A. Go ahead.

3 Q. Do you have any estimates of how many of

4 those seminars and training courses that you
· might have attended in your 28 or 30 years as an
6 industrial hygienist?

7 A. Oh, at least a hundred, I think. Many
8 of them, I was a lecturer, but I usually stayed
· for the full length of the seminar and learned
10 quite a bit each time.

11 Q. Are you a member of any industrial
12 hygiene professional organizations?

13 I'm a member of the American -- AIHA,

14 n Industrial Hygiene Association, and als

15 dustrial Hygie

16 Q. What is the American Academy of

17 Industrial Hygiene?

18 A. Well, people who are certified in
19 industrial hygiene become members of the Academy.

20 Q. And what do you mean, "people who are

21 certified"?

22 A. Well, there's an American Board of

23 Industrial Hygiene which certifies people for the

24 practice of industrial hygiene.

25 Q. Are you board-certified in indus@ial

2 6

1 hygiene?

2 A. I am.

3 Q. And about how long have you been

4 board-certified in industrial hygiene?

5 A. As long, almost, as there has been a

6 certification available. I was grandfathered in.

7 Q. All right. When was that available?

8 A. The exact time, I guess, I can't tell

· you. It was sometime in the 150's.

10 Q. In the 150's -- so it's since the

11 150's --

12 A. I think so.

13 Q. -- you've been --

14 A. I don't remember exactly when. I can

15 look that up, I guess.

16 Q. No. That's all right. The jury is

17 probably going to hear of an organization called

18 the American College of Industrial Hygienists, or

19 the ACGIH?

20 A. I think that was American Conference of

21 Industrial Hygienists.

22 Q. Oh, thank you.

23 A. They were a group of industrial

24 hygienists who limited the membership to those

25 who were Government employees, and the only

1 exception to that I that know of is that they

· allowed some academics in who were technically

3 being paid out of tax money.

4 Q. All right. So you were not a member of

· -the ACGIH?

6 A. I was not allowed to be. I was not

7 eligible.

8 Q. But were members of the ACGIH members of

· the other industrial hygiene group of which you
10 were a member?

11 A. They were members of AIHA, and many of
12 them were certified and, therefore, became
13 members.

14 Q. So you were -- you had associations and,
15 meetings with the ACGIH?

16 A. Oh, yes.

17 Q. Okay. Well, at Dow, how did the
18 Industrial Hygiene Department interrelate with
19 other departments that were concerned with health
20 and safety?

21 A. Well, we worked closely with the Medical
22 Department and the Safety Department, and we were
23 set up to offer assistance or help to line
24 management, who had the direct responsibility for
25 maintaining healthful and safe working

28

1 environments within the company.

2 Q. Okay. When you say "line management,"
3 what are you talking about?

4 A. Well, as opposed to staff functions.

· These were people who had direct control of the
6 department, somehow or other.

7 Q. All right.

8 A. And in my function, I was both line, as
· far as industrial hygiene is concerned, and
10 staff, as far as the rest of the company was
11 concerned.

12 Q. Okay. And so when you're talking about
13 line management, you may be talking about
14 supervisors or --

15 A. I'm talking about anything from the
16 foremen right on to the general manager.

17 Q. All right. How did you communicate
18 among the different departments at Dow?

19 A. Well, it was done in a number of
20 different ways.

21 We developed a datasheet, which was a
22 checklist type of thing which allowed us to give

23 information concerning the toxic properties
24 of a -- of a material, and also to relate the
25 necessary personal protection to four different

2 9

1 categories of operation.

2 Q. All right. Well, I'm going well --

3 we'll just go on to what I had the court reporter

4 previously mark Exhibit 1 to the Hoyle

· deposition.

6 I believe that this contains a

7 datasheet, so if -- let me hand you what's been

8 marked Exhibit 1 and see if you can -- if you

· recognize this document, and if you do, if you

10 can identify it?

11 A. This is a report of what was called a

12 range finding, or class one toxicological test,

13 and it covers a material identified as Asbestos

14 7m.

15 Q. Okay. Can you look in that report and
16 see if it contains a datasheet?

17 A. It does, and maybe I should say that,
18 routinely, whenever any material was investigated
19 in the toxicology laboratory, a datasheet was
20 prepared, and it became a part of that report.

21 Q. Can you tell the jury what -- what was
22 the-purpose of doing a datasheet on 7M cement?
23 what -- what was it being used for?

24 A. Well, this material was -- it was used
25 as a part of a formulation for floor tile, and

3 0

1 the investigator in the laboratory had some skin

· problems, and he picked out asbestos as the

3 Material that he sent over to have tested on the
4 skin, because of his own skin problems.

5 Q. Do you know whether this formulation for
6 floor -- floor tiles was ever manufactured by
7 Dow?

8 A. No. The floor tile formulations, and
9 there was more than one of them, were being
10 investigated in a laboratory within the technical
11 service and development area in Dow. And the
12 purpose was to develop formulations using Dow
13 plastics that would be useful to the floor tile
14 industry, and this is a matter of developing uses
15 for new materials.

16 Q. All right. So what you were doing, or
17 what they were doing here, to the best of your
18 knowledge, was not manufacturing floor tiles with
19 asbestos in them, but they were using this in a
20 laboratory testing sort of function?

21 A. Yes. Dow never made floor tile.

22 Q. okay.

23 A. I'm sure of that.

24 Q. Well, I didn't want that to be

25 confusing, because that was a little bit

3 1

1 confusing to me.

2 So this test was done on asbestos
3 because asbestos was used in this laboratory
4 setting to see if the floor tile formulation was
5 going to work?

6 A. No. May I -- may I add --

7 Q. Well, let me ask you another question:
8 Why was it used?

9 A. Well, why was it done?

10 Q. Yeah.

11 A. Well, the test on the asbestos itself

12 was done simply because the investigator, the man

13 in charge of the laboratory, had a skin problem.

14 Q. All right.

15 A. He didn't know what the skin problem
16 what caused it, and one of the things that was
17 done was to test this particular asbestos form
18 form on -- on rabbits.

19 Q. All right. And someone in the
20 Toxicology Department did that?

21 A. They did that, and as a matter of
22 routine, they made this datasheet.

23 Q. Okay. Now, would you explain to the
24 jury what the findings on the datasheet showed?

25 A. There's only one finding from the tox

3 2

1 investigation, and that is that it had no effect

· on the skin.

3 Q. Okay. And that --

4 A. And there are some other categories that
· were checked here, based on what was known about
6 asbestos.

7 Q. All right. And that's what I wanted to
8 ask you to explain. The -- the categories that
· were checked, other than the test on the skin,
10 came from what source?

11 A. Came from general knowledge concerning
12 asbestos, which was available in the literature
13 and just generally known.

14 Q. All right. And if you look at that
15 datasheet, what were the -- what areas were
16 checked?

17 A. Well, they checked eyes, and it was --
18 there was no unusual effect on the eye.

19 Q. All right.

2 0 A. The mesa ch-c--(-kmark here for--diist
t

21 and mist, and it says tha-t-"Dustv or misty

22 atmospheres may cause serious systemic injury."

23 Q. All right.

24 A. And that's -- that's -- that's a
25 statement that appears frequently in reports, and

3 3

1 was put in here as a checklist. And the reason

· that it's checked where it's checked is because

3 it's known that asbestos could cause asbestosis.

4 All right. Now, was this datasheet

· devised for checking asbestos only?

6 A. Oh, no. No. In fact, there's a

7 sizeable number, thousands of these datasheets,

8 covering various materials that have been tested

· or are in use in the work environments within

10 Dow.

11 Q. So the checklist was a generic sort of

12 checklist --

13 A. That's right.

14 Q. -- that was -- that could be --

15 A. It could -- could be used to -- to give

16 information concerning toxic properties and

17 precautions to line supervisors.

18 Q. All right. And then what other markings

19 did you have on that?

20 A. Well, there's a back side to the sheet,
21 which is marked -- what I've talked about so far
22 is the toxicology side of the sheet.

23 Q. Okay.

24 A. And it simply describes the -- the toxic
25 properties of the material as they were known to

- -----

3 4

1 us at the time. But on the other side of the

· sheet, we arbitrarily decided that operations

3 within Dow would fall within one of four

4 categories, which range all the way from no

· contact at all, which would be characterized by

6 remote operations.

7 Probably the classic example is what's

8 done in most nuclear plants. And we would go all

· the way from that, with two categories in

10 between, to a situation where there was no effort

11 made to control exposure. It's what I have

12 characterized, in a slang way, I suppose, as

13 "scoop, shovel and bucket chemistry.,'

14 Q. So those are the range

15 A. Was --

16 Q. Those are the ranges?

17 A. That's the range, and there are two

18 categories in between, one for continuing -- for

19 continuous operations, and one for batch

20 operations.

21 Q. All right. And did you make any

22 markings related to this asbestos that was being

23 put on this datasheet in response to those

24 categories?

25 A. We did.

3 5

1 Q. All right. And what were those?

2 A. Well, for "no contact," our numbers were

3 all A's, and the AIs indicated no precautions
4 required. That was for no contact, under "eyes,
· skin and inhalation and ingestion."

6 For "minor contact," which would be
7 batch operations, we suggested the use of safety
8 glasses for under "eyes" and "no unusual
· precautions" for the others.

10 And under occasional daily -- well, I --

11 I want to back up. May I?

12 Q. Yes.

13 A. That was minor contact that I just told

14 you.

15 Now I want to tell you about occasional

16 daily contacts, which is the batch operations.

17 And, in my discussion, I turned those two

18 around. I'm sorry for that.

19 Q. All right.

20 A. But under the batch operation, we
21 suggested safety glasses and dust respirators,
22 under "inhalation."

23 Under "gross contact," where you might
24 have great clouds of dust --

25 I've never seen this with asbestos but

3 6

1 it's possible.

2 -- we had safety glasses with side

3 shields and air-supplied or self-contained

4 breathing apparatus.

5 Q. Was there any key to what occasional

6 contact is, or what those -- what those letters

7 stand for?

8 A. Well, the letters that I that I

· meant -- that I have here are keyed down below.

10 Q. All right.

11 A. And if it says "All under "Respiratory,"

12 that means no respiratory protection required.

13 And --

14 Q. I see.

15 A. -- for instance, if it says "EI' under

16 "Respiratory," then it says right here --

17 Q. Okay.

18 A. -- that it is self-contained breathing

19 apparatus or air supplied.

20 Q. When you were filling out this

21 datasheet, and I think you had a comment down at

22 the-bottom, what does it say, "dust" --

23 A. It says "dust respirators."

24 Q. "Dust respirators"?

25 A. in other words, it says, here, "suitable

-- -----

3 7

1 gas mask canister.,, Well, that got in there

· because most of what we make datasheets for we're

3 talking about vapor or gases. And so we added

4 the dust respirator because here we're talking

· about a dusty material, rather than -- than a

6 vapor or a gas.

7 Q. What was the basis of your information

8 about the types of contact and whether a dust

· respirator ought to be used at certain times or

10 not, as far -- you said that you hadn't done

11 testing specifically at Dow on --

12 A. Well, our knowledge concerning asbestos

13 took --

14 Q. -- on dust, so where did your knowledge.

15 come from?

16 A. -- came directly from the literature.

17 Q. All right.

18 A. The generally available information.

19 Q. Okay. And in the generally available

20 information, were there reports of certain levels

21 of exposure?

22 A. Well, there was -- early on, there was a

23 list that was put together of numbers that

24 people -- that were thought, if you didn't go

25 above those concentrations, you would have no

3 8

1 difficulty.

2 Q. All right. What was --

3 A. As you went above those numbers, you

4 increased the likelihood of trouble. It wasn't

· ever meant that if you went above that level, you

6 would immediately have trouble.

7 Q. All right. Were there numbers for

8 asbestos already in the literature at the time

· you made this datasheet?

10 A. Yes. The number --

11 Q. And where --

12 A. The number was five million particles

13 per cubic foot, as we have it on our datasheet.

14 And that came right from -- at the time this

15 datasheet was written, it was the threshold limit

16 value.

17 Q. All right. Can you explain to the jury

18 what a threshold limit value is, just in general?

19 A. It's -- it's a number that expresses the

20 amount of the material that's to be found -- that

21 you can measure in the air. And the threshold

22 limit value was meant to be a guide with people

23 who had taken samples. It had numbers that

24 described the environment.
25 Then you went to the threshold limit

3 9

1 value, and if your numbers were below that
· number, you shouldn't have to worry about a

3 health hazard.

4 Q. All right.

5 A. That was -- I think that's --

6 Q. Okay. How did you -- as far as a dust

7 concern, how did you measure whether you were
8 within the threshold limit values or not?

9 A. Well, with dust, the technique was a
10 very arbitrary technique. And in order to get
11 numbers that could be compared with the five
12 million particles, it was necessary that you take
13 the sample with a properly designed piece of
14 equipment that would -- and then that the sample
15 be treated specifically, as far as transferring
16 it to a dust counting cell, and then that you use
17 a microscope that had exactly the right optics.

18 This whole thing had to be right because
19 it was an arbitrary measurement.

20 Q. All right. The -- the equipment that
21 was used, was this something you were familiar
· 2 with?

23 A. Oh, yes. We used impingers, generally
24 what was called "small impingers." The important
25 thing here -- well, we bought the impingers. We

4 0

1 didn't make them, but they were -- they were

· manufactured to proper specs. And then you ran
3 them at the right rate of air flow through the
4 impinger in order to -- in order to satisfy the
· requirements of the method.

6 Q. Did you know how to conduct an air
7 sample study yourself?

8 A. Yes. I learned from one of the fellows
· that did the developmental work in the first
10 place. The first use of this technique was
11 developed in connection with silica sampling in
12 Vermont. And Warren Cook, who was, I think, a
13 student at the time while that work was being
14 done up in Vermont, had been one of the people
15 that developed the technique for sampling.

16 And it just happened, that when I needed

17 to know how to sample dust, that he was the
18 industrial hygienist for the Zurich Insurance
19 Company, and Zurich had the Dow insurance
20 business, and so I a-sked him if he'd help me
21 learn how to count dust in the foundry that we
22 had,, He came and spent about a week with me, and
23 that's how I became an expert dust counter.
24 Q. In this -- Warren Cook, you said --25 A. M-hlm.

4 1

1 Q. was he the person who came up with
· the list of the MAC'S, as you described the,-n?

3 A. He's the man, that up until Warren wrote
4 down the list of materials with numbers after
· them, that were called MAC'S, what was --
6 happened was that people talked to each other,
7 And the conversation would go like this, "If you
8 measured this material, how much did you find,
· and what was the result of that, in terms of your
10 people?-"

11 Q. All right. So Mister --

12 A. And so he did a service to industrial
13 hygienists, because he gathered together all that
14 kind of information he could find, and he called
15 it an MAC.

16 Q. All right. And the -- the MAC's were --
17 were used before the threshold limit values --

18 A. They predated threshold limit values.

19 Q. All right.

20 A. Threshold limit values were -- that was

21 a terminology used after the American Conference
22 of Governmental Industrial Hygienists took over
23 this MAC --

24 Q. All right.

25 A. -- list.

4 2

1 Q. I'm going to take this exhibit from you
· for just a minute.

3 A. All right.

4 Q. The exhibit that I had handed you, which
· is referred to as Exhibit No. 1, is a report that

6 includes the datasheet, and then it had some
7 other pages back here. Would this just be the
8 raw data that the
9 A. That's --
10 Q. -- that this came from?
11 A. That indicates what they observed when

12 they put the material on the rabbit's stomach.
13 Q. All right. And did you review this
14 report when it was prepared, or about at the time
15 it was prepared?

16 A. No -- no. I only reviewed the
17 datasheet.

18 Q. All right.

19 A. The report was the business of the
20 toxicology laboratory, and you'll see two
21 toxicologists, names on there.

22 Q. So the only part of this report that you
23 were familiar with -- or not familiar with but
24 the only part that you checked or reviewed --

25 A. I read the report, probably, but the

4 3

1 part that I had responsibility for was the

· datasheet.

3 Q. All right. And that would be your name

4 by "checked," H. R. Hoyle?

5 A. Yes, ma'am. Correct.

6 Q. I wanted to look at the second page of
7 this report. When you indicated that you had --
8 under "Occasional Daily Contacts" on this
· particular --

10 A. M-hm.

11 Q. -- setting, what was your -- what was
12 your understanding of what this meant, as far as
13 dust exposure or the threshold limits?

14 A. Well, the threshold limit values were
15 numbers that were supposed to represent a safe
16 and healthful work environment for eight hours a
17 day. And the occasional daily contacts, they --
18 they might -- the kind of operation that we think
19 of here that would -- would be what we called
20 batch operations, where materials are introduced
21 into equipment, and equipment is properly closed
22 up, and then while you're putting the stuff in
23 the equipment, you might have some exposure.

24 Then later on, you may open up the
25 equipment to remove whatever is in there that

4 4

1 you're trying to make, and that would represent
· another possible exposure.

3 Now, I can relate this to asbestos, in
4 my own experience, only by saying that if a
· person were using asbestos as an insulating
6 material, the occasional contact would come when
7 he did something like cutting it.

8 Q. All right. And what about -- in your
· experience, what about other types of uses, other
10 than the actual cutting of insulation material?

11 A. Within Dow, the only other use of
12 asbestos was in the chloralkali business.

13 Q. All right. Were the uses that you
14 observed, in your opinion, under the threshold
15 limit values as they were established at the time
16 -- at this time, of the five million particles?

17 A. I wouldn't -- my experience would have
18 told me to expect, that on the basis of
19 eight-hour exposures, they were indeed lower.

20 Our choice of dust respirators for
21 occasional contact indicates that -- that we saw
22 the possibility of short periods of time when it
23 might have gone above that number and, therefore,
24 the dust respirator.

25 That's a pretty conservative approach to

4 5

1 suggesting the respirator, but that's what we
· chose to do.

3 Q. All right. I'm going to go on to a

4 different exhibit in just a moment, Mr. Hoyle --

5 A. m-h,m.

6 Q. -- but one of the -- when you were

7 saying -- we were talking about communication of
8 information, the datasheet would be made on all
· the chemicals or all the materials that you felt
10 that individuals would come in contact with when
11 they're working at --

12 A. Well, there were two --

13 Q. -- Dow?

14 A. There were two ways that we made the
15 datasheets. one I've already described, where it
16 was a part -- it was done everytime that there
17 was any material tested in the toxicology
18 laboratory.

19 And the other way related to the
20 industrial hygiene activity, in that the very
21 first thing we did when we went into a department
22 was to inventory the materials and forms of
23 energy in that department. And then each of
24 those materials and forms of energy had to have a
25 datasheet. Actually, the datasheet in this form

4 6

1 was only for materials.

2 Q. All right. And this datasheet was --

3 was kept in the records at Dow in --

4 A. Well, what happened to the datasheet,

· after they were made, was that the -- throughout

6 the company -- and this gets beyond the geography

7 at Dow, but includes the -- the Dow operation

8 I mean, the Midland operation, the Safety
· Department and the Medical Department would have
10 received copies of all of them, and then we would
11 have sent -- sent copies to the various
12 departments that we knew about who might have an
13 interest. And then there was another copy that
14 went to a place called Central Research Index,
15 which was a repository for all Dow knowledge.

16 Q. All right. So that was -- information
17 was sent to various parts of the company, as
18 you've described?

19 A. It did go on to the people that could
20 use it.

21 Q. Okay. So there was a threshold limit

22 value already established for asbestos, or an MAC
23 for asbestos at the time that -- that this
24 datasheet was prepared; is that correct?

25 A. That's correct.

4 7

1 Q. Was -- did -- Dow manufacture a number
· of different products. Did Dow manufacture a
3 product with asbestos in it?

4 MS. ABRAMS: objection. Lack of
· foundation. It calls for speculation.

6 THE COURT REPORTER: Ma'am, you're
7 going to have to keep your voice up. I didn't
8 hear the objection.

9 MS. ABRAMS: Lack of foundation,
10 and it calls for speculation.

11 Q. (By Ms. Clark) All right. Go ahead and
12 answer the question.

13 A. May I answer the question?

14 Q. Go ahead and answer the question.

15 A. I don't speculate when I say that there

16 was no Dow product that had asbestos in it --

17 Q. All right.

18 A. -- at the time I was working there,
19 anyhow.

20 Q. All right. And the time you were
21 working there was from 1941 through 1946 --

22 A. Well --
23 Q. up to 1946 -- 1976?
24 A. my knowledge concerning the asbestos,

25 I think I should limit it to 148 to 176.

4 8

1 Q. Okay. And the datasheet was prepared on
· asbestos in this particular case because asbestos
3 was in the floor tile formulation that was being
4 tested?

5 A. That's the reason this particular
6 datasheet was formed -- was --

7 Q. And that's the one I'm talking about.

8 A. And that's the one you're talking about.

9 Q. Right.

10 When did you first -- when did you first

11 learn that asbestos could present a health
12 hazard, approximately?

13 A. That was common knowledge at the time I
14 became an industrial hygienist, I believe.

15 Q. All right. And what was -- what was the
16 nature of the hazard that you were aware of?

17 A. There was -- there was a disease called
18 asbestosis, which resulted in fibrotic change in
19 the lungs, and it was--- quite similar to something
20 called silicosis, which I--alluded to a few
21 minutes ago.

22 Q. All right. Well, how did you believe
23 that such a potential hazard as asbestosis could
24 be controlled? What what did the literature
2 5 say?

4 9

1 A. Well, if you -- if we maintained the
· environment so that it -- you didn't go above
3 five million particles per cubic foot, it should
4 be safe, according to the common --

5 Q. All right. So that you felt that the

6 five million particles TLV was the level below

7 which you should --

8 A. That's the guide that we used --

9 Q. keep the exposure?

10 A. that we used to make any decisions we

11 had to make concerning asbestos.

12 Q. All right. And you -- you indicated
13 from your study that there was no -- there was no

14 Dow product that was manufactured there that
15 contained asbestos?
16 A. That's correct.
17 Q. Okay. And someone had asked the
18 question, I think from the audience here, that in
19 your Exhibit No. 1, what is the date that you had
20 signed this datasheet, so that everyone here can
21 hear that?
22 A. The date I signed it was the 7th of
23 April, 1958, according to the numbers on the
24 datasheet.
25 MS. CLARK: I might offer that in a

5 0

1 minute.

2 Q. (By Ms. Clark) All right. Were there
3 any -- and this might be a little bit redundant,
4 but as I understand it, there were no dust
· studies done by your department at the time that
6 this particular datasheet was prepared in
7 connection with that datasheet; is that correct?

8 A. If when you -- if when you say, "my
· department," you mean the Toxicology Laboratory,
10 that's true.

11 Q. Yes, sir. Yes, sir.

12 A. And -- but that -- I -- I wasn't
13 responsible for the Toxicology Laboratory.

14 Q. All right.

15 A. That's why my answer is the way it is.

16 Q. Okay. So the dust study -- the

17 Toxicology Department did not do a dust study on
18 that particular occasion?

19 A. That's right.

20

21 (Whereupon, there was a discussion held off

22 the-record, after which the video deposition
23 continued as follows:)

2 4

25 Q. (By Ms. Clark) Well, I just -- I

5 1

1 thought I thought I understood you to say that
· on the occasion in question that this particular
3 exhibit was -- Exhibit No. 1 was prepared, this
4 datasheet, that the Toxicology Department did not
· do a dust --
6 A. The only thing that was done was a --
7 Q. study.
8 A. was a skin test.
9 Q. Okay. Well,, I may have misheard you, so

10 thank you. I think that's -- that's correct.
11 I'm going to show you what's been marked
12 as Hoyle Exhibit No. 2, and this is another
13 report we won't need to go through all of it in
14 detail, but just to -- it's, I think, companion
15 to the other one.

16 This one was dated April 21st, 1958.
17 And it -- would you identify that exhibit for us,
1 8 please?

19 A. This one reports the results of range
20 finding toxicological tests on a floor tile
21 formulation which contained an epoxy resin.

22 Q. All right. And this is the floor tile
23 sample that we were talking about earlier that
24 the other datasheet came from?

25 A. The other datasheet was -- described the

5 2

1 asbestos, which we find here.

2 Q. All right.

3 A. And, as you recall, the asbestos was
4 sent in as a separate sample, because of a skin
· problem that the investigator was having.

6 Q. Okay.

7 A. That was not the only thing that was
8 tested. The other -- other materials within this
· formulation were tested. We aren't looking at
10 the -- the reports, because the asbestos is the
11 only one is in that report that you showed me.

12 Q. All right. There would have been a
13 report on the other things --

14 A. I'm sure there was, yes.

15 Q. Okay. So what does this report deal
16 with?

17 A. This -- this report deals with a whole

18 formulation. You take the whole mixture and put
19 it on the animals, on or in them.

20 Q. All right. This was done by the
21 Toxicology Department?

· 2 A. Yes.

23 Q. And there were findings that were listed

24 on this particular report, and they had to do
25 with the whole formulation?

5 3

1 A Yes

2 Q All right.

3 A. And they're -- they're a little

4 different.

5 Q. Okay. And why would they be different?

6 A. Well, because there are other things
7 than asbestos in the formulation. One would
8 expect they might be different.

9 Q. All right. And this would be about the
10 same time, prepared about the same time as the
11 other one?

12 A. It -- yeah, the same time. It turns
13 through -- it turns out they came across my desk
14 on the same day, apparently.

15 Q. All right. I notice that you have a
16 note at the bottom, where you have an asterisk.
17 It says, "Estimated on the basis of asbestos and
18 silica content."

19 A. M-hm, yes.

20 Q. And can you explain what that has
21 reference to?

22 A. Well, in the formulation that was sent
23 in, it showed that sand, which is silicon
24 dioxide, or silica, represented 12.5 parts, and
25 Asbestos 7M, which is what we were talking about

5 4

1 a minute ago, represented 19 parts out of the

· total. There are no -- no testing was done that

3 would have -- no dust testing done; therefore,

4 the information that's passed along concerning

· dust is a judgmental thing based on the fact that

6 it had sand and asbestos in it. And the rest of

7 the formulation wouldn't have required any

8 unusual personal protective measures.

9 Q. Okay. So that was based on what you

10 knew from the literature at that time, that

11 they --
12 A. No. That was --
13 Q. that would be okay?
14 A. that was the common knowledge

15 concerning asbestos and silica.
16 Q. All right.
17 A. It represents what the toxicologists
18 knew about it. I probably knew the same thing.
19 Q. Okay. And that when -- you also checked
20 that datasheet and -- and --
21 A. I did.
22 Q. -- acknowledged that datasheet.
23 A. I did, on the 7th of April, '58.
24 Q. Okay.
25 A. I think that's what -- it was April

5 5

1 of '58 on the other one. Anyhow, I think it was
· the same day, by coincidence.

3 Q. Give me just a second. And was it your
4 understanding, that although they were testing
· floor tile formulation, that Dow did not
6 manufacture and sell this floor tile product?

7 A. Dow did not manufacture and sell the
8 floor tile. The floor tile formulations were

· studied in a -- in one laboratory, one room

10 Q. All right.
11 A. -- at Dow. It never -- and it never go
12 beyond that point and wasn't expected to, within
13 Dow. If it went beyond that point, it would h
14 been in some customer's plant, the customer
15 buying the epoxy resin, or I guess in that case,
16 it was chlorinated polyethylene, but, anyhow, a
17 resin from Dow.

18 Q. All right. What you were doing was
19 trying to formulate a resin that could be used in
20 a floor tile formulation for somebody else to
21 use, if it would work out?

22 A. Sure. If they would want to use a Dow
23 product, that's right.

24 Q. All right. Well, at this point, I want
25 to take just about a five-minute break.

5 6

1 A Okay.

2 Q. Thank you.

3 THE VIDEOGRAPHER: The time is

4 10:29 a.m.

5 Off the record.

6

7 (Whereupon, there was a brief recess,
8 during which the proceedings took place as
9 follows:)

10

11 MR. STUART: Let's have this

12 marked.

13

14 (Whereupon, the instrument referred to

15 by counsel was marked for identification as Hoyle

16 Exhibit No. 4.)

1 7

18 (Whereupon, the brief recess was
19 concluded, and the video deposition continued
20 as follows:)

21

22 - THE VIDEOGRAPHER: The time is

23 10:42 a.m.

24 On the record.

25 Q. (By Ms. Clark) Mr. Hoyle, we're -- we

5 7

1 were talking about threshold limit values a

· little bit before.

3 You had testified that the threshold

4 limit value for asbestos was about -- was five

· million particles per cubic foot of air. What --

6 how long was that the threshold limit value, the

7 established one?

8 A. Well, it wasn't changed until around

· 1970, I think, something like that.

10 Q. All right. So through the time you were

11 an industrial hygienist in the late 140's, 150's
12 and 160's, the threshold limit value remained the
13 same, is that correct, for asbestos exposure?

14 A. Yes.

15 Q. All right. Did you conduct any dust

16 studies related to asbestos exposure yourself,
17 have someone conduct them?

18 A. We made measurements of the amount of
19 dust during the various operations where asbestos
20 was present.

21 Q. All right. And how did you do that --
22 what -- what parameters did you set up?

23 A. We used -- we used the techniques that I
24 described to you before, where we used the
25 impinger to take the sample, and then either

5 8

1 counted the dust ourselves, or had it counted.

· By that time, Dow had a microscopy laboratory.

3 Q. A microscopy --

4 A. Laboratory, m-h'm.

5 Q. Laboratory?

6 That -- what is that?

7 A. Well, this is a group of people who use

8 microscopes to look at things. They're experts
· in microscopy.

10 Q. All right. Well, you've talked about
11 five million particles and about counting dust,
12 and I think the jury may be wondering how you
13 count five million particles of something.

14 Do you sit there -- I have a vision of
15 sitting there and taking a long time and counting
16 them one by one.

17 A. No.

18 Q. How is that done?

19 A. No. You do it by taking a part of the

20 total sample. And then another part of the
21 technique is to have the field that you're
22 looking at divided by little squares that you
23 know the size of, and you can -- you can count in
24 relatively small numbers, and then by applying
25 the right kind of arithmetic, you can come back

5 9

1 to a cubic foot of air.

2 Q - All right.

3 A. See, the amount of air that's sampled in
4 the sample you actually look at is pretty small.

· I mean, that's only a small part of the total
6 sample that you look at.

7 Q. So you count a small percentage of that,
8 and then you extrapolate that up to the

9 A. That's true.

10 Q. -- to the five million, or something?

11 A. And you count more than one field so

12 that you have something to average.

13 Q. Okay. And so you have indicated that
14 you -- you tested the air sample on several
15 different jobs -- or several different tasks, I
16 guess would be a better way to describe it.

17 Can you just tell us, briefly, how you
18 did that, how you set up the test?

19 A. Well, there were -- part of the data
20 that I was referring to is reported in a report
21 that we looked at the other day which was a
22 matter of actually doing an in-depth industrial
23 hygiene survey in work environments, where
24 asbestos was present. Those were the work of Roy
25 DeGesero I'm talking about.

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6 0

1 And the other sampling was done in the

· chlorine cells, or the chloralkali plant, as it's
3 called in some parts of Dow,, where the jobs were
4 evaluated, which involves the use of asbestos.

5 Q. All right. What -- what jobs did you
6 think involved the use of asbestos, what jobs
7 were you looking at?

8 A. Well, insulators were -- do use some
· insulation that contains asbestos. This doesn't
10 represent a -- their full job, or anything of
11 that kind, because pipe covering or as -- or
12 insulation that's like on the vessels, is put on
13 for a number of reasons. It -- it's always,
14 somehow or another, to control temperature. But
15 a whole lot of the insulating that was done was

16 to avoid the effect of low temperature; in other
17 words., freezing up outdoors in Michigan --
18 Q. All right.
19 A. -- as opposed to the asbestos-containing
20 insulation which you used in high temperature
21 applications and represented less in terms of the
22 total use of pipe covering or insulating
23 material.
24 Q. All right.
25 A. It -- it -- it wasn't a high

6 1

1 percentage. I don't know exactly what percentage
· of the total it would have been.

3 Q. All right. I think we need to kind of
4 put this in terms of time and when certain --
· when certain tests were done.

6 The tests that you're talking about that
7 Roy DeGesero did, that I think will be an exhibit
8 later on in your deposition --

9 A. Yes, it will come along a little later.
10 Q. -- what -- approximately when were those
11 tests done?

12 A. They are done in the late 160's.
13 Q. All right. In the late 160's, those
14 were done. And did you -- had you conducted a
15 test earlier than that, yourself, on a pipe
16 coverer?

17 A. Probably in the late 150's, but in
18 the 150's sometime or another. What I did was
19 get a pipe coverer to do the different things
20 that pipe coverers have to do. It wasn't done
21 under actual pipe covering conditions in the
22 plant, because my purpose was to see how much
23 dust he would create cutting pipe covering and
24 putting it on pipe, and this kind of thing, so
25 that we could make some judgments concerning the

6 2

1 recommendations for respiratory protection.

2 Q. All right. And this was -- was done,
3 you said not under actual working conditions, but

4 you checked --

5 A. It was done in an indoor environment,

6 because most of our Michigan environment, work

7 environments are indoors.

8 Q. All right. That's what you were saying,"

· then, in Michigan, a lot of the pipes are indoors

10 because of the freeze -- because of the cold, and

11 all that?

12 A. That's right, m-hlm.

13 Q. So that was -- your first sampling that

14 you did in the late 150's was of that work --

15 A. Yes. It was not a --

16 Q. -- situation?

17 A. It was not an extensive investigation.

le Q. All right.

19 A. It was done -- it was done simply to get

20 an indication of the levels that you might run

21 into while doing different things that they told

22 me they did.

23 Q. All right. Did -- did you reach any

24 conclusions about what -- what should be done

25 related to certain tasks and jobs that someone

-- -----

6 3

1 working directly with insulation did?

2 A. There -- there were a couple of things

3 that he did where the -- where there was some

4 obviously dusty conditions. And I did the

· sampling in a different way than the way I've

6 described to you.

7 There was on the market and in our

8 hands, at that time, something called a Bausch &

· Lomb dust counter, and it didn't fit the cookbook

10 for counting dust, but it did give you an
11 indication of dirtiness, and it was a
12 conservative approach because you could see a lot
13 more dust in a dark field microscope, which is
14 what B & L dust counter was.

15 I used that because it was more
16 convenient and it gave me -- I knew that whatever
17 numbers I got would be high.

18 Q. All right.

19 A. And, therefore, if I made a judgment
20 based on those numbers, I would be conservatively
21 safe.

22 -Q. Okay. Now, did you come to any
23 conclusion about any of the tasks that you were
24 monitoring for at that time?

25 A. Yes. Those that were obviously dusty,

6 4

1 there were a couple. One was sawing, cutting,
· and the other was removal of old pipe covering.

3 Q. All right. And this was on an indoor,

4 enclosed --

5 A. It was in the shops --

6 A. place?

7 A. on a shop bench.

8 Q. Okay. And what recommendation would you

· have made on that --

10 A. Simply that they wear --

11 Q. -- response?

12 A. Simply that they wear a dust respirator

13 while they were doing those jobs.

14 Q. All right. Otherwise, you felt that
15 that they were well within the TLV'S?

16 A. That's right.

17 Q. All right. Now, what we need to do
18 can tell we're -- we've already been admonished
19 once by the court reporter, and that's I'm
20 talking when you're talking, and you're talking
21 when I'm talking, so you need to let me finish
22 the question, and I need to let you finish your

23 answer, if that's all right.

24 A. Okay.

25 Q. So you felt that a dust respirator might

6 5

1 be used if conditions exceeded the threshold

· limit values of five million particles; is that

3 correct?

4 A. That's generally the way we approached

5 it.

6 Q. All right. You had referenced a little

7 bit earlier some studies that were done in 1968

8 or 169.

9 A. M-hlm.

10 Q. And we want to look at those in just a

11 minute.

12 MS. CLARK: I'm not sure, do we
13 have those exhibits over there, the DeGesero
14 exhibits?

15 Q. (By Ms. Clark) One of the questions that
16 I have, when you said that you're counting dust
17 samples, and so forth, were you counting -- did
18 you consider the threshold limit value, when you
19 referenced it, to be total dust or to be -- how
20 did you --

21 A. The first --

22 Q. How did you look at that?

23 A. The first thing we did, which I Just

24 finished describing to you, was not an in-depth

25 study, and we just simply used all the dust that

6 6

1 we saw.

2 Q. All right. So when you -- when came to

3 your conclusion about various dust levels, you

4 were talking about total dust levels?

5 A. Yes. We knew there was asbestos

6 present, but we didn't -- we didn't try to

7 characterize the sample, in terms of percent of

8 asbestos.

9 Q. All right. The court reporter is
10 marking a couple of exhibits for us.

11

12 (Whereupon, the instruments referred to
13 by counsel wee marked for identification as Hoyle
14 Exhibit No. 5 and 6.)

15

16 Q. (By Ms. Clark) Mr. Hoyle, I'm going to
17 hand you what's been marked as Hoyle Exhibit
18 No. 5, and I would like for you to identify that,
19 if you can.

20 MR. COVERT: Excuse me, Sandra.

21 Could you let us know what you're introducing?

22 MS. CLARK: That would be nice,
23 wouldn't it? I'm sorry. I kind of -- that was a
24 report that -- let me look at it -- called "A
25 Survey and Evaluation of Pipe Coverers'

6 7

1 Exposure," and it is by R. A. DeGesero, and it's
dated March 21, 1959.

3 MR. JONES: Sandra --

4 MS. CLARK: M-hlm.

MR. JONES: I know lie's
6 distributing some now, but we haven't seen "4,11
7 and I was just wondering if you are intentionally
8 skipping over four

9 MS. CLARK: Yeah, I'm -- I'm
10 intentionally skipping that number and coming
11 back to it, so --

12 MR. JONES: Okay.

13 MR. BEZET: 11411 is the October
14 26th, 1964 letter to R. C. Middleton --

15 MS. CLARK: Yes.

16 MR. JONES: 169.

17 MS. CLARK: Mr. Hoyle referred to
18 this one earlier, and so I want to go ahead and
19 talk about this one.

2 0

21 (Whereupon, there was a discussion held off
22 the-record, after which the proceedings continued

23 as follows:)

24

25 MS. CLARK: We have some extra

6 8

I copies of it around. If you have one -- does

everybody have access to one?

3 MR. GEORGE: How about one more

4 over here?

5 MS. JENKINS: Do you have any extra

6 ones?

7 MS. CLARK: I don't know that we

8 have an extra one.

9

10 (Whereupon, there was a discussion held off
11 the record, after which the proceedings continued
12 as follows:)

13

14 Q. (By Ms. Clark) All right. Do you have
15 that exhibit?

16 A. I do.

17 MS. CLARK: Where is my copy?

18 Thank you.

19 Q. (By Ms. Clark) All right. Would you
20 identify for the jury what this report is,
21 please?

22 A. This is a report of a study -- a survey
23 of pipe coverers, exposure to dust from
24 insulation containing asbestos.

25 Q. All right. And and who prepared this

16

6 9

1 study?

2 A. The work was done by Roy A. DeGesero,

3 who was an employee who reported to me, at that

4 time, an industrial hygienist.

5 Q. All right. Now, Roy DeGesero was an

6 industrial hygienist at Dow?

7 A. Yes, ma'am.

8 Q. And he reported to you?

9 A. Yes, ma'am.

10 Q. Did you have anything to do with the

11 plan or setup of this particular study?

12 A. I was involved in the planning. There's
13 another name that maybe should be mentioned.

14 Q. Surely.

15 A. Because Ralph Langner had, at this time,
16 become Manager of Industrial Hygiene for the
17 Michigan Division, and he didn't yet have a crew
18 of industrial hygienists. During this period of
19 time, people working for me were assigned to
20 projects that he might identify in the Michigan
21 Division. So he was involved in the planning,
22 and-so was I.

23 Q. All right.

24 A. But Roy DeGesero was rather a new man,
25 and I was responsible for the quality of his

7 0

1 performance. It's a little complicated, but

· Ralph was responsible for the planning of the

3 project, but I was also involved in it.

4 Q. Okay. I wanted to ask you a little bit

· about this, as an aside. You said that there was

6 the Michigan Division, and so you, at this time,

7 were a little bit -- you were not directly in

8 charge of a division, but you were a little apart

· from that; is that correct?

10 A. Well, what happened was that when I

11 became an industrial hygienist, there wasn't any

12 identified difference between the corporation and

13 the Dow Chemical Company in Michigan.

14 As time went along, then the various

15 divisions of the company were organized and . they

16 got their own industrial hygiene functions.

17 Q. Okay.

18 A. And then mine became a corporate
19 function, with some responsibility and contact
20 with these various industrial hygiene functions.
21 Q. So there was a division in Texas, as I
22 understand it --
23 A. That's right.
24 Q. And there was a division in Louisiana?
25 A. Yes.

7 1
1 Q. And then there's a Midland Division?
2 A. And there's a Western Division.
3 Q. And a Western Division.
4 A. And a Eastern Division.
5 Q. And each of those, at some point in

6 time, had its own Safety and Industrial Hygiene
7 Departments?

8 A. As soon as they grew to the size that
· justified it, then they had their own, that's
10 true.

11 Q. All right. And so what was your
12 responsibility, then, to the industrial
13 hygienists that were in the -- in the divisions?

14 A. Well, it was a dotted line
15 responsibility. I had a responsibility to see --
16 to see that information got to them, to see that
17 information was actually exchanged back and
18 forth.

19 The -- the group that I had
20 responsibility for had broad -- broad
21 responsibility within the company beyond
22 industrial hygiene within the production plants.
23 It finally developed into something called
24 "product stewardship," which is the part of the
25 effort that had to deal with our relationship to

7 2

1 our customers and the general population.

2 Q. All right. So what you -- you said a
3 "dotted line responsibility." You gave -- you
4 were a resource person for information and
· exchanged information with them; ;s that correct?

6 A. And I -- and I had some responsibility

7 for knowing what they were doing and having some
8 input into the plans that were made.

9 Q. All right. But they -- they implemented

10 certain programs within the division?

11 A. On a day-to-day basis, I tried.

12 Q. Okay. So Roy DeGesero -- we'll get back
13 to this exhibit again, and that's Exhibit No. 5;
14 is that right?

15 Roy DeGesero actually undertook to do
16 this particular --

17 A. He did all of the sampling.

18 Q. Sampling?

19 A. M-h'm.

20 Q. All right. You -- you are the person

21 signed here who checked this report, and your
22 signature is dated March 24, 1969?

23 A. Yes.

24 Q. Is that correct?

25 A. Yes, ma'am.

7 3

1 Q. What were you -- okay. What was the

· purpose of this particular study?

3 A. Well, it had the same purpose as all
4 industrial hygiene studies at Dow, to evaluate
· the exposure of people to be certain that they
6 were within acceptable limits.

7 It had a further reason for being,
8 because this is at a time when the five million
· particles per cubic foot threshold limit value
10 was under question, and it was obvious to us
11 that, barring some added information, it was
12 going to become two million particles per cubic
13 foot.

14 And so there's a need to know, in
15 considerable detail, where we are with respect to
16 exposure, to see what effect on our operations
17 the new standard was going to have.

18 Q. All right. And so what operations were
19 actually monitored?

20 A. Well, in this case, it was all the
21 things that pipe coverers were doing.

22 Q. And what was -- what was the result that
23 were reported here in these dust studies?

24 A. Well, in broad terms, the -- I mean, in

25 the conclusions, the time-weighted exposures that

7 4

1 were done were acceptable with five million

· particles as the number, were not acceptable with

3 two million particles as the number.

4 Q. So the studies that were done would have

· been acceptable under the threshold limit values

6 that had been in place from nineteen --

7 A. Yeah. This study --

8 Q. forty --

9 A. showed that what we have been

10 doing -- I'm sorry.

11 Q. Now, wait a minute. You're interrupting

12 me.

13 A. I'm sorry.

14 Q. These particular studies reflected that

15 the work done that were monitored would have been

16 acceptable under the threshold limit values of

17 five million particles?

18 MS. ABRAMS: Objection. Leading.

19 Q. (By Ms. Clark) Is that correct?

20 A. That's true.

21 Q. All right. And then you said that they

22 were -- that there was -- that this was to check

23 to see which functions would have met the limits

24 of two million, when they were going to be

25 decreased to two million; is that correct?

7 5

1 MS. ABRAMS: objection. Leading.

2 A. The -- the results of this investigation

3 indicated that there would be a need for changes

4 in the way we were doing pipe covering if two

· million particles were to become the standard.

6 In other words, we were above the two million

7 particles, but below the five million particles.

8 Q. All right. And what -- what changes,
· then, were recommended to be made?

10 A. That there -- there are no -- there are
11 recommendations here that -- well

12 Q. Well, actually --

13 A. Let me -- let me back up.

14 Q. Okay.

15 A. The pipe coverers needed to be informed

16 of the difference between the interpretations of
17 their exposure under five and two million
18 particles.

19 Also, there were a number of ways of
20 handling the -- the exposures, so that they would
21 be reduced below the two million particles. And
22 part of -- part -- one of the ways is personal
23 protection, use of personal protective devices.

24 Another way would be soaking down
25 insulation that was old and friable and as a way

7 6

1 of controlling dust to some extent. And what
· really happened was that, in parallel with this
3 study, at about the same time, other people were
4 looking to see what other materials might work in
· place of asbestos-containing insulation.

6 And they found that, indeed, for almost
7 all the cases that we had, there were acceptable
8 substitutes. So the solution to the problem was
· not to go forward with -- with a plan to handle
10 asbestos materials but, rather, to substitute
11 materials, I mean, in pipe covering, which had no
12 asbestos in it, which left us, then, with a need
13 only to take special precautions for removal of
14 already in-place materials.

15 Q. Okay. In looking back, if you will,
16 look back at this the study that was prepared
17 here. Mr. Hoyle, you reviewed the study at or
18 about the time it was done; is that correct?

19 A. Well, during the time it was being done,

20 I had contacts with Roy, day to day.
21 Q. All right. You reviewed this --
22 Then I reviewed the file and signed it
23 on 1969, March 24.
24 Q. Was the report that was done and signed
25 by you on March 24th, 1969, made at or about the

7 7

1 time that the study was conducted?,

2 A. Well, the study had been ongoing

3 probably for a few months.

4 Q. But this --

5 A. -- because these things don't get done
6 all in one day is what I'm trying to say.

7 But I don't have a recollection of
8 exactly the length of time that the study was on
going.

10 Q. All right. But what I'm asking you was
11 the report was -- was prepared as soon as the
12 information had been gathered and was available
13 to be reported on?

14 A. Yes, ma'am.

15 Q. All right. And you had personal
16 knowledge of the information as it was designed
17 and as -- as it was being collected?

18 A. Yes.

19 Q. And you have -- you had knowledge of the
20 conclusions that were reached in this report?

21 A. Yes.

22 Q. And you agreed with these conclusions as
23 set out?

24 A. That's what my signature is meant to
25 mean.

7 8

1 Q. Okay. And this report was kept in the
records, in the appropriate places, in the Dow
3 Chemical Company?

4 A. Yes, ma'am.

5 Q. All right.

6 MS. CLARK: I'd like to offer this

7 Exhibit No. 6 into evidence at this time -- I
8 mean, Exhibit No. 5, that is.

9 MR. COVERT: For clarification,
10 please, in the Louisiana cases, Gary and those
11 involved, we reserve objections to the times that
12 they are introduced, this deposition will be
13 introduced? Is that our understanding?

14 MS. CLARK: Well, I believe that if
15 there's any objection that needed to be made as
16 to predicate,, that those should be made now,
17 since the witness is here, if any other questions
18 needed to be asked to -- if you feel that there's
19 any lack of predicate.

20 MR. COVERT: I may consider doing
21 that so --

22 MS. CLAIK: Okay.

23 MS'. ABRAMS: On behalf of the
24 interests in California, I would object to the
25 introduction of this document as evidence, and I

7 9

1 would reserve all of those objections for

· purposes of the trial at the time that this

3 deposition is introduced into evidence.

4 THE COURT REPORTER: Ms. Abrams --

· MS. ABRAMS: I'm sorry.

· THE COURT REPORTER: Go ahead,
7 start all over.

8 MS. ABRAMS: I would object to the
· introduction of this document as evidence and
10 reserve our right to object to -- for purposes
11 of introduction of this document at trial at the
12 time -- until the time that this document is
13 introduced in a California court and the
14 objections can be duly made in front of the trial
1 5 judge.

16 I note for the record that this document
17 was handed to me about two minutes ago. I've not

18 had an opportunity to review the document at all,

19 and at a minimum, I would want the opportunity to

20 review the document and make my objections at the

21 time that I have been able to review it and

22 question the witness on it.

23 MR. COVERT: And I would join in

24 the objection in the Louisiana cases, making my

25 objection, in general, as to these documents.

8 0

1 MR. HAINKEL: John Hainkel for
· Owens-Corning in the one Louisiana case that I'm
3 here for, the same objection. As far as I'm
4 concerned, we're operating under the Louisiana
· Code of Civil Procedure in that particular case.
6 MS. CLARK: All right.
7 MR. HOBSON: Let me interject, as
8 well, please, since everybody gets a chance to
· talk. The copies that I see, for instance, on
10 Page it looks like ST006812, there appears to be
11 handwritten notes that have been written in the
12 margins that are partially or almost totally
13 obliterated. Plus, there have been entries that
14 look to be obliterated at the top that may have
15 been handwritten. And until we can get a copy of
16 this document without the handwritten portions
17 obliterated, I'm not satisfied that I've got a
18 copy of the document as it originally existed.
19 MR. STUART: What page are you
20 referring to?
21 MS. CLARK: I'm not sure what page
22 you're referring to, Mr. Hobson. The -- the
23 exhibit
24 MR. HOBSON: The table. Here you
2 5 go.

1 MS. CLARK: Okay. The exhibit is
· numbered as ST006806.
3 MR. HOBSON: Look at Page 1-2, the
4 last two digits being 1-2, the table.
5 MS. CLARK: Page 1-2.
6 MR. HOBSON: Can you see, right
7 under "Range," and "Time-Weighted Factor," and
8 "Asbestos," the very tops of some handwritten
· notes that have been obliterated, and I want to
10 know what those are.
11 The top of that same page looks like
12 it's had writing on it. The top of the next page
13 looks like it's had writing on it.
14 MS. CLARK: I don't know. The copy
15 I have is the same -- it doesn't look like it's
16 had any writing on it, but we can talk about
17 that, if we want to --
18 MR. HOBSON: well, I object --
19 MS. CLARK: -- later. But I'll --

20 I'll check, but that doesn't -- mine does not
21 look like anything has been obliterated on it.
22 The objections -- we do not agree that
23 objections can be reserved regarding the
24 foundation or predicate -- I mean, the State
25 Rules that apply, will apply, obviously, but we

8 2

1 are not, by not responding to your objections,
· agreeing that these can be reserved.
3 I believe under, at least the Texas
4 Rules, that whatever lack of foundation or
· predicate objections have to be made at the time
6 of the presentation of the -- the predicate.
7 So if we have any of those objections,
8 or authenticity-type objections, then I think,
· because the witness is here, they ought to be
10 made at this time. You know, if you want to
11 reurge your objection, that's fine, but we
12 don't -- you know, we're not acquiescing in that
13 objection and we will apply -- comply with
14 whatever Rules of Procedure would apply to the
15 deposition at the time.

16 MR. HOBSON: Well, my objection is
17 to the authenticity of the document, and I object
18 to a copy being produced, as opposed to the
19 original, or at least we ought to be able to see
20 the original and match -- match it to these
21 copies before they're introduced.

22 MS. CLARK: All right. That --

23 that objection is noted.

24 MS. ABRAMS: Can I voir dire the

25 witness on this document? If not, I will reserve

8 3

1 my voir dire, and I will, therefore, reserve my
· objections.

3 Q. (By Ms. Clark) Mr. Hoyle, I'm going to

4 show you what's been marked as Exhibit No. 6.

· And could you identify that exhibit?

6 MS. CLARK: This exhibit,

7 Mr. Covert, to try to clue you in to what this

8 exhibit is, it's a similar exhibit. It's another

· Roy A. DeGesero report.

10 Q. (By Ms. Clark) And what is the date of

11 that one?

12 A. This was -- I signed it 10/24/69.

13 Q. Let me see yours a second.

14 A. And his -- I guess I signed it the same

15 day he signed it.

16 Q. okay.

17 MS. CLARK: And it's numbered

18 beginning with an ST000647, and it's signed on

1 9 1 0 / 2 4 / 6 9 .

20 Q. (By Ms. Clark) There you go. Would you
21 identify this exhibit, please?

22 A. This reports industrial hygiene

23 investigations made at the Ludington plant in the

24 Michigan Division.

25 Q. All right. Could you identify, for the

8 4

1 record, who Roy A. DeGesero is, just briefly

· please?

3 A. Yes. He was industrial hygienist at Dow

4 who reported to me.

5 Q. All right. And did you have any input

6 into the design of this study?

7 A. I would have assigned the job to Roy and

8 would have talked to him about what he was to do

· when he got to Ludington. So, in that sense, I

10 had to do with the design.

11 Q. And what was the purpose of this study?

12 A. Well, it was to accomplish the same
13 thing at the Ludington plant that I described as
14 the reason for having done the study in the
15 Midland plant.

16 Q. All right. Now, would you tell me what
17 the reason of doing the Ludington plant was, if
18 you had done the Midland plant?

19 A. Well, because it's a different -- a
20 different plant and different circumstances.

21 Q. What were the different circumstances?

22 A. Well, this gets me into a rather
23 lengthy -- lengthy description of the difference
24 between what happened in Midland and what
25 happened in Ludington. In other words, what they

8 5

1 did over there in the way of manufacturing

· materials --

3 Q. Well --

4 A. -- was not the same as what was done in

· Midland.

6 Q. Okay. Let me stop you a second, because
7 it sounds like an air-conditioner vent just went
a on, and I -- you may need to put your voice up a
· little bit.

10 A. Okay.

11 Q. I don't know that you need to go into a
12 lengthy description, but can you just summarize
13 the types of differences between the two
14 operations?

15 I mean, if you can't, you can't. I
16 mean --
17 A. Well, it's -- it's pretty -- it's not --
18 as far as the pipe coverers doing pipe covering,
19 it's pipe covering is pipe covering.
20 However, as far as the part that's
21 indoors, versus the part that's outdoors versus
22 the size of the -- of the pipe being covered,
23 it's difficult for me because -- for instance,
24 there was a -- a lime kiln there which didn't
25 even exist in Midland, but which I know involved

8 6

1 quite a little bit of insulating
2 Q. All right.
3 A. -- which would have been a different
4 operation than those that would have been covered
· by the Midland investigation.
6 Q. So -- so you were -- you were testing a
7 different location and with different types of --
8 A. We were measuring --
9 Q. -- facilities.
10 A. We were measuring the health hazards

11 within environments that were different and
12 avail -- they were more available in Midland.
13 Q. I'm sorry?
14 A. I said we were measuring the degree of
15 exposure in environments that were different.
16 Q. All right. Well, that's what I mean.
17 A. Yeah.
18 Q. That's really the --
19 A. That's -- that was the reason --
20 Q. the point that I --
21 A. for going there. It was our

22 intention, purpose, and usually we managed it, to
23 have data concerning the different work
24 environments.
25 Q. What were the conclusions reached, as

8 7

1 far as exposure in the Ludington plant?
2 A. Well,, they were -- it turned out they
3 weren't too far different than what we found
4 in -- in Midland, in that the average was a

little below 5 -- 4.4 it says -- where asbestos

6 was being used.

7 And then we had something here, I don't

8 remember fiberglass showing in that Midland

· study. Here did they did find 1.3 million

10 particles per cubic foot where it was fiberglass

11 rather than asbestos.

12 And for asbestos, it pointed out that

13 five million particles was acceptable.

14 And again we find that, with two million

15 particles, we're above over there, also.

16 And let's see what we said about -- oh,

17 on fiberglass, at that time, there wasn't

18 specific information available on fiberglass, and

19 so it was considered a nuisance dust, and the

20 number implying the nuisance dust was usually

21 fifteen million particles.

22 Q. Fifteen million?

23 A. Fifteen.

24 Q. Okay.

25 A. So they -- so we -- the data that we

8 8

1 acquired there would have said that the

· fiberglass was acceptable.

3 Q. All right. On Page 3 of this report,

4 there is a reference at the bottom of the page to

· F. A. Patty, P-a-t-t-y, "Industrial Hygiene and

6 Toxicology.

7 A. Yes.

8 Q. Who was Patty, and why was he referenced
· in this particular paper, if you know?

10 A. Well, Frank Patty was one of the early
11 industrial hygienists, and he had rather a -- a
12 broad experience, including Public Health
13 Service, I believe. At the time of his
14 retirement, he was in charge of industrial
15 hygiene for the General Motors Corporation.

16 He -- in this context, he was the
17 editor -- "author" is hardly the right word -- of
18 "Industrial Hygiene and Toxicology." It finally
19 became a three-volume compendium of "Industrial
20 Hygiene and Toxicology." And various chapters in
21 those books were prepared by various people in
22 the-field of industrial hygiene who he felt had
23 the necessary skills and knowledge to adequately
24 prepare such a chapter.

25 And then his function was putting the

8 9

1 thing together and editing it.

2 Q. Was this a -- a volume that was used

3 generally by industrial hygienists?

4 A. It was pretty much the Bible.

5 Q. All right. And what do you mean by
6 that?

7 A. Well, it was the authority, if you

8 wanted a single authority.

9 Q. But his, as it turned out., three-volume

10 set was --
11 A.
12 Q. -- was the one single authority, if you
13 had to pick one?
14 A. If you were going to just one, I think
15 most industrial hygienists would have chosen
16 that.
17 Q. And why was it particularly referenced
18 here on this page? What -- what was the
19 reference?
20 Q. Oh, let's see.
21 Well, the formula that you see there
22 for'-- for calculating millions of particles per
23 cubic -- what is to be found in Patty's Volume
24 4 No. 1.
25 Q. So that was a -- was that a formula --

9 0

1 A. Page 198.
2 Q. Okay. Was that a formula that was the
3 accepted formula to calculate the --
4 A. Yes. That's the one that I attempted to
5 describe to you a few minutes ago. It's the
6 formula that would describe what was done.
7 Q. All right. Sometimes you have to take
8 more than one chance to describe a formula to
9 me.
10 A. Yeah.
11 Q. In the Exhibit No. 6, the DeGesero
12 study, what group, again, was tested in that
13 study or studies?
14 A. Well, the environments being
15 investigated were pipe coverers.
16 Q. Okay. And, again, let me ask you a few
17 questions about your knowledge of this particular
18 document.
19 Did you review this document at or about
20 the time that the study was concluded?
21 A. I reviewed it before I signed it. I
22 also probably reviewed it before it was in final
23 print.
24 Q. Okay. Did you have any input into the
25 design or the carrying out of the study?

9 1

1 A. Oh, yes. As his supervisor, I did.
2 Q. Okay. Would this have -- this study,
3 once it was reviewed and signed by you, would
4 this have been maintained in the records at the
5 Dow Chemical Company?

6 A. Yes. It would have been kept in the
7 various places that I mentioned in previous
8 testimony. The Central Research Index would have
· had a copy, and so would the various industrial
10 hygiene and safety departments around Dow.

11 MS. CLARK: We would offer, at this
12 time, Exhibit No. 6 into evidence.

13 MR. HAINKEL: I will again have the
14 same objections as to Exhibit No. 5, and that is,
15 that all rights are reserved until the time of
16 trial in the cases in Louisiana.

17 MS. CLARK: I can't hear him.

18 MS. ABRAMS: The Plaintiff also has
19 the same objections as previously stated and
20 reserves objections until the time of trial, and
21 adds the problems of authenticity.

22 MS. CLARK: We make the same
23 response, that we would insist that objections to
24 predicate be raised now, while the witness is
25 here, who could supply information regarding

9 2

1 these documents.

2 Q. (By Ms. Clark) When you say "pipe
3 coverer," you're talking about a pipe coverer,
4 are they -- would they be the same as insulators,
· another term for these individual workers?

6 A. As a matter of fact, pipe coverers did
7 more than cover pipe, but that was the usual name
8 within Dow for people who put covering on pipe or
· put insulation on vessels.

10 Q. So another name for these individuals
11 might be "insulators"?

12 A. I'm sure it could be. It was
13 generally, that was not the way we described them
14 in Dow, as far as I know.

15 Q. Okay. Would you look at Exhibit No. 6,

16 Mr. Hoyle. And you might need -- you may need to
17 take a minute and -- and just thumb through every
18 page of the exhibit.

19 Do you see any changes made that you
20 would recognize from the original report that you
21 signed, from that to the copy that's before you?

22 MS. ABRAMS: objection. Lack of
23 foundation.

24 Just for the record, the original
25 apparently is not in the presence of the witness

9 3

1 at this time.

2 A. Table -- Table I, the word "Average" has
3 been circled and the word "Range" written in.

4 And it truly is the range. That could be my
· writing. I'm just not sure. It looks a little

6 like it.

7 Q. All right.

8 A. I should have initialed it, if it is my
· writing.

10 Q. So you don't know specifically --

11 A. I can't be sure, but I --

12 Q. whose writing that is?

13 A. in looking at it, I -- I can see that

14 that correction needed to be made.

15 MR. JONES: Sandra, while he's
16 looking at that, can we get a clarification as to
17 whether Exhibit 5 is the Midland study?

18 MS. CLARK: Exhibit 5 is the
19 Midland study.
20 Exhibit 6 is the Ludington study.

21 MR. JONES: Okay.

22 MS. CLARK: And I'm going to have
23 him go back through No. 5, as well,, to see if
24 there are any markings on it that he could

25 identify.

9 4

2 (Whereupon, there was a discussion held off
3 the record, after which the proceedings continued
4 as follows:)

5

6 A. There is one other place on the very
7 last page, Page 13, where an addition has been
8 made, and that addition is written in. it
· says -- into the distribution list. And it says
10 "C. G. Kramer, Corporate Medical, 2030 Building,
11 6/25/70.11

12 That says, to me, that he asked for a
13 copy and got one.
14 Q. Do you know whose handwriting that is?
15 A. No. I don't recognize that handwriting.
16 Q. But what that indicates to you is just

17 an additional person got a copy of the report?
18 A. Yes. And that was common practice to
19 write on the distribution list if somebody, in
20 addition, had asked for a copy.

21 Q. All right. where is the actually marked
22 No.,5? Here it is.
23 I'm going to hand you, also, No. 5 --
24 but before you look at No. 5, in Exhibit No. 6,
25 the only markings that you noted were on the

9 5

1 table, which had "Average" circled and the word
· "Range" written above it. You can't identify
3 specifically whose handwriting that is; is that
4 correct?

5 A. I'm not a handwriting expert. I think

6 I've made marks that look like that.

7 Q. Okay. And then you noted on the

8 distribution list there was an addition?

9 A. Yes.

10 Q. All right. Would you look, now, at
11 Exhibit No. 5 and see if you recognize any
12 changes, additions, deletions. And this was the
13 Midland study.

14 MS. ABRAMS: Objection. Lack of
15 foundation. Calls for speculation.

16 A. On Page 7, there is, up in the
17 right-hand corner, an indication that something
18 has been -- been there and had been whited out,
19 perhaps. I believe that that probably was an
20 internal file number.

21 There's a little spot on page -- on Page
22 8, also, which is in that same location. And in
23 my opinion, that's probably the same thing.

24 Q. Were either of those notes located in

25 any part of the actual body of the report itself,

9 6

as far as

2 A. No

3 Q. -- any substance of the report?

4 A. No, not if they are what I think they

were, and have reason to think they were.

6 MR. HOBSON: May I see a copy of
7 the marked exhibit, as opposed to the one I'm
8 working off of?

9 MS. CLARK: I'm sorry? The marked
10 exhibit?

11 THE WITNESS: The one I'm looking

12 at?

13 MS. CLARK: Yes.

14 I believe, at this time, we're going to

15 move on from these exhibits, and I'll be happy to
16 give you this, but I think the way we had
17 scheduled things that this was our -- our
18 breaking point for our lunch, and we'll break
19 now. And I'll give this to Plaintiff's counsel
20 over the lunch break.

21 MR. HOBSON: Thank you.
22 THE VIDEOGRAPHER: The time is
23 11:32 am.
24 This ends Tape Unit No. 1. Off the
25 record.

9 7

2 (Whereupon, there was a luncheon recess,
3 after which the proceedings continued on the
4 stenographic record as follows:)

5

6 MS. CLARK: Would you mark these

7 while we're waiting.

8

9 (Whereupon, the instruments referred to
10 by counsel were marked for identification as
11 Hoyle Exhibit Nos. 7, 8 and 9.)

1 2

13 THE VIDEOGRAPHER: The time is
14 1:10 P.M.

15 This begins Tape Unit No. 2 on the
16 record.

17

18 DIRECT EXAMINATION (Continued)
19 QUESTIONS BY MS. CLARK:

20

21 Q. Mr. Hoyle, we're continuing your

22 deposition now, after we've had a lunch break.

23 As an industrial hygienist, you were
24 concerned with many different kinds of chemicals
25 and substances; is that correct?

9 8

1 A. Yes, ma'am.

2 Q. Did you compile datasheets on all of
3 these, or most of these?

4 MS. ABRAMS: objection. Vague.

5 A. We would have had datasheets on
6 materials as soon as we identified them as being
7 a part of the Dow environment or materials
8 identified as a Dow product.

9 Q. All right. So you had datasheets on
10 things that could have been in the environment in
11 addition to things that were used in Dow
12 products; is that correct?

13 A. Oh, yes.

14 Q. Okay. Do you have an estimate of how
15 many datasheets were compiled while you were an
16 industrial hygienist there?
17 A. Well, I never counted them. I guess the
18 best way to answer your question is to say that I
19 kept a full set in my office in the notebooks,
20 and that they were kept on shelves. My office, I
21 think, was 14 feet across, and I was on the third
22 shelf when I retired, so I had something over 28
23 feet of shelf space covered with datasheets.
24 Q. All right. Were these datasheets
25 updated as time went on?

9 9

1 A. Whenever new information came along that
· required it, we issued a new datasheet, and the
3 policy was to ask people to remove the old
4 datasheet and destroy it. That was so that we
· wouldn't mistakenly take precautions based on old
6 information.

7 So it was an ongoing thing, and as fast
8 as a new one came along, it was -- the old one
· was destroyed.

10 Q. Did you try to keep the current
11 information in the current file?

12 A. Yes.

13 Q. All right. Did much of your testing as
14 an industrial hygienist relate to products that
15 were manufactured by Dow?

16 A. Well, we were as interested -- we were
17 more interested in the products because, at this
18 point, we were interested in the general public
19 and our customers, but we had great interest in a
20 lot of other things that were either raw
21 materials or by-products or end process
22 materials, which were of interest to us in
23 maintaining a healthful environment for the Dow
24 employees.

25 Q. Okay. And asbestos that we've been

1 0 0

1 talking about for a while this morning was one of
· those products that was in -- not one of your
3 products that were manufactured by Dow, but one
4 of these other types of products that you might
· have been interested in?

6 A. Our whole interest in asbestos was
7 related to its appearing in some of the
8 insulating materials used, and also that was used
· in the chloralkali plants, not in the products in
10 the plant, but in the equipment that was used to
11 make --
12 Q. In the --
13 A. -- chloralkai.
14 Q. In the process that was used?
15 A. Yes. The equipment that was used for

16 process equipment did involve asbestos as a part
17 of the equipment.

18 Q. All right. on these other things, and
19 right now I'm not talking about asbestos, but on
20 some of the other chemicals and substances that
21 you might have been interested in, were there
22 also TLV's established for these products?

23 A. Many of them had TLV's and many of them
24 did not. The TLV's were promulgated after
25 some -- after a material became of wide enough

1 0 1

1 interest so that the American Conference of
· Governmental Industrial Hygienists would include
3 it on their list. Of course, they had to have
4 information upon which to base a number so it
· also had to wait for the information to become
6 available.

7 Q. All right. And previously you've talked
8 about the American Congress of Governmental
· Industrial Hygienists. Is that my -- am I saying
10 that wrong?

11 A. No. You're saying "Congress," and it's
12 "Conference."

13 Q. I don't know why I keep saying that
14 wrong, but that's -- you've corrected me once,
15 but correct me again.
16 A. All right.
17 The American Conference of Governmental
18 Industrial Hygienists, we've referred to them a
19 couple of times in the past in the deposition.
20 Could you tell the jury who made up that
21 conference?
22 . A. This was made up of industrial
23 hygienists and with people interested in the
24 field of industrial hygiene. What i,m saying is
25 that an industrial physician could have been a

1 0 2

1 member if -- if he were getting paid tax money.
2 Q. All right.
3 A. In other words, it had to be
4 Goirern,mental. And there was one exception, as I
5 said this morning, that some of the academics
6 were allowed to have membership who were not from
7 Government -- directly Government institutions,
8 state-employed.
9 And these were the people, the
10 industrial hygienists who developed and kept
11 maintained the list, I guess it could be called,
12 of threshold limit values?
13 MS. ABRAMS: objection. Leading.
14 A. The threshold limit value, the
15 terminology itself belonged to the American
16 Conference of Governmental Industrial
17 Hygienists. It was a project ongoing which they
18 carried out as a service to their own members and
19 to anyone doing industrial hygiene.
20 Q. (By Ms. Clark) All right. And you
21 monitored, in your various facilities at Dow, for
22 other substances that had threshold limit values,
23 in addition to asbestos. We talked about this
24 morning, but you did other monitoring
25 A. Yes, and we monitored --

-- -----

1 0 3

1 Q. and other things?
2 A. We monitored for materials that didn't
3 yet have a published number.
4 Q. All right.
5 A. These -- these, when they were Dow

6 employees -- I mean, Dow materials, our basis for
7 judgment was usually animal testing; that is, use
8 of an animal model to test the material for its
· toxic properties in the Dow toxicology lab.

10 Q. So if something didn't have a threshold
11 limit value, you might do some testing to try to
12 establish your own threshold limit value?

13 A. We did have -- we did have a list of
14 what we called "guides" --

15 Q. All right.

16 A. -- which were used in the same way as
17 the TLV'S.

18 Q. All right. Oh, was it important to stay
19 under the TLV's in the areas that you were
20 discussing and monitoring in?

21 A. We used the TLV's as a guideline in
22 making professional judgments concerning the
23 various work environments.

24 Q. You've talked about industrial hygiene
25 this morning, and I wanted to ask you about some

1 0 4

1 of the standards that were used in the field of
· industrial hygiene. And what I mean is what sort
3 of controls were used by industrial hygienists to
4 try to maintain certain exposure levels?

5 A. Well, there are a number of ways that
6 you can modify a man's exposure, or a woman's
7 exposure on the job. The use of protect --
8 personal protective devices is one way of doing
9 it.

10 And another way is to use control at the
11 point of release, and ventilation falls in this
12 category. And the ideal is to contrive to handle
13 the materials so that they do not escape the
14 equipment so you don't have any exposure.

15 Q. All right.

16 A. Those are the three ways in which it can
17 be done.

18 Q. And you can adapt various, I guess,
19 techniques to whatever the product was?
20 A. Well, back to our -- our datasheets, the
21 data -- the datasheets related to these different
22 ways that I've just mentioned to you. And the
23 way that the datasheets were used was that the
24 line supervisor decided which category of
25 exposure the thing that he was doing or proposed

I O 5

1 to do would fall. As soon as he knew that, he
· could look and see what protective personal
3 program would be required.
4 If it were something that -- in the way
· of personal protection that -- that was
6 unacceptable -- suppose it came out that you
7 needed to put them in a -- in a suit, like a
8 diver. Chances are he wouldn't want to do that.
· Well, then he could move into another category --
10 engineering is planned accordingly -- and arrive
11 at a set of personal protective -- or a personal
12 protective program that was acceptable to him.
13 So he had -- that's the way they could make up
14 their mind on what they would do based on our
15 recommendations.

16 Q. All right. You testified earlier, I
17 believe, that the monitoring of the pipe coverers
18 that was done in 1969 in the DeGesero studies,
19 indicated that their work was below the threshold
20 limit values for asbestos.
21 A. On a time-weighted basis., the exposures

22 were below five million particles.

23 Q. All right. I wanted to show you another

24 exhibit, and this is one that we've marked as

25 Exhibit No. 3, and this was the -- well, to -- so

1 0 6

1 that the other attorneys here know what I'm

· talking about, this one is entitled, "Evaluation

3 of Chemical Exposures Received by R. R. Spencer

4 of Coatings Technical Service, in the 433

· Building."

6 And I'll hand this to you. Can you

7 identify that exhibit?

8 A. Yes. This does report the findings of a

· very special industrial hygiene investigation

10 which was done because R. R. Spencer was having

11 health problems. And it's not infrequently that

12 the Medical Department would ask for a careful

13 evaluation of a work environment as an aid to

14 proper diagnosis. That's the general one in

15 which this were used.

16 Q. All right. Can you tell us what

17 chemicals or other substances were monitored in

18 this particular study?

19 A. Well, there were -- the dust that he

20 encountered was measured with eleven different

21 samples. This was dust-counting techniques that

22 we've talked about before.

23 And in addition to that, dust

24 concentrations on a weight basis were determined

25 in three other samples. And the materials that

1 0 7

1 were considered were asbestos, quartz or silica,

· cadmium, calcium and a resin which is simply

3 designated 2716, which is a research number

4 within Dow which describes the resin.

5 Q. Can you tell us where -- where this

6 monitoring was done and what procedure was bei-iig

7 undertaken, "procedure" meaning what was the

8 the particular job that this individual was

· doing?

10 A. Well, he was --

11 Q. What --

12 A. He was using what's known a Banbury

13 mixer, which is a mill, or a stirring-up device,

14 if you will, to make various formulations and

15 compound them.

16 Q. Okay. What I'm really asking you about

17 is, is this -- we've talked a little bit earlier

18 about an exhibit that was discussing the floor

19 tile formulation. Is this an individual who was

20 working in this -- with this floor tile

21 formulation that you had mentioned earlier?

22 -A. I think it is in the same laboratory.

23 Q. All right.

24 A. But it isn't clear in the description

25 here -- it doesn't actually say it in the

1 0 8

1 description of what he was doing, except in one

· place, where, indeed, it says he was calendaring

3 vinyl asbestos tile formulations.

4 So that tells me that, indeed, the
· answer to your question is "yes.,'
6 Q. All right. And these were the very --
7 the various substances and chemicals you've read
8 over that were monitored for. What was the
· conclusion of that report?
10 A. Well, the conclusion was that if his
11 "If Mr. Spencer's difficulty is the result of
12 chemical exposure, the causative agent is
13 unknown ... In other words, it was not
14 identified by this study.
15 He further says that when they're
16 working with chlorinated polyethylenes, we should
17 do some more testing.
18 In other words, that's the one thing
19 that wasn't done at the time these measurements
20 were made. If polyethylene -- if chlorinated
21 polyethylene was not being used as a resin, some
22 other resins were being used.
23 Q. All right.
24 A. And --
25 Q. So when it says that some other testing

109

1 should be done, it was to test for that
·
· particular --
3 A. The resin that --
4 Q. resin?
5 A. he hadn't seen yet, that's right.
6 Q. Was there a -- was there a number
7 actually determined on what the exposure to
8 asbestos was in that
9 A. No.
10 Q. -- report?
11 A. The highest number that I see -- I
12 mentioned there were eleven samples that were
13 taken for counting, and the numbers ranged
14 from .02 parts per -- million parts, that is, per
15 cubic foot, to 3.2. And the average size was two
16 to three microns. And that about covers it.
17 Q. All right. Would that --
18 MR. HOBSON: Excuse me. I don't
19 think that's right. While we're here, you might
20 want to get that number right again.
21 THE WITNESS: I couldn't hear you.
22 MR. HOBSON: I think the gentleman
23 has said .02 was the lowest, and I think
24 it's .2, 0.2.

25 THE WITNESS: No. I said 0.2. if

I 1 0

1 I didn't, I'm sorry.

2 MR. HOBSON: I beg your pardon.

3 THE WITNESS: I should have said

4 0.2, if I didn't, because that's what it says, to

· 3.2.

· Q. (By Ms. Clark) All right. So, just to
7 make sure there's -- there's no misunderstanding
8 about that, the lower number would be 0.2

9 A. 0.2, and that describes the air in the
10 office, not in the lab.

11 Q. All right. Then the higher number was

12 3.2?

13 A. That's the highest number. And that was

14 during the mixing with the Banbury mixer.

15 Q. All right. And is this -- can you
16 relate this or correlate this to what the
17 threshold limit value was at the time --

18 A. It was --

19 Q. -- for asbestos?

20 A. It would have been five million

21 particles per cubic foot.

22 Q. So would -- would this be below the
23 threshold limit value?

24 A. Yes, ma'am.

25 Q. All right. You mentioned the size of

1 the -- of the dust, or you said two to three

· microns?

3 A. That's what he says here.

4 Q. Can you tell the jury what that means?

· What does -- is that a measurement or what?

6 A. Yeah. That's a fraction of a
7 centimeter, or a fraction of a millimeter. These
8 are lengths, like feet and inches in the -- this
· is in the metric system; whereas, you would call
10 them feet and inches in the English system, the
11 one we're more used to.

12 Q. Okay.

13 A. But it's a distance measurement from
14 there to there.

15 Q. Okay. And was there -- was there
16 something significant about the -- the
17 measurement of the size of the fibers or the size
18 of the dust?

19 A. Well, these are not fiber readings.

20 These are particle size measurements, as I read
21 this report. And the significance is that it
22 would have put that dust in the respirable range.

23 Q. All right. Is there a -- a limit, I
24 guess, that's used in -- in the literature that
25 is a respirable range on the size of particles

1 1 2

1 or

2 A. Yes

3 MS. ABRAMS: objection. Vague as
4 to size.

5 A. There -- there is such a range, and I
6 can't remember just exactly what it was.

7 Q. Okay. So this -- in this, particular
8 sampling, then the table that you talked about
discusses the various samples of asbestos usage,
10 or the dust created with asbestos usage?

11 A. These are dust measurements made in that
12 laboratory where the formulation would have
13 contained some asbestos.

14 Q. All right. And was this measuring total
15 dust measurements, or can you tell by looking at
16 t h i s ?

17 A. These measurements were total dust.

18 Q. All right.

19 A. There's nothing here to indict

20 otherwise.

21 Q. I would --

22 MS. CLARK: Do you have another
23 copy of that?

24 Q. (By Ms. Clark) Because I'm looking over

25 your

1 1 3

1 A. Oh.

2 Q. -- your shoulder.

3 That's okay. I want you to look at that

4 one. I'm going to get another copy because I
can't see from here to there.

6 A. Oh.

7 Q. That's one of those problems with
8 advancing age, I'm afraid.

9 All right. I wanted to ask you a
10 question about --

11 MS. CLARK: Did you hand me the
12 right one? Okay.

13 Q. -- about a statement in this report
14 because you -- this is a report that's dated
15 1/30/58; is that correct?

16 A. M-h'm.

17 Q. In Paragraph 2, under "Conclusions," and
18 it states in there that he worked -- Mr. Spencer
19 worked with vinyl asbestos tile formulations, and
20 in the course of that work, was occasionally
21 exposed to somewhat excessive concentrations of
22 airborne asbestos." And then it goes on and
23 gives specifics.

24 I was -- do you have a comment about
25 what is meant by Conclusion No. 2?

1 1 4

1 A. The sampling that was being reported

· here was in 1958. The dates mentioned here
3 are 153 to 154. That's four years before.

4 This indicates to me that in
· conversation with Bob Spencer, that Peterson had
6 had described to him the circumstances that had
7 existed sometime before.

8 And so this is subjective observations,
· and there's nothing in this report that would
10 justify such a statement as the one we're reading
11 here, because the numbers reported were all below
12 five million particles.

13 So you see here a subjective comment
14 concerning his previous history.

15 Q. I want to ask you another -- another

16 couple of questions about this particular

17 report. This is signed by Mr. Peterson; is that

18 correct?

19 A. That's right.

20 Q. And who is Mr. Peterson?

21 A. Oh,, he is a -- a chemical engineer who

22 joined my group in industrial hygiene. And it
23 was during the period of time that he was in our
24 group that he did this work.

25 Now, the only other characterization or

1 1 5

1 identification of Peterson that I can make is

· that he left us, returned to school at the

3 University of Michigan, obtained a Ph.D. in

4 industrial hygiene, and is presently a consultant

· living in Wisconsin.

6 Q. Okay. And you reviewed this report, and
7 you reviewed the data that is connected with it?

8 A. I read -- I read the report, and after
· I'd read it, I signed it.

10 Q. All right. And you -- this report is
11 your recollection that this report was made at or
12 about the time that this study was done, or
13 this -- I guess it's more of a report was done
14 regarding Mr. Spencer?

15 A. Yes. My recollection and judgment is
16 that samples were taken shortly before the report
17 was written -- written.

18 Q. All right. And the report was written
19 shortly after this work was done?

20 A. Yeah, almost July, as soon as the work
21 was done.

22 Q. All right.

23 A. And you see -- I said before that this
24 was done at the request of the Medical Department
25 as,-- to assist them in making a diagnosis of
I 1 6

1 Spencer's problem.

2 Q. All right.

3 A. So I'm sure it would have been done as
4 soon as possible in order to take care of that
· requirement.

6 Q. All right. And -- and you reviewed this
7 material and were aware of the sampling that was
8 being done. You have personal knowledge, I
· guess --

10 A. Right. Sure.

11 Q. -- of this report?

12 A. Sure. Sure.

13 Q. All right. There is another bit of

14 sampling that was done, I believe in -- I will

15 show you what's been marked as Exhibit 4. And
16 this is a letter that's to R. C. Middleton, of
17 the Safety Department, Ludington Division. It's
18 October 26, 1964.

19 MS. CLARK: Do you all have a copy
20 of that?

21 MR. HOBSON: 'Which number?

22 MS. CLARK: It's No. 4.

23 MR. HOBSON: Right.

24 MS. CLARK: And it's ST No. 6762.

25 MR. HOBSON: You passed that out

1 1 7

1 earlier.

2 MS. CLARK: Yeah. Right.

3 Q. (By Ms. Clark) I want to hand you what
4 has been marked as Hoyle Exhibit No. 4 and ask
· you if you recognize that exhibit?

6 A. Yes. This is a letter which I wrote to
7 Bob Middleton to report to him the results of
8 some industrial hygiene activity at the Ludington
· plant.

10 Q. And what were the -- just generally,
11 what were some of the things that were looked at
12 at the Ludington plant?

13 A. Well, one of the things we looked at was
14 the plant air. Now, that's not the ambient air.
15 That's in the plant, there was air from a
16 compressor which was piped to various locations
17 for use for whatever purpose in the process. And
18 we were looking to see whether -- what the
19 quality of that plant air might be.

20 And what it says is that we found that
21 it was not contaminated with significant amounts
22 of either carbon monoxide or mercury. And we
23 further made an agree -- an arrangement with a
24 man at the Ludington plant to sample that air for
25 particles and told him how to do it.

1 1 8

1 Q. All right. And --

2 A. And then we went on and told him how to
3 interpret his results, how many -- what weight it
4 was cut out by and what wouldn't be acceptable.
5 And we talked with a couple of people
6 over there about radiation and radiation
7 manuals. I don't know if it's very apparent
8 here, but they had some instrumentation which
· depended on sealed sources of radiation.

10 Q. All right. And I guess to get on a
11 little bit farther in the letter, there is a
12 mention, on Page 2, of an inquiry about
13 asbestos. And what was -- what was the study
14 done, and what was your opinion?
15 A. A question was raised about asbestosis
16 having to do with sawing Transite. Transite is a
17 building material which is used on a good many
18 ways, commonly as an outside wall for buildings.
19 And it comes in corrugated sheets, and it's made
20 of mostly cement with enough asbestos in it to
21 hold it together, I think is a good way to
22 describe it.
23 And so what we said was, that although
24 the dust from such an operation will probably
25 contain respirable particles of asbestos, it's
I 1 9

1 ly unlikely that enough exposure would exist
· in the use of Transite to represent a real
3 hazard. That was a professional judgment based
4 on no data.

5 Q. Okay. But this was what your -- your
6 judgment was at the time, in 1964?

7 A. Yeah. I was influenced partly by the
8 fact that any asbestos that was airborne wouldn't
· be asbestos fibers, but would be of little chunks
10 of concrete with little particles of asbestos in
11 the little chunk of concrete, the little piece of
12 dust. And probably what you would have the most
13 of would be the exposed end of the fiber, as
14 opposed to the fiber itself. -

15 Q. And so, in Your opinion, at that time,
16 because of those factors --

17 A. We Just didn't feel that there was any

18 need to Pursue the matter further.

19 Q. Okay.

20 MS. ABRAMS: I'm sorry. I didn't

21 hear the witness at the end.

22

THE WITNESS: I said that I

23 MS. CLARK: Wait a minute. Wait a

24 minute.

25 THE WITNESS: Oh, excuse me.

1 2 0

1 MS. CLARK: Why don't you read it
2 back?

3

4 (Whereupon, the requested testimony was

read back by the court reporter.)

6

7 MS. ABRAMS: Thank you.

8 Q. (By Ms. Clark) Now, going back to

DeGesero in these exhibits that we talked about
10 earlier

11 A. Yes.

12 Q. -- you had -- I'm sorry. That's Exhibit

13 No. 5 and 6, that I think you you've looked --

14 looked at, and these are not

15 A. These are not it.

16 Q. -- not it. Okay.

17 Did you expect that the pipe coverers

18 that were tested in these particular studies

19 would have had more exposure than other workers?

20 MR. HOBSON: Objection. No
21 foundation.
22 „A. The -- our -- our --
23 MS. ABRAMS: i,II Join in that
24 objections
25 1 A. our expectation professional judgment
1 2 1

1 would have been that --Lfie people actually handling
· the insulation would have had the higher
3 exposures.

4 Q. All right. Let me ask you some -- a
· little bit of background questions to that.

6 Throughout your career, had you had the
7 occasion to observe workers in the field?

8 A. Many times. That was my job.

9 Q. All right. And how would you observe
10 them? I mean, what was your job related to
11 actual work going on in the plant?

12 A. Well, we -- we studied the workers and
13 their activities, so that we would be able to
14 assign lengths of time to the various sampling
15 that we did.

16 In other words, if we sampled while they
17 were taking a sample, then we'd find out how many
18 samples they took per day and how long each
19 sample took because, ultimately, we were going to
20 come up with a time-weighted average exposure to
21 Chemical A, B or C, or whatever, for that man on
22 that job.

23 In other words, our judgments weren't
24 based on the -- on what was the material. Our
25 judgments were based on what was the material,
1 2 2

1 what was the level of exposure, how frequently
· did it happen and for how long.

3 Q. Okay. And to make these judgments,
4 you -- how did you set up this observation, I
· guess, to make this --

6 A. Well,, I just -- first, we had a safety

7 meeting and we explained to the people in that
8 plant, first, who we were and why we were there
· and what we were going to do. And the next thing
10 we did was to find out what materials were
11 present. This was what we used to call the
12 "inventory of materials."

13 And then, for each job, we -- we took
14 from that inventory of materials, the materials
15 that would be involved in that job, whatever it
16 might be. And then we simply went out, walked
17 around the plant with the man as he did his job,
18 and kept track of what he did, how long it took
19 him to do it and how often he did it.

20 We depended on what we observed, we
21 depended upon what he told us, and we depended
22 upon what the supervisor told us about each job,
23 and then we reconciled any differences.

24 As soon as we had that done, why then we
25 developed our sampling procedure so that we would

1 2 3

1 get numbers that we could use to arrive at a
· time-weighted average.

3 Q. And did you have an occasion, over the
4 years, to observe pipe coverers?

5 A. I, personally, not in great detail, but
6 I saw pipe coverers at work many times, because
7 they -- it's not uncommon to see a pipe

8 coverering crew in a -- in a chemical production
· plant. It's an ongoing job, in other words.

10 Q. All right. And did Roy DeGesero conduct
11 his studies using that technique when he did his
12 pipe coverers study?

13 A. He did it --
14 MR. HOBSON: Objection
15 A. He did it
16 MR. HOBSON: Excuse me, sir.
17 THE WITNESS: Yes, sir.
18 MR. HOBSON: I need to object.

19 This man is not in a position to address that.
20 Lack of foundation.

21 MS. ABRAMS: We join.
22 -Q. (By Ms. Clark) Go ahead.
23 A. Well, philosophically and, actually, as

24 far as studying the jobs are concerned, he did it
25 in just the way I have described to you, taking
1 2 4

1 into account the different kinds of pipe covering
· that were being used, because for pipe coverers,
3 the -- their exposure was related to their
4 craft.

5 In other words, they came on the job,
6 bought some covering with them, whatever kind
7 they needed, and put it on wherever it was
8 needed.

9 Q. All right. And did -- were you in a
10 position to observe the methodology that Roy
11 DeGesero used in his study?

12 A. I can't remember that I actually went on
13 site and observed him at this particular sampling

14 in this particular project, but that I did a
15 number of times with him, and others of our more
16 experienced people also had done the same thing.

17 Our procedure for breaking in a new man
18 was to have him work with a person who was
19 already there on a project like this. But he had
20 progressed by this time, in his experience with
21 us so that we didn't have a second industrial
22 hygienist with him.

23 Q. All right. You had certain procedures
24 in your department that you would follow to
25 determine the type of work the man did so -- for

1 2 5

1 your study purposes?

2 A. Yes, we had forms that he had to fill
3 out.

4 Q. All right. So -- and you were in a

position to know what that procedure was?

6 A. M-hlm.

7 Q. In fact, did you establish that
8 procedure yourself?

9 A. Yes.

10 Q. And so you knew that that was -- that
11 was the procedure and that forms had to be filled
12 out to --

13 A. M-hlm.

14 Q. -- to show that that procedure had been
15 followed?

16 A. M-hlm.

17 Q. Is that correct? You'll need to say
18 "yes" or "no," for the record, please.

19 A. Yes.

20 Q. Okay. Did you -- what was your opinion
21 about whether -- about the type of -- I guess the
22 extent of exposure that a pipe coverer would
23 have, as opposed to other workers who were not
24 pipe coverers?

25 MS. ABRAMS: Object to the form of

1 2 6

1 the question as opinion.
2 A. To asbestos, you mean?
3 Q. (By Ms. Clark) Yes.
4 A. The exposures of the pipe coverers would

· have been greater than to others, in my
6 professional opinion. Now, this is based on I
7 don't know how many samples taken in people's
a breathing zones and at distances from their
· breathing zone.

10 You have a pretty good feeling for how
11 much difference there is between right in a man's
12 breathing zone and -- and a few feet away. And
13 based on that kind of experience, we didn't feel
14 any need to sample others in the area.

15 Q. Because of your experience in -- in
16 doing the testing at various distances from the
17 breathing zone --

18 A. That's right.

19 Q. -- of a pipe coverer?

20 A. In the past.

21 MS. ABRAMS: Excuse me.

22 Objection. Leading.

23 And, Mr. Hoyle, if you would be so kind
24 as to wait until the questioner finishes the
25 question, in case some of us would like to

1 2 7

1 interpose objections, it would be very helpful.

2 THE WITNESS: I'll try.

3 MS. ABRAMS: Thank you.

4 THE WITNESS: I've been trying.

5 MS. ABRAMS: It's hard.

6 THE WITNESS: I'm used to

7 conversation rather than depositions. I'm sorry

8 about that.

9 Q. (By Ms. Clark) About -- oh, I'm going to
10 show you what has been marked now as Exhibit No.
11 7 by the court reporter. And this is what is
12 titled "Exposure to Fine Dust Encountered by
13 Workers Cutting Various Types of Pipe Covering
14 Material," and it's dated July 21st, 1965. And
15 that's Exhibit No. 7, and it's the ST number,
16 four zeros and 568.

17 I'm going to hand that to you. And do
18 you -- can you identify that exhibit, please?

19 A. This is a report of work done at the Dow
20 Corning Corporation, at their request. And it
21 reports the results of measurements made while
22 workers were handling pipe covering materials in

23 different ways.

24 Q. All right. Can you -- excuse me. Can
25 you tell us the reason for conducting this

1 2 8

1 particular study?

2 A. The reason, as I recall, was that the --

3 some of the members of the Dow Corning pipe

4 covering group, crew, what have you, had read in

· their -- either in the newspapers, or somewhere

6 else,, about asbestos,, that they'd read something

7 that had caused them to be concerned.

8 And so it was regular procedure in Dow,

· and it turns out in Dow Corning, that we would do

10 what we could to answer people's questions. And

11 these -- this work was done to answer questions

12 asked by the people in the covering crew, if I

13 remember right. I'm not sure I do remember

14 right.

15 Q. Okay. And I'll have to ask you, as we

16 go on, when that -- there's this little air

17 conditioner or compressor or motor or something

18 that comes on, and we'll have to ask you to keep

19 your voice up a little bit when that happens so

20 we can hear you.

21 A. I'll try.

22 -Q. This was signed by a gentleman named E.

23 J. Schneider or "Sha-ny-der." Can you identify

24 Mr. Schenider?

25 A. Yes. I was the Dow Chemical Company's

1 2 9

1 first full-time industrial hygienist, and Ed

· Schneider was the second full-time industrial
3 hygienist. He joined me about six months after I
4 started in the Department.

5 Q. All right. And I noticed that there
6 are, on Page 2 and on Page 3, at the bottom of
7 the page, there are some footnotes.

8 A. M-hm.

9 Q. And the footnotes are to -- the first

10 book is "Industrial Toxicology" by L. T.
11 Fairhall; is that correct?

12 A. That's right.

13 Q. What sort of a reference book is that?

14 A. Well, it was one of the early and pretty

15 good reference books available to us, and it was
16 written by Dr. Fairhall.

17 Q. All right. And then I noticed that, the
18 second page, there's a reference again to Frank

19 A. Patty.

20 A. That's the same book we talked about
21 this morning.

22 Q. And can you characterize what sort of
23 references these are, as far as quality or -- or
24 usefulness?

25 1 A. Well, they're good. They're --

1 3 0

1 they're as far as they're being authoritarian
· is concerned, they're as good as was available at
3 the time --

4 Q. All right.

5 A. -- in my opinion.

6 Q. This -- can you tell us what the

7 conclusions were in this study conducted by
8 Mr. Schenider and, I believe, checked by you?

9 A. Well, he found that if you were using a
10 table saw -- this is the first time we've
11 mentioned table saws', but this is a power saw --
12 that you could stir up dust in excess of
13 acceptable levels.

14 That's one -- the first of his
15 conclusions. And the total dust count, or the
16 number of particles per million cubic feet of air
17 would, therefore, exceed acceptable levels under
18 these circumstances.

19 Q. Let me stop you there and ask you a
20 question.
21 A. Yeah.
22 Q. We've talked about limits, dust limits,
23 and so forth. And when you say "total dust,"
24 what -- what do you mean by "total dust"?
25 A. Well, I mean, if you take a dust sample
1 3 1

1 and simply look at it under a microscope, it's
· difficult, if not impossible, to tell the
3 difference between different kinds of dust.

4 In other words,, they're just little
· spots of light that are like a light that you can
6 see. And so you call it "total dust."

7 Now, what you can do is to take samples
8 in such a way as to get larger amounts which can
· be analyzed chemically, spectrographically, or
10 what have you, and then you can start to consider
11 the kinds of dust, kinds of materials that are
12 represented by that dust that you're looking at.

13 Q. Was there -- was this particular concept
14 about total dust, as opposed to asbestos, was

15 this taken into account here in this report?
16 A. Let me see. I think it was.
17 Yeah, they did characterize the dust,
18 because this report is written after there
19 started to be some understanding of the fact that
20 asbestos was fibrous and that different length
21 fibers with different diameters would be handled
22 differently within ttae lung or respiratory
23 system.

24 And the third conclusion here was that
25 the amount of asbestos fibers of significant
1 3 2

1 length found within the dust exceeds 25 percent
· of the fiber content. And what that means to me

3 is that 25 percent of the fibers that they could

4 find were within the area of concern, as far as

· fibers themselves goes.

6 Q. All right.

7 A. The rest of the fibers, really, are too
8 long or too short to be of concern.

9 Q. All right.

10 A. Then he goes on to say that "The
11 possibility that Dow Corning workers are being
12 exposed to excessive amounts of asbestos fibers
13 within the important fiber lengths" -- if I'd
14 have read -- I should have read a little
15 further. And then he says, 1120 to 50 microns,"
16 which is the length of concern -- "is unlikely,
17 however, it is advisable and prudent to have
18 workers wear respiratory protection while cutting
19 pipe covering material. This is especially true
20 when using a table saw.,,

21 Because it -- it puts just much more
22 material in a short period of time with a table
· 3 saw.

24 Q. Now, in the back of this exhibit
25 someplace, I'm going to show you there's an "ST"

1 3 3

1 number on it, and it's a "ST" with four zeros and

· a 578, and then there's a 579 and 580.

3 A. All right.

4 Q. Do you see that? Could you just --

5 A. These would be the pictures, here.

6 Q. All right. Can you just identify what

7 that is?

8 A. I can tell you what it is, yes. That's
· a photomicrograph taken of one of the samples.

10 Q. And what can you just say -- what is

11 it?

12 A. The long the long narrow ones are

13 fibrous in appearance and are -- might be
14 asbestos, based on the fact that there was
15 asbestos in the sample.

16 Now, there isn't enough -- there
17 is -- there is no information here that let's --
18 there's no scale information, so I can't tell you
19 how long those were that you're looking at, but
20 that's what you're looking at. And all these

21 other little pieces would have been counted as
22 dust, but are not fibrous.
23 Q. Do you know where these particular
24 studies were done? Where, like in what location
25 in the -- in the facility?

1 3 4

1 A. Well, this -- this wlioie report, I
· think, reports work that was -- was not done
3 during the normal covering of materials in the
4 Dow Corning plant. This reports measurements
· made while people did specific operations.
6 Q. This was in -- in the first -- I notice
7 in the first paragraph, on the first page, it
8 says that this was a question raised by shop
· personnel.
10 A. Right.
11 Q. Do you know whether this was done in the
12 shop or outdoors, or can you tell?
13 A. It would have been done in the shop.
14 Q. So this particular study would have been
15 indoors?
16 A. It would have been in the shop.
17 MS. ABRAMS: objection. Leading.
18 And it calls for speculation. It lacks
19 foundation. --
20 Q. (By Ms. Clark) Do you have any
21 independent
22 'A. it
23 Q. Let me -- let me ask you a different
24 question.
25 A. Okay.

- -----

1 3 5

1 Q. Would you have any independent memory of
· the location, other than what's reported in the
3 report itself?
4 A. Yeaft, I have memory of the request
· coming in and my calling Ed Schneider in and
6 asking him if he would go and take care of it.
7 Q. No. I'm
8 A. And I have memory of saying to him that
· they were thinking -- what their plan was, was to
10 set up specific operations with pipe covering,
11 rather than to try to make -- the reason I
12 remember this is, is that this would have been of
13 relatively short duration, because they set up
14 all the different operations.
15 The alternative would have been to go
16 out and do a comprehensive industrial hygiene
17 survey of Dow Corning's pipe covering crew, which
18 we did not do.

19 Q. All right. It was about in -- in about
20 1970, I think that you have testified earlier
21 that the threshold limit values for asbestos was
22 lowered.
23 MS. ABRAMS: Objection. Leading.
24 A. Well, it went --
25 Q. (By Ms. Clark) I think you testified to

1 3 6

1 that, but correct me if I'm wrong.
2 A. It went from five to two sometime close
3 to 1970, possibly 1969. And my memory isn't quite
4 good enough to say what year, but it was in a --
· within a three-year -- three-year period. I
6 think I'm right. Like 1969, 1970 or 1971.
7 Q. All right. Do you know why --
8 A. Now, that would be available, if anyone
· really wanted to know, because -- because the
10 threshold limit values committee, their records
11 would show that.
12 Q. All right. Do you know why the
13 threshold limit value was lowered?
14 MS. ABRAMS: Objection. Lacks
15 foundation.
16 A. Should I -- should I answer?
17 Q. (By Ms. Clark) Go ahead.
18 A. There had been, over a period of time in
19 the 1960's, new information showing up and being
20 discussed in the -- in the toxicology area and in
21 the medical area concerning effects other than
22 asbestosis which might come from working with
23 asbestos. And the decision to lower the level
24 from five to two was related to that scientific
25 ferment that was going on.

1 3 7

1 As the information was presented and
· further discussed and so on, there was a felt
3 need to lower -- to lower the levels of exposure,
4 as I understood it, not because of any concern
· for asbestosis, but for these other concerns.
6 Q. All right. I want to ask you a question
7 before we take a little -- we'll take our little
8 afternoon break in just a minute, but I wanted to
· ask you a question about scientific theories, I

10 guess, in general. Now I'm going back to when
11 you were a scientist and a teacher, and all of
12 that.

13 When you have a scientific hypothesis,
14 is that hypothesis generally accepted whenever
15 it's hypothesized?

16 MS. ABRAMS: Objection.

17 Q. (By Ms. Clark) Or can you explain --
18 maybe a better way: Can you explain how, I
19 guess, a theory or a hypothesis gets into
20 practical --

21 A. Well --

22 Q. -- literature?

23 MS. ABRAMS: Excuse me.

24 A. Well, generally --

25 MS. ABRAMS: Excuse me.

1 3 8

1 MS. CLARK: Wait a second.

2 MS. ABRAMS: Objection. It lacks
3 foundation. It calls for speculation and it
4 calls for an expert opinion.

5 Q. (By Ms. Clark) Go ahead. You can
6 answer.

7 A. Well, what usually happens is that
8 experiences -- and these can be from all the way
· from case studies to carefully done animal
10 experiments -- are reported by the investigator,
11 whoever he may be. And they're usually reported
12 in form of papers at scientific meetings and --
13 and/or publications in scientific journals. And
14 before they get -- get great credence, someone
15 usually will reproduce the findings.

16 Once the findings have been reproduced,
17 this tends to give them more weight, so to speak,
18 as far as we're going to jump now to setting
19 threshold limit values.

20 In other words, the better the data, the
21 more likely they are to end up changing the --
22 the-guidelines.

23 MS. CLARK: All right. I think
24 this is a good point to take about a ten-minute
25 break, and we'll resume at 2:15.

1 3 9

1 THE VIDEOGRAPHER: The time is
· 2:03 p.m.

3 Off the record.

4

5 (Whereupon, after a brief recess, the
6 video deposition continued as follows:)

7

8 THE VIDEOGRAPHER: The time is 2:18

9 p.m.

10 On the record.

11 Q. (By Ms. Clark) Mr. Hoyle, before the

12 break, we were talking about, I guess, the fact
13 that the threshold limit values had been lowered,
14 or were going to be lowered, and that we had
15 talked about scientific theories and evolution
16 and so forth.

17 Did you become aware, at some point,
18 that asbestos exposure could be associated with
19 other diseases, other than asbestosis?

20 A. Yes.

21 Q. And what -- about when did you become
22 aware of that,, and what other conditions were you
23 aware?

24 A. Well, the other -- there were two things
25 that -- that we started to hear about. First was

1 4 0

1 mesothelioma, which is a -- a rather -- a rather
· unusual tumor, as I understand it, that has been
3 associated with asbestos and was reported.

4 The other thing was -- that I heard
· about was lung cancer as being a matter of
6 concern. Now I couldn't put a -- there's no
7 specific date that I can associate with the
8 appearance of these concerns. What I remember is
· the developing concern among the health
10 professionals over a period of time which
11 ultimately ended in a decision to change the
12 threshold limit values.

13 Q. What -- where were the first case
14 reports of mesothelioma from that you read about
15 or heard about?

16 A. Oh, I think it came from -- it seems to

17 me they were reported from South Africa, but I'm
18 not -- I'm not really sure whether it was South
19 Africa or England, at this moment. But it was
20 outside the U. S., as I recall.

21 Q. Did -- when did you become aware that
22 lung cancer could be associated with cigarette
23 smoking?

24 A. Not until about the time I retired was
25 it more or less totally accepted, as I remember.

1 4 1

1 Sometime in the early 170's, in other words.
2 Q. Was it -- do you have an approximate --
3 A. I
4 Q. Go ahead.
5 A. Let me back up a minute.
6 As far as lung cancer associated with

7 cigarettes, period, of course, that came with the
8 Surgeon Generals requirement, the date of which
9 I don't remember, when they started to put labels
10 on cigarettes, and all that kind of stuff.

11 What I, do remember is the -- the report
12 was published prior to that which resulted in his
13 coming out with the requirement.

14 Q. And --

15 A. And I answered you in terms of cigarette
16 smoking as it relates to asbestos exposure, which
17 isn't what you asked, I think.

18 Q. No, it wasn't, but I will -- I will ask
19 that.

20 So you -- as I recall what you said,

21 then, you -- about the time of the Surgeon
22 Gen'erals Report, or prior to that, you learned
23 about lung cancer and cigarette smoking. And
24 then did you learn about some connection between
25 asbestos and smoking and lung cancer?

14 2 1 A. Yeah. There came a time, in the '60's,
2 when this had been reported. There had been --
3 there was -- there was some other investigation,
4 after its first being reported, which confirmed

it.

. Q. All right. Did you have an estimated
7 time when you learned of the mesothelioma?
a A. It's fuzzy in my mind, but it was
9 A. Fuzziness becomes less and less fuzzy as
10 you get into the early 160's and when you go
11 toward the middle 160's. But if -- if I were to
12 ask myself, was it in the 150's, late 150's, or
13 was it in the 160's, my memory is not good enough
14 to tell me, right now.
15 Q. Okay. It was after --
16 A. I might have an opinion, but I wouldn't
17 have a memory of it.
18 Q. Okay. You had said it was after you had
19 heard a report either from -- reported cases from
20 South Africa or from England. Is that --
21 MS. ABRAMS: Objection.
22 Q. (By Ms. Clark) -- your memory?
23 MS. ABRAMS: Objection. Leading.
24 A. Those were -- that's what I recalled for
25

1 4 3

1 Q. I was going to show you what's been
marked as Exhibit No. 8, and this appears to
3 be -- I'll let you identify what it is, if you
4 can.

5 MS. CLARK: And this, ladies and
6 gentlemen in the background, this is, I believe,
7 three letters that are attached together that are
8 dated October 7th, 1968.
9 A. And the last one is October 31st.
10 Q. Okay.
11 MS. ABRAMS: Can you give us a

12 minute to examine this document?
13 MS. CLARK: All right. Why don't
14 we just go off the record just a second. We
15 could take a -- we'll not take a break,
16 literally, but just break from the video.
17 THE VIDEOGRAPHER: The time is
18 2:24 p.m.
19 Off the record.
20
21 (Whereupon, after a brief recess, the
22 video deposition continued as follows:)
23 MS. CLARK: Are we back on?

24 THE VIDEOGRAPHER: The time is
25 2 :26 p.m.

1 4 4

1 On the record.

2 Q. (By Ms. Clark) Before we -- we move on
3 to this exhibit that I just handed you, Exhibit
4 No. 8, I had asked you the question about
· mesothelioma, and you had indicated that you had
6 heard of some cases, and that you were not -- not
7 real sure about when that was, but do you know
8 what type of exposures or type of workers were
· reported in those cases?

10 MS. ABRAMS: Objection. Compound.

11 A. The -- in those cases, now that I --
12 there was a study, but I think it was not the
13 mesothelioma cases that were reported in that
14 study, although they were reported there, too,
15 perhaps, which involved shipyard use of asbestos
16 lighting in the engine rooms of ships. And
17 that's the one that I remember something about,
18 as far as what kind of exposures did they have.
19 I'm a little blank on the rest of it.

20 Q. All right. And it was your
21 understanding -- can you compare the type of
22 exposure that you understood to be in that report
23 to the type of exposures that you were monitoring
24 at Dow?

25 A. As -- as described, the exposures that

1 4 5

1 happened in the engine rooms of ships during
· World War II were gross compared with those which
3 we encountered by pipefitters in Dow Chemical
4 Company plant -- plants that I know about.

5 Q. All right. Thank you. Let's move on to
6 this Exhibit No. 8.

7 Can you identify this correspondence,
8 Mr. Hoyle?

9 A. Yes. There are three letters here, one
10 sent to me by Bob Middleton,, Safety Director at
11 Ludington, Michigan; one written by me to a man

12 in the Safety Department at Midland, asking him
13 to answer part of the questions; and another one
14 written by me to Bob to answer the questions that
15 I had referred to the Safety Department.

16 Q. All right. What was the question asked,
17 and what was the -- basically, what was the
18 response given?

19 A. Well, he asked what are -- what are they
20 doing in the Midland -- what are the pipe
21 coverers in Midland doing. And that's the part
22 that I -- that I referred to the Midland Safety
23 Department. And then I replied to him concerning
24 hazards due to the handling of materials
25 containing asbestos.

1 4 6

1 And what I told him, to paraphrase it,
· was that there's a discrete disease associated
3 with asbestos which is called "asbestosis." I
4 told him that it was quite similar to silicosis,
· which is caused by crystalline quartz, and --
6 Q. Go ahead and read that, if you want to.
7 A. "In more or less recent past the subject
8 of average or good asbestos has been further
· complicated by reports in the literature of
10 malignant growths which were associated with the
11 presence of asbestos bodies. The whole subject
12 is presently under study by the U. S. Public
13 Health Service."

14 Then I told him that I feel at this
15 point "...our best bet is to control the asbestos
16 dust exposures according to the Threshold Limit
17 Values suggested by the American Conference of
18 Governmental Industrial Hygienists. This
19 Threshold Limit Value is five million particles
20 per cubic foot of air. We have done some dust
21 sampling during a variety of operations carried
22 out-by pipe coverers. I'll include a summary of
23 this work for your information. You will see
24 that there are some jobs where the numbers of
25 particles in the air are above five million

1 4 7

1 particles per cubic foot mentioned here. Jobs
· such as this would be done using industrial
3 respirator which is approved by the U. S. Bureau
4 of Mines for protection against toxic dusts,
· including silica.

6 "Another approach to the dust hazard is
7 to contrive better control of the dust so that
8 the measurements will show less than five million
· particles and there will, therefore, be no need
10 for respiratory protection. Generally, this is
11 the best -- is best accomplished by the use of
12 exhaust ventilation at the point where the dust
13 is being generated.,,

14 Q. And does this -- Mr. Hoyle, would that
15 represent, fairly, your opinion as of October
16 31st, 1968?

17 A. I would -- it's -- it's signed by me.

18 My answer to you is a --

19 MS. ABRAMS: Objection.

20 A. -- yes.

21 MS. ABRAMS: It calls for opinion

22 testimony.

23 Q. (By Ms. Clark) All right.

24 A. Because I composed the letter and signed

25 it.

1 4 8

1 Q. All right. Mr. Hoyle, were you aware at
· any time that there was any monitoring or
3 following done of pipe coverers by the medical
4 Department at Dow?

5 A. There was a regular program of chest
6 X-rays that was carried on, and also a -- a vital
7 capacity testing with a spirometer in the Medical

8 Department. And the pipe coverers were included
· in that program for a period of time. And the
10 findings were all negative, and the decision was
11 made by the Medical Department to discontinue
12 them on the program after a period of time.

13 Q. Why did they decide to discontinue them
14 on a program?

15 A. Just because they were finding entirely
16 normal findings, and even though X-rays of the
17 chest aren't going to give rise to -- to serious
18 overexposure to radiation, a good practice is
19 that you don't expose people to radiation
20 unnecessarily.

21 Q. During your years at Dow, were you ever
22 aware of any case of an asbestos-related disease
23 reported in any Dow employee?

24 A. No.

25 Q. I wanted to just point out one thing.

1 4 9

1 In -- in Hoyi-e Exhibit No. 5, there is a comment
· on the first page that sayst "The present
3 Threshold Limit Value (TLV) for asbestos of 5
4 million particles will remain in force until
· 1971."

6 It -- you -- do you have any information
7 any different about when that threshold limit
8 value might have been changed, as far as the
· actual date?

10 A. I don't really know when it happened,
11 but there was a warning given out by the TLV
12 Committee that they expected to change it in
13 1971, and that's the basis for that statement.

14 Q. Okay.

15 A. Whether they -- whether they did it at a
16 different date, for some reason, I don't know.

17 Q. All right. So you don't have any
18 independent --

19 A. No. That's the --
 20 Q. knowledge --
 21 A. best information I have.
 22 -Q. Okay. And when -- whenever the

23 committee changed it is when they changed it?
 24 A. That's when they changed it, that's
 25 right.
 150

1 Q - Okay.

2 A. It was -- it was the policy of that

3 committee --
 4 Q, Mr. Hoyle --
 5 A. If I may?
 6 Q. All right. Go ahead.
 7 A. It was policy of that committee to give

8 advanced warning of change so that people could
 · make their comments, if they wanted to.

10 Q. Okay. Do you have an opinion,
 11 Mr. Hoyle, based on your experience, your
 12 training and your knowledge as an industrial
 13 hygienist, whether a pipe coverer who worked in a
 14 plant setting, applying insulation, some of which
 15 contained asbestos, had exposure levels within
 16 the five million particles TLV level?
 17 MS. ABRAMS: Objection. It calls
 18 for opinion testimony.
 19 Are you done? Were you finished with
 20 your question?
 21 MS. CLARK: Yes.
 22 MS. ABRAMS: It calls for opinion
 23 testimony. It lacks foundation and calls for
 24 speculation, and it's vague and ambiguous.
 25 Q. (By Ms. Clark) Do you have --
 151

1 A. Based on our own data, as reported in
 · the DeGesero reports, the answer is that we did
 3 not have exposures on a time-weighted basis above
 4 five million particles per cubic foot.
 5 Q. Okay. And could you briefly tell the

6 jury what a time-weighted average means when you

7 refer to that term?

8 A. Yes. The exposures in the work
 · environment are not uniform. They tend to go up

10 and down, depending on particular tasks that are
11 being done by the people at work. And the
12 time-weighted average concept says that for the
13 time where you might have a peak above the
14 number, you can take credit for the time when you
15 have a peak or a depression below the number.

16 In other words, you're allowed to
17 average it out. That's what time-weighted means.

18 Q. All right. And -- and that was -- that
19 was a process that was used in -- was used in
20 reasonable and responsible industrial hygiene
21 practice?

22 MS. ABRAMS: Objection. It calls
23 for an expert opinion.

24 A. That was the way that industrial hygiene
25 was the way these numbers were used by
1 5 2

1 industrial hygienists.

2 Q. Okay.

3 A. These numbers being threshold limit
4 values.

5 Q. And do you have an opinion, Mr. Hoyle,
6 based on your knowledge and experience and
7 training as an industrial hygienist, whether a
8 pipefitter -- and I'm talking about a pipefitter
· as opposed to a pipe coverer, now -- a pipefitter
10 or similar craftsman working in a plant setting,
11 had exposures to asbestos under the threshold
12 limit values of five million particles?

13 MS. ABRAMS: Objection. It's vague
14 and ambiguous. It lacks foundation. It calls
15 for speculation, and it calls for an expert
16 opinion beyond the expertise of this witness.

17 Q. (By Ms. Clark) Do you have such an
18 opinion?

19 A. My -- my -- my expert opinion as a

20 certified industrial hygienist is that the
21 expo sures of people, other than the insulators
22 themselves, would not have exceeded the
23 guidelines in effect.

24 Q. And what do you base -- on what do you
25 base that opinion?

1 5 3

1 MS. ABRAMS: The same objection.
2 A. I base this on a publication of an
3 epidemiology study done at the Dow Chemical
4 Company which compared the state of the health of
5 Dow pipe coverers to Dow pipefitters to control
6 groups.

7 Pipefitters were the same as the
8 controls. The pipe coverers showed an increased
9 incidence of lung cancer for those who were
10 smokers, as well as pipe coverers. It showed
11 that the pipe coverers who didn't smoke were the
12 same as other smokers. And there was a factor of
13 eight or ten, or something like that, greater
14 likelihood of lung cancer for people who were
15 smokers and pipe coverers than there would have
16 been if they had just been smokers.

17 Q. All right. Approximately when was this
18 study done?

19 A. From the early 170's.

20 Q. All right. And at this time, it's --
21 well, it's almost twenty until 3:00, or so.

22 Mr. -Hoyle, I appreciate your -- your attention
23 this afternoon.

24 MS. CLARK: And I pass the
25 witness.

1 5 4

1 Why don't we go off the record for just
2 a second and talk about the scheduling just a
3 little bit?

4 THE VIDEOGRAPHER: The time is
5 2:39 p.m.

6 Off the record.

7
8 (Whereupon, there was a discussion held off
9 the record, after which the proceedings continued
10 on the stenographic record as follows:)

11
12 MS. CLARK: Gerry, if we might,
13 everybody here, or at least we are in agreement
14 that questions that are dealing with cancer
15 testimony would be used only in cases where that

16 issue can be -- that is, tried with the rest of
17 the issues in the case.

18 There are some jurisdictions,
19 apparently, where both cases are segmented out.
20 Their asbestosis cases are tried separately from
21 cancer cases, and that there wouldn't be any
22 disagreement with using testimony only relevant
23 to certain cases in those jurisdictions where
24 that is appropriate.

25 MS. ABRAMS: What are you -- are
1 5 5

1 you requesting that -- I'm not sure what your
· statement is.

3 MR. HOOD: Well, we don't want to
4 have to have to object everytime the word
· "cancer" is mentioned if it's irrelevant in a
6 given case.

7 MR. BEZET: Well, aren't you
8 operating under a stipulation that all objections
· are reserved except as to the form of the
10 question and responsiveness of the answer?
11 Relevancy is preserved.

12 That covers it, doesn't it?

13

14 (Whereupon, there was a discussion held off
15 the record, after which the proceedings continued
16 as follows:)

1 7

18 MR. HOOD: My name is Bobby Hood,
19 and it's my understanding that Plaintiff counsel
20 and the defense counsel understand that the
21 questioning of this witness, whether a reference
22 is m-ade to cancer or malignancy or tumors is only
23 to be used when this deposition is shown to a
24 jury in a case where such references are relevant
25 and admissible in that particular case.

1 5 6

1 Does anyone disagree with that?

· MR. BEZET: I am.

· MS. ABRAMS: Yes, I do, too.

· MR. COVERT: I do, too.

· MR. HOOD: Now, if you do disagree,
6 does that mean that you want us, everytime you
7 mention the word "cancer," to interrupt you and
8 object because

9 MR. COVERT: No. Just make a
10 general objection in the Louisiana cases. That's
11 all I'm concerned with.

12 MS. HOOD: Will this objection,
13 then, be sufficient to run throughout any
14 questions by any Plaintiff counsel, so it doesn't
15 have to be repeated each time the word "cancer"
16 is mentioned?

17 MR. COVERT: Speaking for myself,
18 yes.

19 MR. HOOD: How about any other

20 Plaintiffs, counsel?

21 MS. ABRAMS: That's fine with me.

22 MR. HAINKEL: I'm going to join in
23 the objection for the Louisiana cases, too, with
24 reference to cancer.

25 THE VIDEOGRAPHER: The time is

1 5 7

2:43 p.m. On the record.

2

3 EXAMINATION

4 QUESTIONS BY MR. COVERT:

5

6 Q. Mr. Hoyle, my name is Gerry Covert, and
7 I'm here primarily inquiring about the Dow
8 Plaquemine facility, and I think you mentioned
· that once, in passing.

10 Were you, sir, in industrial hygiene
11 when the Dow Plaquemine plant was built?

12 A. Yes.

13 Q. And do you recall the time stage on
14 that, Mr. Hoyle?

15 A. Not exactly, because I answered you
16 quite positively because I was in industrial
17 hygiene and had some contact with the Texas

18 division during the planning of the Louisiana
19 Division, but I just can't remember what year the
20 Louisiana Division took off.
21 Q. Well, as I told someone, I did
22 abstracting in law school when they were building
23 that, so it was in the 1950's. Does that sound
24 about right?
25 A. All right, I'll agree.

1 5 8

1 Q. All right. I was interested -- you said
· you had something to do with the planning of the
3 Plaquemine facility. What did you mean by that,
4 Mr. Hoyle?
5 A. Well, I had -- there was an opportunity
6 for industrial hygiene input through the
7 engineering stages of various Dow plants. And it
8 was in that context that I made the comment. And
· my function would have been to furnish
10 information to the engineers, so that they could
11 plan a facility that would make it possible to
12 operate the plant in a work environment that was
13 healthful.
14 Q. I see. Did you actually consult with
15 the engineers relative to your knowledge of
16 asbestosis?
17 A. No.
18 Q. You did not?
19 A. I did not.
20 Q. All right. Is there any reason? Were

21 you not called upon to --
22 -A. Asbestos was -- I was not called upon,
23 and I think the reason was that asbestos related
24 to specific trades, and the -- I would have been
25 most likely to have been consulted or asked for
1 5 9

1 information concerning the control of chemicals
· from process and within process, because the
3 tradesmen -- we -- would have been handled as
4 special cases by Maintenance Engineering involved
· in any Dow use of asbestos at Plaquemine.

6 THE VIDEOGRAPHER: Excuse me,

7 Mr. Hoyle. Your microphone is slipping off.

8 THE WITNESS: Oh, dear.

9 THE VIDEOGRAPHER: The time is

10 2:47 p.m.

11 Off the record.

12 THE VIDEOGRAPHER: The time is

13 2:47 p.m.

14 On the record.

15 Q. (By Mr. Covert) Mr. Hoyle, let me back

16 up just a little bit.

17 When you went to work for Dow in 1941 or

18 1942, were you aware that asbestos insulation was

19 used in the Dow facility?

20 A. I became aware of it very soon after,

21 but not in the context of industrial hygiene --

22 Q. Okay.

23 A. -- because my job, at that time, had

24 absolutely nothing to do with industrial hygiene.

25 Q. Fine. About when did you become aware

1 6 0

1 of the usage of asbestos-containing insulation at

· Dow?

· A. In 1941, because I was a pipe shop

4 estimator at that time, and I estimated pipe

· covering work.

6 Q. All right. And at that time, the pipe

7 covering did contain asbestos for the hot

8 insulation?

9 A. The hottest insulation used asbestos.

10 Q. Was there any difference in the type hot

11 insulation used at Midland, as opposed to

12 Plaquemine, if you know?

13 A. I don't think so --

14 Q. So to --

15 A. -- but I don't know for sure.

16 Q. To your knowledge, when the Dow plant

17 was built, the hot insulation did contain

18 asbestos, as far as you know?

19 A. Yes, as far as I know, on hot

20 applications, asbestos was used at Dow

21 installations until the late '60's or

22 early '70's.

23 Q. And do I understand you from the

24 previous question that I asked, that although you

25 had had knowledge since 1948, approximately --

1 6 1

1 A M-hm.

2 Q. -- that asbestos could cause asbestosis,
3 you were not called upon or were not asked about
4 the usage of asbestos in the construction of the
5 Plaquemine plant?
6 A. I furnished information to the Safety
7 Department, who did have an interest in the
8 insulators, the pipe coverers, from the safety
9 point of view. And we resourced people to them
10 in -- in determining safe operation for pipe
11 coverers.
12 Q. I'm speaking not only of pipe coverers
13 in the plant, but during the initial construction
14 of the Plaquemine plant, too, Mr. Hoyle.
15 MS. CLARK: Let me object. It's
16 not really an objection, but I believe that there
17 are a number of different parts of the plant.
18 It's a -- you know, the facility has several
19 different buildings, and they were built at
20 different times. So that might be unclear as far
21 as when these were all applied.
22 Q. (By Mr. Covert) If -- if my question
23 confuses you, Mr. Hoyle, be sure to stop me, but
24 I'm concerning myself --
25 A. Tell me -- would you repeat it, please.

1 6 2

1 I'm sorry. I lost my train of thought.
2 Q. Me, too. Concerning ourself --
3 MR. COVERT: Well, you'd better
4 read the question back to me.
5
6 (Whereupon, the requested testimony was
7 read back by the court reporter.)
8
9 Q. (By Mr. Covert) Were you, likewise,
10 concerned with their safety, as an industrial
11 hygienist?
12 A. The -- early on, and I think that's
13 early on, maybe the late end of early on, the
14 relationship with contractors in Dow facilities
15 was that they were independent operators. They
16 had their own safety programs, and the people who
17 applied different trades were expected to know
18 how to take care of themselves, as far as their
19 own trade is concerned.
20 And on that basis, early on, I can't be
21 sure that any information that I had, as an
22 industrial hygienist, whether it got to them or
23 not, I'm not sure. If it did, it got through the
24 Safety Department, who at some point in time, in
25 Midland, I can't speak for Plaquemine, but at

1 6 3

1 some time point in time in Midland, in

· the 160's, the company started to be more
3 aggressive concerning the safety behavior of
4 contractors on site.

5 But their contracting was mostly done by
6 Austin Company, and this is a big company. And
7 I'm not sure that we would have been welcome if
8 we had tried to tell them to fit pipe and put on
· covering.

10 Q. Okay.

11 A. And I think they actually went out and
12 bought the covering and brought it on site,
13 probably, because I do know that Austin Company
14 had their own Purchasing Department.

15 Q. But the -- the insulation that they
16 would supply to Plaquemine would have been
17 according to Dow specifications?

18 A. Been according to Dow specs, that's
19 right.

20 Q. Now, there are two things that I'm not
21 sure of and I wish you would help me clarify.

22 You answered many questions about plant
23 environment, as to the pipe coverers in the plant
24 environment at Dow.

25 A. M-hm.

1 6 4

1 Q. What did you mean by that, Mr. Hoyle?

2 A. Well, the plant environment is the -- is

3 when a pipe coverer would be applying his trade
4 in an operating plant, as opposed to applying his
· trade in a -- under new construction.

6 Under new construction, then, by my
7 definition, that's not a plant environment.

8 Q. What -- what would "new construction,,
· imply to you, as an industrial hygienist?

10 A. Oh, a brand-new plant.

11 Q. Would in your opinion, the exposures to
12 asbestos dust be greater under the circumstances
13 of new construction?

14 A. I don't --

15 MS. ABRAMS: objection. It calls
16 for an expert opinion.

17 A. -- know why it would be, but it would be
18 related to the -- to applying the trade of pipe
19 coverer. And whether you put pipe covering on a
20 pipe in a plant where there's no chemical
21 operation, or whether you're putting pipe
22 cove-ring on a piece of pipe in a plant that's

23 operating, I don't see why it would make any
24 difference, as far as the -- the pipe coverer is
25 concerned, as far as his exposure to the contents
1 6 5

1 of the covering that he's using.

2 Q. Would any time -- would time make any

3 difference in the utilization or exposure to that

4 asbestos insulation

5 A. I don't quite understand your question.

6 Q. Well, you said in the plant environment
7 someone would be using it part-time, and you
8 didn't see any difference in new construction, in
· which I assume there would be a great deal of
10 applying insulation with the hot pipes --

11 A. To the extent that they might have made
12 an assembly-line operation on a new construction,
13 there could have been a difference. I'm not
14 aware that they did that, but I can -- if you
15 were to organize yourself so that one man did
16 nothing but cut pieces of pipe covering, that
17 would not be what I was talking about.

18 Q. I see.

19 A. Do I -- do I make myself plain?

20 Q. I think you do. I think you do.

21 A. Okay.

22 Q. The other thing, I'm having a hard time

23 quantifying five million particles per cubic
24 foot. Can you see the material -- the dust in
25 this amount of vapor or mist?

1 6 6

1 A. You can -- you cannot see the respirable
· dust, because it's too small. The techniques
3 that are used for sampling actually are developed
4 in such a way that you -- that what you get in
· your sample is respirable dust.

6 Q. So someone working with insulation which
7 contained asbestos could conceivably be breathing
8 these sort of particles without knowing it; is
· that correct?

10 A. It's highly unlikely, because usually
11 the respirable dust would be associated with the
12 bigger particles, which you can see.

13 Q. Okay. How about someone -- well, strike
14 that question.

15 Did there ever come a time, Mr. Hoyle,
16 where Dow started looking for alternative
17 products to take the place of asbestos in the
18 plants?

19 A. Yes, sir.
20 Q. And about when did that come about?
21 A. That was in the late 160's and it was

22 associated with the time that I was -- that I
23 testified to when the threshold limit value was
24 at five, and it was proposed to reduce it to two.

25 Q. And --

1 6 7

1 A. And at that point, we first had to find
· out whether the new number -- what effect that
3 would have on our operations. And that was the
4 basis for the DeGesero study that we talked about
· at length this --

6 Q. What do you mean, what effect it would
7 have on your operation?

8 A. Well, if we were -- if we needed to know
· what the exposures were, and with fair accuracy,
10 and up until that point, we had been satisfied
11 that we were below five million particles, but we
12 hadn't done an in-depth study to know exactly
13 where we were. We knew we were below, but we
14 didn't know just where below.

15 So the question then is, if we -- if we
16 have a new number to work with, will that affect
17 our safe practices. And so that's why we did the
18 in-depth study, which told us where we were, and
19 we found we were, indeed, above two million
20 particles, and that prompted us to go ahead and
21 look for alternative materials, which you just
22 askb'd about.

23 Q. Well, what alternative materials did you
24 look at, Mr. Hoyle?

25 A. I wasn't involved in the looking at

1 6 8

1 alternative materials. That was done by the
· Maintenance Engineering Group. And so they
3 searched the marketplace and finally found
4 materials that could be used for high
· temperature, most high temperature installations
6 that had no asbestos.

7 But I wasn't involved in that enough to
8 even know what the -- I just knew there was no
· asbestos and had little interest in it beyond

10 that point, because it was no longer an

11 industrial hygiene problem.

12 Q. I see. Were you with Dow when what's

13 known as "Asbestos Abatement Programs" began,

14 Mr. Hoyle?

15 A. That's about the time I left.

16 Q. I see.

17 A. And the kind of thing -- may I ask you a

18 question now?

19 Q. Sure.

20 MS. CLARK: Mr. Hoyle, you really

21 need to answer his questions, because he's not

22 under oath, and if he answers --

23 THE WITNESS: Yeah, okay. I'm

24 curious as to what his terminology meant. Maybe

25 I should say, "Would you restate your question?"

1 6 9

1 MS. CLARK: That's right.

2 MR. COVERT: He's trying to help

3 me.

4 Okay. Could you read it back to him?

5 THE WITNESS: Okay.

6

7 (Whereupon, the requested testimony was

8 read back by the court reporter.)

9

10 Q. (By Mr. Covert) And I think you answered

11 that that's about when you were leaving.

12 A. I think so.

13 Q. Okay. And -- and what, if you know,

14 Mr. Hoyle, was the purpose of replacing this

15 asbestos?

16 A. I beg your pardon?

17 Q. What was the purpose of this asbestos

18 abatement program, if you know?

19 MS. CLARK: Again, answer if you

20 know.

21 MR. HOBSON: Well, "if you know,"

22 means if you know.

23 THE COURT REPORTER: Who said that?

24 MR. HOBSON: He said that.

25 THE COURT REPORTER: Okay.

1 7 0

1 MR. HOBSON: Okay.

2 A. I wasn't involved in detail in
3 describing the so-called abatement program.

4 Q. (By Mr. Covert) Well, let me ask -vou
· this, Mr. Hoyle: Did a time ever come, in your
6 employment with Dow as an industrial hygienist,
7 when you felt that the use of asbestos was too
8 dangerous to the individuals involved or exposed?

9 A. No.

10 Q. It never did?

11 A. No. The -- when you say "too dangerous"

12 to me, I have to answer you that way, because any
13 material can be handled without its being too
14 dangerous, with the proper precautions.

15 If you'd have -- if your question had
16 gone beyond that point, I might have answered it
17 differently.

18 Q. Well, let's go back not that far.

19 If you could, when -- whether two
20 parts -- two million parts per cubic foot became
21 too dangerous for the utilization of the new
22 employees --

23 A. No,, that didn't make it too dangerous.

24 That simply required that you take different
25 precautions.

1 7 1

1 Q. And those precautions were "stay below
· that." What else?

3 A. Not necessarily to stay below that, as
4 far as measurements are concerned, but you would
· have been required more in the way of personal
6 protection as a -- as a program, with that
7 number, than you would have with five.

8 Q. Would you, as an industrial hygienist at
· the present time, or at the time you left Dow,
10 Mr. Hoyle, recommended the use of insulation

11 containing asbestos?

12 A. If there were -- I -- I could have

13 recommended its use if it were the -- the

14 material of choice, and then I could have

15 recommended precautions that would make it safe.

16 Q. And, again, if you could tell me those

17 precautions.

18 A. They would have been use of personal

19 protective devices, either that or the use of

20 local ventilation during particular operations,

21 or soaking the material. I think I'm describing

22 abatement to you.

23 Q. All right. And one more thing. You've

24 got to put up with me. we spoke a great deal

25 about the the floor tile at Dow, and I

1 7 2

1 understand

2 A. I didn't get your word.

3 Q. The floor tile, the test --

4 A. Oh, the floor tile, yeah. Okay.

5 Q. And I think you -- did I -- did I

6 understand you correctly, sir, that Dow sold the

7 materials which went into making up this floor

8 tile?

9 A. I'm not sure whether our Coatings

10 Technical Service group were successful or not.

11 I can tell you that I know that they were

12 experimenting with various formulations, which

13 hopefully would have developed a market for Dow

14 resins in the floor tile business.

15 Q. Mr. Hoyle, where would I go to try to

16 find out if Dow did ever sell the resins which

17 contained asbestos to other parties?

18 A. Dow never sold asbestos -- any resins

19 containing asbestos. If the asbestos ever got

20 into a floor tile formulation with a Dow resin,

21 it was done by the floor tile company. We --
22 there was no attempt made to develop a product
23 containing asbestos.

24 See, they were trying to break into a
25 into a business that used a different resin, and
17 3 so the formulation would need to be different to accommodate the new resin. And the only
reason

3 the asbestos was there is that that was the way
4 floor tile was made.

5 Q. okay.

6 A. Do you see what I'm saying?

7 Q. Yes, sir. I think I understand.

8 A. okay.

9 Q. Mr. Hoyle, some of my clients have

10 spoken of turnaround operations at Dow. Are you
11 familiar with the term?

12 A. Oh, I know what a turnaround is. This
13 is when you shut down for maintenance.

14 Q. Okay. And would you say, sir, that
15 that's different than the factory environment
16 that we previously discussed?

17 MR. HAINKEL: I object to the form
18 of the question.

19 A. It's different in that the whole plant
20 is shut down. Nothing happens there except
21 maintenance during the turnaround.

22 It's not too different than maintenance
23 done in an operating plant, so far as the
24 tradesmen are concerned, as I can see, as far as
25 any exposures related to their trade. But it

1 7 4

1 would be different in terms of the opportunity

· they might have for exposure to a chemical in

3 process.

4 Our -- generally, maintenance work,

· before the maintenance people are asked to do it,

6 the equipment is freed of any chemicals. If you

7 have a turnaround, that becomes simpler, because

8 you just simply remove all the chemicals from the

9 site.

10 Q. Let's -- let's confine it, if we could,
11 to the insulation --

12 A. Okay.
13 Q. -- relating to turnarounds. Would that
14 make any difference, in your opinion?
15 A. Well, I don't -- I don't think, unless
16 we were to get back to some kind of mass
17 production techniques, that would be associated
18 with it, and then I'm unaware that it was done,
19 because I --
20 Q. Assuming --
21 A. -- I'm simply unaware.
22 -Q. Right. Assuming, Mr. Hoyle, that my

23 clients would say, that during turnaround
24 operations at Dow, the removal of hot insulation
25 resulted in work conditions where it was kind of
1 7 5

1 like snow falling on them, and this assume --
· presumably contained

3 A. over how long a period of time would

4 this have happened?

5 Q. Well, say for several weeks.

6 A. I would - I would be suspicious of
7 their observations.

8 Q. All right. Well, for several days,
· let's put it into that time frame.

10 A. Well, if you had said

11 MR. HAINKEL: I object to the form.

12 Was that a question, Gerry, or ,

13 MR. COVERT: I confined it

14 converted it to several days from several weeks,
15 to see where we're going.

16 MR. HAINKEL: I object to the form
17 of the question.

18 Q. (By Mr. Covert) If you can, answer that,
19 if you would, please.

20 MR. BEZET: Well, what was the
21 question?

22 -A. I can answer it this way, and this is
23 based on my casual observations over the years.

24 It might be possible, that for a very
25 short period of time, there might be a case where
1 7 6

1 a fairly large piece of insulation would just

· come apart, you know. And that, I wouldn't be

3 surprised at. I don't think it would last for

4 very long. It would settle to the ground and
· they'd sweep it up and take it away. Now, that's
6 what I'm envisioning.

7 Now, the idea that it was snowing
8 asbestos, I haven't been -- I've been around
· turnarounds, and I've never seen it snowing
10 asbestos.

11 Q. (By Mr. Covert) Okay. Would that, to
12 you, as an industrial hygienist, mean exposure
13 greater than the five parts per million per cubic
1 4 f o o t ?

15 A. There would be -- it would be difficult
16 for me to say "yes" or "no," because what you're
17 seeing are big pieces falling down, and the
18 amount of respirable dust would relate to how
19 friable that material was at the time.

20 Q. And the respirable dust, Mr. Hoyle, does
21 it disintegrate, or does it remain on site after
22 it's cut?

23 A. The respirable dust?

24 Q. Yes, sir.

25 A. It -- respirable dust is pretty small,

1 7 7

1 and it floats for a long time in the air. And
· the wind comes along and blows it away and -- and
3 disperses it. So it wouldn't be around the site
4 for any length of time, I don't think.

5 Q. So it could, in this -- is it your
6 opinion that this wind, et cetera, could stir up
7 a respirable dust causing further exposure to
8 people who work --

9 MR. HAINKEL: I object to the form
10 of the question. I don't think that's his
11 testimony.

12 A. The -- I think your inference was that
13 they would be exposed to high concentrations.
14 And the sampling that I've done in my life would
15 tell me that that the answer would be known or
16 probably known, because when the wind blows in an
17 outdoor operation, the dilution factor is
18 tremendous.

19 Q. In your studies, Mr. Hoyle, what is the
20 exposure -- is the exposure required to contract
21 mesothelioma?

22 A. I haven't the -- I haven't the least
23 idea. I don't think any one of us knows.

24 Q. So you don't know the exposure to cause
25 mesothelioma?

1 7 8

1 A. The -- now, let me qualify by saying
· that I've been spending my time doing other
3 things involving the literature for the past 14
4 years, but as I know it, at the time that I
· stopped having regular contact with the
6 literature, there was no quantitative
7 relationship between levels of exposure and
8 mesothelioma. There was even a question as to
· whether mesothelioma had anything to do with
10 asbestos most of the time that I was an
11 industrial hygienist.

12 Q. That was the time that you left Dow,
13 that was the consensus; is that your testimony?

14 A. At that time the consensus may have been
15 changing a little bit, but there was question as
16 to -- early on, there was question as to whether
17 or not those reported cases were caused by

18 asbestos. I am unaware of any studies that
19 related mesothelioma to levels of exposure.
20 That's just not to say that there were none, but
21 to say that I'm unaware of any.

22 Q. I'm reviewing my notes, and I just want
23 to clarify one more point.

24 Did I understand you correctly that you
25 stated, in the 160's., that new information from

1 7 9

1 toxicology revealed diseases from working with
· asbestos -- asbestos, including mesothelioma,
3 came to light?

4 MR. HAINKEL: Object to the form of
· the question.

6 A. I think that I recognized the fact that
7 in the literature and in the health sciences
8 area, this question was being raised.

9 Q. Did you accept it, sir, as the rules
10 that you wish to promulgate at Dow?

11 A. We -- because asbestos was a very small
12 part of our industrial hygiene concern, very
13 small, we couldn't justify doing any
14 toxicological investigation of a material which
15 was made by someone else and sold to us for use
16 in a specific trade.

17 And so I did not ever become involved in
18 trying to judge what the number should be.
19 Rather, I accepted the number as it was and went
20 ahead with industrial hygiene accordingly.

21 That's the way I have to answer your

22 question.

23 Q. Sure. And I guess it goes back to your

24 relying on the literature at that time; is that

25 correct?

1 8 0

1 A. Well, we relied on -- on what was common
knowledge. Another way to say it is literature.

3 It goes beyond that. It's spoken word, too,
4 but -, spoken literature.

5 Q. Okay. Mr. Hoyle, let me ask you one
6 more question for some of the other Louisiana
7 lawyers that are here: Are you familiar with the
8 products, the manufacturers of the insulation,
asbestos-containing insulation products at Dow in
10 Plaquemine, the brands?

11 A. The brands?

12 Q. Yes, sir.

13 A. No.

14 MR. COVERT: Excuse me just a

15 second.

16 That's all I have.

17 THE WITNESS: Okay.

18 MS. CLARK: Thank you, Mr. Covert.

19 And I believe, at this time, we'll stop
20 for today, and we'll start again in the morning.

21 Is 9:30 a satisfactory time with
22 everybody, for scheduling? Herschel, are you
23 going to go next?

24 MR. HOBSON: I don't know.

25 MS. CLARK: Is that satisfactory

1 8 1

1 with you all?

2 Okay. Thank you very much.

3 THE VIDEOGRAPHER: The time is
4 3:12 p.m., and we're off the record.

5

6 (Whereupon, the video deposition of
7 Mr. Harold Robert Hoyle was recessed for the day,
8 to be reconvened on the 19th day of February,
1991, at 9:30 a.m.)

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Beaumont, Texas 77704

Re: Cause No. A-134,614

Russel H. Alle?4 et al vs. Anwiican Petrofina, Inc. Deposition of. Harold Hoyle (B91-8), (B91-9), (B91-11)

Dear Ms. Clark:

Enclosed herewith please find a copy of the original deposition of the witness named above. Please have the witness review and sign the jurat page before any Notary Public prior to returning to our office.

Should the witness find it necessary to make any changes or additions to the deposition, please use the amendment sheets enclosed.

Should you have any questions regarding this matter, please feel free to contact our office.

Sincerely,

M @A@ Rangel

Scheduling Department

mar

Enclospre

cc: -Mr. Hershel L Hobson Ms. Kathy Kubach Mr. Geolge R. Covert Ms. Demse Abrams Mr.
Peter Boyd Wells, III Mr. Thomas W. Duesler Mr. Duncan S. Stuart Mr. James H. Powers Mr.
Robert H. Hood Mr. Gary A. Bezet

Page 2

M@ Sandra Clark

Mr. J. Thad Heartfield Mr. David Ledyard

Ms. Gail C. Jenkins

Ms. Ann L. Burkey

Mr. John J. Hainkel, II Mr. Christopher A. Conkling Mr. William E. Schweinle, Jr. Mr. John B. Hall

Mr. J. Wiley George

Mr. D. Allan Jones

Mr. Kristopher E. Fernandez Ms. Katherine Armstrong

1
2 RUSSELL ALLEN, ET AL
3 VS.
4 AMERICAN PETROFINA, ET AL

NO. B-126,986
IN THE DISTRICT COURT
JEFFERSON COUNTY, TEXAS
60TH JUDICIAL DISTRICT

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6
7 FRENCH HICKS, ET AL
8 VS.
9 BETHLEHEM STEEL CORP., ET AL

NO. A-134,614
IN THE DISTRICT COURT
JEFFERSON COUNTY, TEXAS
58TH JUDICIAL DISTRICT

10
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14 VIDEOTAPED DEPOSITION OF
15 HAROLD ROBERT HOYLE

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19
20 On July 20, 1993, the videotaped
21 deposition of HAROLD ROBERT HOYLE, a Witness in the
22 above-styled causes, was taken at the instance of
23 the Plaintiffs at the Valley Plaza Inn, 5221 Bay
24 City Road, Midland, Michigan, pursuant to
25 Stipulations of Counsel contained herein.

2
1 Those Counsel present, representing their
2 respective client or clients in the causes of
3 action in which they have filed Answer, were as
4 follows:

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20 VIDEOTAPE OPERATOR:

21 MR. HUNTER BLANKS Beaumont, Texas 77701 22 23 24 25

6

1

2

3 IN ATTENDANCE:

4 MR. DUNCAN STUART and MR. MICHAEL KAY

5 The Dow Chemical Company 2030 Willard H. Dow Center

6 Midland, Michigan 48674

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1 S T I P U L A T I O N S

2

3 IT IS STIPULATED AND AGREED BY COUNSEL
4 FOR THE PARTIES HERETO:

5

6

7 That the deposition is taken pursuant
8 to the Texas Rules of Civil Procedure;

9

10 That Charlotte Smith, a Certified
11 Shorthand Reporter for the State of Texas, may act
12 as a Certified Shorthand Reporter for the State of
13 Michigan for purposes of swearing the Witness in
14 this deposition;

15

16 That an objection made by one Defendant
17 shall serve as an objection by all Defendants for
18 purposes of this deposition;

19

20 That the deposition is to be videotaped;

21

22 That the transcript will be submitted
23 to the Witness for reading and signing by said
24 Witness;

25

8

1 That according to Rule 206 of the Texas
2 Rules of Civil Procedure, the original transcript
3 will be delivered to MR. JOSEPH C. BLANKS.
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

9

1 2 3 4 5 6

7 E X A M I N A T I O N I N D E X

8

9

10 EXAMINATION BY: PAGES:

11 Mr. Joseph C. Blanks 10 - 169

12 Mr. Arthur Almquist 169 - 171

13 RE-EXAMINATION BY:

14 Mr. Joseph C. Blanks 171 - 176

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1

2 having been duly sworn, testified as follows,

3 to-wit:

4

5 EXAMINATION BY MR. BLANKS:

6 Q Good morning, Mr. Hoyle. I'm Joe

7 Blanks, as I'm sure you have been told, here to

8 ask you some questions today in our ongoing

9 asbestos cases.

10 Would you just do me the favor of

11 introducing yourself for the jury for the

12 purposes of your deposition, sir.

13 A Yeah. My name is Harold Hoyle.

14 Q And you are a former Dow employee, are

15 you, sir?

16 A Yes, sir.

17 Q Where do you reside these days,

18 Mr. Hoyle?

19 A Right now Midland, Michigan. In the

20 wintertime I'm in Florida.

21 Q Just for continuity purposes, let me

22 just recap a couple of things from your

23 background and also to get them focused in my

24 mind.

25 If I remember correctly, you served

11

1 for many years as the chief industrial hygienist

2 for Dow Chemical Company, roughly from '48

3 through '76. Would that be so?

4 A That's true. I was the chief

5 industrial hygienist.

6 Q And would you remind me when you

7 joined the company, sir.

8 MS. USERY: Could you have

9 the Witness speak up a little

10 bit?

11 MR. ALMQUIST: He's talking

12 as loudly as he can.

13 A I have a bit of a problem.

14 Q Speak at your comfort level and

15 MR. ALMQUIST: Speak at the

16 level you are comfortable with.

17 Q I'm sorry, I was asking you when you

18 joined the company. I apologize.

19 A In 1941 I was here for a summer, and I

20 returned to teaching and became a full-time

21 employee in 1942.

22 Q And your background I think was in

23 chemistry and physics?

24 A That's true.

25 Q Was that the field you worked in in

12

1 the first years, the first four, five, six,

2 seven years with the company was in the field of
3 chemistry?

4 A No.

5 Q What were you doing?

6 A The first job I had was a pipe shop

7 estimator in the summertime. And the second job

8 that I had was in the Accounting Department as

9 the Dow Magnesium Corporation.

10 Q This almost sounds like you were in

11 the Army instead of in private business. You

12 have a chemist and a physicist and you put him

13 in the Accounting Department. What was going on
14 there?

15 A I had a physical problem. I had

16 ulcers and I was told to find a job where I

17 would be responsible for my own actions. I was

18 a high school coach before that, which may

19 explain.

20 Q What led, then, to your move into the

21 industrial hygiene field in 1948?

22 A I had been a safety engineer for four

23 years prior to that, and the decision within the

24 company was that someone was needed to do this

25 job full-time.

13

1 Q And was it the case that before there

2 was actually an Industrial Hygiene Department

3 founded or created, that the Safety Department

4 had been responsible for industrial hygiene-type

5 activities and concerns?

6 A The Safety Department always had a

7 shared responsibility because it is part of

8 safety. Actually, the industrial hygiene done

9 prior to my arrival was done by a man who was

10 also the chief toxicologist.

11 Q Would that be Mr. Rowe?

12 A No. That was Dr. Edgar Adams.

13 Q So, if I understood you, then, before

14 '48 for some period of time Dr. Adams --

15 A Yes.

16 Q --- who was the chief toxicologist,

17 also did some industrial hygiene work at Dow?

18 A As needed. He probably was the father

19 of industrial hygiene at Dow.

20 Q Could you give me a feel for

21 approximately when Dr. Adams began with the

22 company?

23 A Yes. He came to Dow in 1934.

24 Q Was it your understanding that he had
25 kind of begun doing industrial hygiene-type

14

1 tasks back even into the late '30's on an
2 as-needed basis?

3 A I can't put a time on it, really. He
4 had done it because he was doing toxicology and
5 had the kind of information that would be needed
6 to make some decisions in industrial hygiene.

7 Q So, he had access to the health hazard
8 information about various materials?

9 A His job was to develop that kind of
10 information on our products.

11 Q And I guess necessarily he also had
12 laboratory facilities and a technical
13 background, of course, that would --

14 A He had a Ph.D. in biochemistry.

15 Q Was Dr. Adams actually the founder of
16 the Toxicology Department at Dow? Was that the
17 right way to say that?

18 A Dr. Donald D. Irish was the first
19 biochemist and did the first toxicology. His
20 interests were broader than just toxicology, so
21 he brought Dr. Adams in a couple of years after
22 he arrived.

23 Q What was it that got you interested in
24 industrial hygiene to where this position was
25 actually appealing to you and one you wanted to

15

1 take?

2 A Well, I think it goes back to the
3 thing you alluded to: I'm a chemist by
4 training, and although I was enjoying the safety
5 engineering job, it was not as technical as it
6 might have been. And industrial hygiene is
7 quite similar to safety as far as its goals are
8 concerned, being limited to the work environment
9 rather than things like falling down stairs and
10 getting electric shocks and things like that.
11 There's a whole laundry list of safety items
12 that are not chemical in nature.

13 Q So, this gave you a chance to combine
14 your safety background and your scientific
15 education into a --

16 A That's the way I saw it when I took
17 the job, yes, sir.

18 Q I guess you liked it. You stayed with
19 it for almost 30 years.

20 A For a while, yes.

21 Q Could you give me some sense of how you

22 came to have your training in industrial hygiene
23 and what did you do to really become proficient
24 at this job and who were you dealing with as you
25 began to develop in the field after '48?

16

1 A Maybe the best way to describe it is
2 to say that I have frequently said that Ed Adams
3 was my major professor. And, of course, there
4 were opportunities to - for training in terms of
5 seminars and opportunities to hear papers being
6 presented at technical meetings, things like
7 that.

8 Q If I remember correctly, you had said
9 earlier that you only missed one or two of the
10 American Industrial Hygiene Association meetings
11 over those years you were practicing.

12 A I believe that's right.

13 Q You went to the first one in 1948 in
14 Boston?

15 A Yes, it was in Boston.

16 Q This would have been an opportunity
17 for you to hear technical papers being
18 presented?

19 A Yes. That's the major one that I
20 remember. There were other circumstances, but
21 that was the annual thing that one could depend
22 on and it's where the people doing industrial
23 hygiene had an opportunity to present their
24 papers and reports.

25 Q And then these were published in the

17

1 quarterly journal of that association which you
2 also received?

3 A It was quarterly to start with.

4 MR. ALMQUIST: Mr. Hoyle,
5 we're getting so we're talking on
6 top of each other, and I know
7 Mrs. Smith over here is a real

8 good reporter, but she has a hard
9 time when both people are talking
10 at once. Please wait until

11 Mr. Blanks gets through with his
12 question before you start your
13 answer.

14 THE WITNESS: All right.

15 Q We tend to fall into a conversation
16 here --

17 A That's true.

18 Q --- and it's making it tough.

19 We were talking about the AIHA

20 quarterly journal. I suppose that would have

21 been one of the resources that you would have
22 had available and would have been reading --
23 A Yes.
24 Q --- as the issues came out, to stay
25 abreast of new developments and also to educate

18

1 yourself?

2 A That's right.

3 Q The Industrial Hygiene Foundation is

4 an organization you are familiar with, isn't it?

5 A Yes, sir.

6 Q I'm thinking back at some point that

7 it was called the Air Hygiene Foundation of

8 America?

9 A It may have been. That was before my

10 time.

11 Q It might have been back in the '30's.

12 And I understand Dow had been a member of the

13 Industrial Hygiene Foundation from fairly early

14 on as you recollect. Is that true?

15 A Yes.

16 Q Is that an organization whose meetings

17 you also attended from time to time?

18 A Yes.

19 Q And they had at least one or more

20 regular publications, too, I think. Do you

21 remember those, Mr. Hoyle?

22 A The one that I remember best was the

23 industrial hygiene Digest.

24 Q I guess "Digest" describes it.

25 A Well

19

1 Q I mean it was a collection of little

2 abstracts from articles published in the field

3 from around the world, wasn't it?

4 A Yes, sir.

5 Q Was that something that was handy and

6 useful to you?

7 A It was a source of information;

8 useful, of course.

9 Q I guess it gave you a convenient way

10 of keeping up with developments in a lot of

11 different fields of industrial hygiene without

12 having to actually subscribe to the hundred or

13 more journals that they abstracted periodically.

14 A More importantly, you didn't have to

15 read all those journals - the articles that were

16 of interest.

17 Q And for the jury's benefit, then, this

18 Industrial Hygiene Foundation Digest would give

19 you just a little brief paragraph describing the

20 highlights of a new article on whatever the
21 topic might be --
22 A Yes, sir.
23 Q --- to where you could skim through
24 the Digest, look for the topics of interest.
25 And if it looked like it was worth pursuing,

20

1 then you could obtain a copy of the actual
2 article that was mentioned in the Digest. True?
3 A Yes.
4 Q Do you remember, Mr. Hoyle, if this
5 Digest was a resource that they had at Dow when
6 you began to do industrial hygiene work there -
7 which would have been in '48 again?
8 A Well, I remember seeing it early on
9 when I went to work there. Does that answer
10 your question?
11 Q I think so. It was there when you
12 began or at least --
13 A Or copies came across my desk sometime
14 soon after I got there.
15 Q Do you know which individuals from
16 Dow; if any, were connected with the Industrial
17 Hygiene Foundation - I mean as directors or
18 officers or something like that?
19 A Not any, to my knowledge, that I
20 remember.
21 Q Do you remember that the IHF was
22 organized that way to where individuals did
23 serve from outside companies?
24 A They had a board of directors - I
25 remember that - and officers. And I think these

21

1 people may have been from companies, but I don't
2 remember that there was any Dow involvement at
3 that level.
4 Q Do you recall that the Industrial
5 Hygiene Foundation was a foundation organized by
6 different companies, industrial companies, to
7 further industrial hygiene matters?
8 A I don't believe that I know how it was
9 organized. It was already there when I became
10 interested in the field.
11 Q But specifically during the 28 years
12 that you were doing industrial hygiene, you know
13 of no Dow employees who actually served as board
14 members?
15 A I can't remember any such circumstance.
16 Q Or any Dow employee who actually had
17 any position with the Industrial Hygiene

18 Foundation that you can recall?
19 A Not in any permanent position, no.
20 Q Now, I understand that the Industrial
21 Hygiene Foundation from time to time did
22 consulting work in the field.
23 A Yes, sir.
24 Q Do you recall Dow ever using the IHF
25 as a consultant?

22
1 A Not during my time at Dow did we use
2 them. Whether they were used before my arrival,
3 I don't know.
4 Q And I suppose other than going to the
5 annual meetings or the periodic meetings that
6 the Industrial Hygiene Foundation sponsored for
7 its members, you never went to any organizational
8 meetings?
9 A No. There were occasional symposiums,
10 I remember, that they had sponsored from time to
11 time.
12 Q That's a better way to describe it -
13 for the meetings. So, you went to the technical
14 symposia from time to time?
15 A Yes, I participated from time to time.
16 Yes:
17 Q But never had any connection with any
18 of the activities of the organization in terms
19 of how it was run --
20 A No.
21 Q --- or its policy settings or anything
22 like that?
23 A No.
24 Q What kind of connection, if any, did
25 you ever have with the American Congress of

23
1 Governmental Industrial Hygienists, the ACGIH?
2 A Well, they had their meetings
3 concurrent with the AIHA meetings. I had
4 contact with some of their members because the
5 State Health Department people were members of
6 that group; in Michigan, that is.
7 Q How was it, Mr. Hoyle, that you were
8 acquainted with the State Health Department
9 industrial hygienists in Michigan?
10 A Well, they had an industrial hygiene
11 unit in that group, and, therefore, they had
12 industrial hygienists whose job it was to
13 largely help industry maintain and create
14 healthful work environments. It was in that
15 context that I had my contacts with them. They
16 were called engineers.

17 Q Industrial hygiene engineers?

18 A I believe that's right.

19 Q Do you have any understanding of how

20 far back in time the Michigan industrial hygiene

21 unit goes in the State Health Department?

22 A Well, to 1948, I know, and before.

23 Q Did you ever hear that it was founded

24 back in the '30's or during the early '40's?

25 A I wouldn't doubt it at all, but I have

24

1 no specific recollection-of when it was started.

2 I know it was there when I got started.

3 Q Can you recall, Mr. Hoyle, any of the

4 gentlemen connected with that unit that were

5 around when you began doing industrial hygiene

6 at Dow?

7 A I have trouble with names, remembering

8 names. Always have. If I saw a list I could

9 pick them out, but I'm afraid I can't just

10 offhand name the people that I had contact with

11 over the years.

12 Q Nobody comes to mind at the moment?

13 A I can tell you his first name and

14 describe him to you. His first name was Russ,

15 and he was tall.

16 Q Tall Russ.

17 A Tall Russ, an engineer who had his

18 office in Saginaw, and I would see him

19 occasionally. He's one that comes to mind.

20 There was another fellow who was before

21 him who I can describe to you, but I can't even

22 tell you his first name. I can tell you that he

23 was a pilot and flew his own plane because I

24 remember he told me about that, and he left the

25 state service at the time Russ came to this area.

25

1 Q Do you recollect that any of these

2 gentlemen left the State Health Department and

3 went to work in industry?

4 A None of those that I know did. I

5 wouldn't be at all certain but that somewhere

6 along the way there might have been somebody

7 that did.

8 Q Did you ever do any projects with them

9 or consult with them on things at Dow?

10 A Not too often because they were usually

11 responding to complaints, and we didn't have many

12 complaints. That's the reason the contacts were

13 more in the line of our being source people, I

14 guess, to stop by once in a while and say,

15 "What do you know about such-and-such material?"

16 That was the context I remember.

17 Q So, often these state industrial
18 hygiene engineers would be relying on some of
19 the scientists at Dow for a little technical
20 expertise?

21 A I would hate to say they relied on us,
22 but I would say that our professional contacts
23 were such that there was an easy exchange of
24 information.

25 Q Did that work both ways?

26

1 A Yes, but I think they probably got
2 more than they gave because we had a toxicology
3 lab and they did not.

4 Q Did you have a local section in the
5 late 1940's for the Industrial Hygiene Association?

6 A Well, it wasn't the late '40's, I
7 don't think. I think it may have been in the
8 '50's. We tried for two years to have a local
9 section because in the wintertime it wasn't very
10 nice to drive to Detroit for meetings. But it
11 didn't work out - mostly I think because people
12 who were available for membership were mostly
13 Dow employees and we saw each other all day
14 anyhow. So it just didn't work out. But there
15 was a local section here for more than one year
16 and less than five. I don't remember exactly.

17 Q So, effectively, the local section was
18 the Dow personnel and --

19 A There were only a few others because
20 there were only a few others in the Saginaw
21 Valley.

22 Q And the state people you were seeing
23 informally from time to time anyway?

24 A That's right. I can't recall whether
25 Russ joined our group or whether he maintained

27

1 his membership in the so-called Michigan
2 Section.

3 Q Which would have been down at Detroit?

4 A Down at Detroit.

5 Q Did you go down there for any
6 meetings?

7 A Yeah, I did occasionally if the
8 weather wasn't too bad and I didn't have too
9 many things I had to do. I was a member of that
10 group and still am.

11 Q Did you make the acquaintance of Bill
12 Bradley from Detroit?

13 A Not in that context. I knew him at
14 AIH. He had already left Michigan by the time

15 he became an industrial hygienist, I think.

16 Q Yes, sir, that was his testimony:

17 that he left about the time the War began,

18 probably about the time you started at Dow,

19 actually.

20 A Yes.

21 Q Going to New York.

22 A Wasn't he with Cyanamid?

23 Q Yes, sir. Was Mr. Patty back in

24 Detroit when you started doing industrial 25 hygiene work in '48?

28

1 A He was, indeed.

2 Q I suppose you made his acquaintance.

3 A I did.

4 Q Somebody that you would see from time

5 to time in your professional activities?

6 A Generally at AIHA meetings or at the

7 Michigan meetings.

8 Q We were told that Mr. Patty and

9 Mr. Bradley were the founders of the Detroit -

10 or the Michigan Section.

11 A It sounds reasonable to me, but I

12 wasn't around, so ...

13 Q What company was Frank Patty working

14 with during the years you knew him?

15 A General Motors.

16 Q They are based down in Detroit, are

17 they?

18 A It's a suburb of Detroit where they

19 are now, so-called GM Tech Center, I think. I

20 don't know the name of the suburb.

21 Q Now, we were talking briefly about the

22 ACGIH, and I understood you to say that they met

23 at the same time or in the same city and in the

24 same week as the American Industrial Hygiene

25 Association for convenience sake.

29

1 A It was a concurrent session. People

2 from either group were welcome at the other

3 group's meetings.

4 Q Oh, okay. I didn't understand.

5 A And many of the ACGIH people were

6 members of AIHA. We didn't exclude them. They

7 excluded us.

8 Q The ACGIH consisted of industrial

9 hygienists who were not industrial employees?

10 A I believe they had to be governmental

11 employees of some kind.

12 Q That would also have included those

13 attached to universities, I suppose?

14 A I think so.

15 Q And you were able to attend their
16 meetings that took place along with the AIHA
17 meetings?

18 A Yes. If they had a session we wanted
19 to go to, we were welcome.

20 Q What sorts of things would they cover
21 in their sessions? Was it the same sort of
22 general industrial hygiene topics?

23 A They reported what they had been
24 doing, if what they had been doing had led to a
25 scientific publication, which was true of the

30

1 other organization, the AIHA.

2 Q Did you ever have any dealings with
3 their threshold limits value committee or its
4 predecessor, Mr. Hoyle?

5 A I was sometimes involved in
6 conversations, particularly where they were
7 considering materials that Dow made and handled,
8 where they wanted - were interested in our
9 industrial hygiene experience. That's the only
10 contact I had.

11 Q And you recall, don't you, sir, that
12 other Dow professionals or scientists also had
13 dealings with the ACGIH committees over the
14 years?

15 A In much the same way that I did.

16 Q In fact, there were at least a couple
17 of individuals that had been referred to as like
18 ex officio members of the --

19 A Just one that I know of.

20 Q Which one?

21 A Dr. Theodore Torkelson. It probably
22 would have been more accurate to call him a
23 source person than a member of the committee,
24 but he did act as a consultant to them. As an
25 individual and not as a Dow employee.

31

1 Q To the TLV committee?

2 A Yes, sir.

3 Q And didn't V. K. Rowe also do that
4 from time to time as you remember?

5 A Well, Torkelson worked for Rowe, and
6 he was in charge of the inhalation toxicology
7 laboratory. Of course, that's the laboratory
8 that generates the kind of information they
9 would have been most interested in - that
10 context, I'm sure.

11 Q Mr. Hoyle, could you give me some idea
12 or understanding of how the TLV committee of the
13 American Conference of Governmental Industrial

14 Hygienists would contact you and how the flow of
15 information or discussions would go when it
16 would happen that they would be interested in a
17 chemical that Dow was making or using?
18 A Well, there wasn't a formal procedure
19 that can be described. It was a matter of
20 personal contact and the question being asked.
21 The questions usually were, "What experience do
22 you have? What data do you have?" They were
23 interested in data. In my case they were
24 interested in what had we measured in the work
25 environment. In V. K.'s case they were interested

32

1 in whether the animal data - what the animals
2 said to us, in other words.
3 Q So that those of us here can
4 understand and the jury can understand, could.
5 you tell me, you know -- Who would it be from
6 the ACGIH that would contact you? I mean was
7 there an official committee and employees that
8 would make the contact or would it be some
9 individual who was working on a particular
10 material? I mean just how did it work? How
11 organized was it?

12 A They had a committee. These were all
13 volunteer people. They had no staff, so to
14 speak, and the contacts would - they could be
15 telephone contacts or whatever.

16 Q Letters were probably more common back
17 then.

18 A Well, I would say more common was just
19 through conversation - at an AIHA meeting as far
20 as my contacts would be concerned. The
21 telephone would be the second most likely.
22 I don't remember too many written requests.
23 I'm not sure but what there may have been some,
24 but I don't remember.

25 Q But if I am understanding you, then,

33

1 there would be committees of ACGIH members who
2 might be, let's say, looking at threshold limit
3 values. And as you perceive it, one or more
4 individuals on that committee might have the
5 responsibility to look into --

6 A I wasn't on the committee, so I don't
7 know how they assigned it. My contacts were all
8 with some one individual person. It would just
9 be playing guesswork. I would guess that they
10 probably would take assignments for a particular
11 material.

12 Q That was at least your perception of

13 it?

14 A Well, I don't know if I had a
15 perception. To be honest with you, I think
16 these were people that I knew who came and asked
17 for information. It was that simple.

18 Q They were volunteers that did this on
19 their own time?

20 A That's right. That's right.

21 Q And however they got the assignment -
22 whether it was personal interest or an actual
23 assignment from the committee chairman - an
24 individual might contact you and talk with you
25 at a professional meeting and say, "What can you

34

1 tell me about chemical 'X'?"

2 A That's right. And it was a matter of
3 contact between two people, both in the same
4 profession and both trying to assure safe
5 working conditions in industry. It was in that
6 context.

7 Q I appreciate that. So, they were
8 seeking data from the actual users of the
9 particular material?

10 A I presume that they were seeking data
11 anywhere they could find it, and certainly the
12 users were the ones - or the manufacturers were
13 the ones most likely to have measurements made
14 in the work environment, I would think.

15 Q Your experience certainly would
16 support that inference, wouldn't it?

17 A That's right.

18 Q And I suppose that, short of asking
19 for this data from tox labs or from your field
20 industrial hygiene surveys, the ACGIH really
21 didn't have much other way of obtaining this
22 information other than what would be in the
23 published literature. Would that be a
24 reasonable assumption?

25 A That's true.

35

1 Q Were there any times, Mr. Hoyle, when
2 Dow would actually go to one of the ACGIH
3 committees and say, "Fellows, we've got some
4 data on a new material we have developed. We
5 have some concerns about it," or, "We need to
6 handle it in a particular way to be careful,"
7 or, "It is more toxic than generally might be
8 believed"? In other words, where you would
9 actually take the first step and contact them
10 and say, "Here is some information on a chemical
11 we've been working with that you need to

12 consider in formulating the threshold limit
13 values for it"?

14 A I think that that may have happened.

15 I don't know all of the different ways that they
16 became interested in materials. I do know that
17 we did publish at Dow tox information on
18 materials as soon as investigations were
19 complete.

20 Q Well --

21 A I personally was not much involved in
22 that.

23 Q of course, you wouldn't have been
24 doing the toxicology work.

25 A I wasn't doing the tox. V. K. is the

36

1 one that I am remembering-what he and his people
2 did more than I did.

3 Q Do you recall publishing results of
4 field surveys, field measurements?

5 A Generally, no. Generally they were
6 not scientific investigations in the terms that
7 most editors look at scientific investigations.
8 We did make some publications, but in many cases
9 our investigations were to gather the
10 information that we needed. We didn't try to
11 keep anybody from getting it from us, but there
12 is industrial hygiene information unpublished
13 because it is simply not extensive enough to
14 satisfy an editor.

15 Q Yes, sir.

16 A That's what I'm trying to -- I'm
17 having trouble answering the question without
18 using a lot of words.

19 Q It's all right. I'm not doing a good
20 job of asking questions. I'm kind of nervous
21 now that Duncan has told his new lawyer here
22 that he's going to see a good job done.

23 MR. STUART: Well, I'm sure
24 he is.

25 Q What I'm getting at, though, Mr. Hoyle,

37

1 was how in your experience would field data or
2 industrial hygiene survey data regarding some
3 material get to the ACGIH if they didn't come
4 asking for it?

5 A We might have volunteered it at times.
6 I don't remember specific instances, so "yes" or
7 "no" I can hardly say. But I -- Certainly in
8 conversation when I was asked, I can remember
9 passing such data. I cannot remember a case
10 where we said, "My goodness, we'd better get

11 this to the TLV committee," not having found
12 many cases of that kind. But Torkelson, because
13 of his relationship, might have been a conduit
14 from time to time.

15 Q Again, because of the laboratory --

16 A That's right.

17 Q --- and the fact that they were --

18 A We worked closely enough with the
19 toxicologist so he would have had information
20 from our lab as well as his.

21 Q You had an industrial hygiene lab that
22 was in addition to the toxicology lab at Dow?

23 A Yes, sir.

24 Q How early on was that set up, sir?

25 A In 1948 with my advent to the scene.

38

1 Q You mean they made you the industrial
2 hygienist and then gave you a tox lab at roughly
3 the same time?

4 A Not a tox lab.

5 Q I'm sorry. I'm looking at what I had
6 written down. They made you the industrial
7 hygienist in '48 and equipped you with an
8 industrial hygiene laboratory then, too?

9 A Yes, sir.

10 Q Can you just briefly describe what
11 that consisted of in terms of space and
12 equipment?

13 A Yes. It was a one-room laboratory,
14 and the equipment was the kind of equipment that
15 you need to get air samples, for the most part.

16 Q So, you had sampling devices?

17 A Yes.

18 Q Like --

19 A Go ahead.

20 Q You go ahead and tell me what was
21 there. I'm just guessing. You know.

22 A Well, some of this equipment I should
23 have said was there because otherwise Adams
24 couldn't have done any industrial hygiene.

25 Q Sure.

39

1 A So formally having it separate
2 happened in 1948. Having some of the equipment
3 present was before that time. But there hadn't
4 been a specific laboratory for industrial
5 hygiene until they had an industrial hygienist.

6 Q So, you had counting equipment as well
7 as the sampling equipment?

8 A Yes.

9 Q Microscopes, I guess?

10 A Yes, sure did.

11 Q Were you using midget impingers back
12 in '48?

13 A We were using Greenburg-Smith
14 impingers which are big impingers. And as soon
15 as I got acquainted with midget impingers, we
16 started using midget impingers.

17 Q When did you obtain the Bausch & Lomb
18 dust counters?

19 A That was there when I arrived. Adams
20 had bought it.

21 Q Did you have any Zeiss konimeters?

22 A No.

23 Q Did you ever get one?

24 A No.

25 Q Did you have some sort of a device

40

1 around that time for sampling for vapors?

2 A Several.

3 Q Is there some sort of a spectrometer
4 device that is used for that purpose?

5 A Not for sampling, no.

6 Q What would you use to sample for
7 benzene vapors?

8 A Well, we used silica gel to a large
9 extent as a trapping agent.

10 Q Did you have to do the lab work
11 yourself in the beginning?

12 A Not the analytical part, no. Dow was
13 well established in the analytical business
14 before I arrived. I had to get samples that the
15 chemists could handle.

16 Q So, you'd grab them and they would
17 count them?

18 A As far as the counting is concerned, to
19 begin with I did count them. As time went along,
20 I got a lab called the microscopy lab, much more
21 sophisticated than I was. From a research point
22 of view they did some of ours. But as far as
23 the counting, using the cookbook that you had to
24 use in order to use the standard, we did it
25 ourselves.

41

1 Q At least back in the early years, huh?

2 A Yes.

3 Q Can you give me an approximate value
4 or number of how many times you think some
5 person from ACGIH TLV committee would have
6 contacted you about a material that you were
7 working with over the years?

8 A Oh, dear.

9 Q And it is very approximate, of course.
10 A It wasn't an unusual circumstance. I
11 was there for 30 years. I have difficulty
12 answering your question. I don't know.
13 Q Well --
14 A Was it --
15 Q --- certainly more than a few times?
16 A More than a few times, but certainly
17 not every day or anything of that kind, either.
18 Q Over 30 years maybe even as much as 100
19 times perhaps, given the years that were involved
20 and that it was a period of a lot of activity in
21 your field?
22 A Well, I hesitate to put any kind of
23 number on it. It was not unusual, I can tell
24 you that.
25 Q Can you recall that there were any

42
1 times when some ACGIH member contacted you about
2 a proposed revision, a change, of a threshold
3 limit value as opposed to the creation of a new
4 one for some new material?
5 A The change that pops into my mind
6 immediately is the change that was proposed for
7 asbestos, and I was not contacted because I was
8 not an expert - wasn't doing research in the
9 area is what I should have said. I was expert
10 enough to apply the standards, but beyond that I
11 was not involved.
12 Q Do you recollect, Mr. Hoyle, that the
13 standards for the different TLV's were revised
14 very frequently over those years you were
15 practicing?
16 A Not very frequently. There were that
17 I remember revisions. Vinyl chloride was
18 revised, just to name one. It pops into my
19 mind. I need to do a little research to help my
20 memory, I guess, to answer your question.
21 Q I guess we could go back and compare
22 the tables from year to year.
23 A One after another you would certainly
24 find it, that's right. But that there were a
25 lot of changes, that's not my recollection.

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1 Q And if we were to review the tables
2 from one revision to the next, isn't it so that
3 we would find some new materials added --
4 A Oh, yes.
5 Q --- for one thing?
6 A That's certainly true.
7 Q We would find a few revisions in a

8 standard for a particular material, such as you
9 mentioned with vinyl chloride ---
10 A I'm sure you would.
11 Q --- and perhaps benzene or some
12 others?
13 A Yes.
14 Q But when we speak of a revision of the
15 threshold limit values, there wasn't a wholesale,
16 across-the-board changing of standards for each
17 and every material or even more than just a
18 handful at any one time, was there?
19 A That's, I think, true.
20 Q And the proposed revisions of the
21 asbestos standard came roughly when as you
22 recall, in the '70's?
23 A No, I think we started hearing about
24 it in the '60's, the late '60's. These things
25 generally didn't happen on a Tuesday.

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1 Q You mean --
2 A It took years of discussion among the
3 professionals before changes were made,
4 publications, this kind of thing.
5 Q Would it have been the case,
6 Mr. Hoyle, that no ACGIH member ever contacted
7 you about lowering or changing the standards for
8 asbestos exposures?
9 A I don't recall ever being contacted
10 about that change.
11 Q Do you recall ever being contacted at
12 Dow about any proposed change in the silica
13 threshold limit value?
14 A No, I don't.
15 Q Do you recall ever being contacted
16 about a proposed change let's say in the benzene
17 standard?
18 A I think I had some conversations with
19 someone - I can't remember who now - about that
20 in terms of, "What kind of measurements for
21 benzene do you see in the environment?" But I'm
22 not sure it was a member of the threshold limit
23 value committee. It might have been T.orkelson.
24 Q Can you recall approximately what part
25 of a decade that discussion took place in?

45
1 A No, I don't.
2 Q Did you ever come across any
3 indication that any asbestos insulation
4 manufacturers had provided data to the ACGIH
5 TLV committee that would show the need to change
6 the standard for asbestos?

7 A Not being a member of the committee or
8 being involved with asbestos except as a
9 material that we bought, I would have been
10 surprised if I had, and I certainly don't
11 remember it.
12 Q Do you remember if any asbestos
13 insulation company ever came to you at Dow and
14 gave you any information that you could have
15 used to make better judgments about protecting
16 the people working in your plants from asbestos
17 exposure?
18 A My recollection is that we depended
19 upon the standards or, rather, the threshold
20 limit value and Patty's book pretty much. And I
21 don't recall having contact with any of the
22 suppliers.
23 Q What do you recall Dow doing to
24 prepare for the proposed change in the asbestos
25 exposure standard in the late '60's, Mr. Hoyle?

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1 A We initiated a study of the Dow
2 insulators to see what their exposures were - I
3 mean in some detail, because we wanted to know
4 whether we were satisfied already that we were
5 doing all right with the five million particles;
6 but we needed further information to see where
7 we would stand if it changed to two million
8 particles.
9 Q Was there a time when you or your
10 staff did some monitoring work for Dow Corning
11 employees?
12 A Yes, in response to a request from Dow
13 Corning. One of my industrial hygienists did a
14 study which was -- It's reported in detail in
15 one of the reports that was a part of my last
16 deposition.
17 Q Was it the case that Dow industrial
18 hygienists were available as consultants to Dow
19 Corning during any of the years you were there?
20 A Well, to any of the Dow associated
21 companies, not just specifically Dow Corning.
22 Q What other companies would that have
23 included that you can remember?
24 A Oh, there was a Dow-Smith, I believe,
25 Company that existed for a while, and then there

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1 was Dowell which was at times a separate company
2 and at times a division of the company.
3 Q Was Merrell Dow ever one of the
4 companies that your industrial hygiene section
5 ever provided services for?

6 A Merrell Dow didn't exist until years
7 after I retired.
8 Q What was the business of Dowell?
9 A They were an oilfield service company.
10 Q So I gather you did industrial hygiene
11 services for Dowell from time to time?
12 A I don't recall specifically that I did
13 when they were a separate company. From time to
14 time I had industrial hygiene contacts with
15 Dowell - I believe as a division of Dow.
16 Q Did any of the materials that they
17 handled include some that contained asbestos, to
18 your knowledge?
19 A Not that I recall.
20 Q You never did any sampling in
21 connection with the mixing of drilling mud?
22 A I did very little sampling in Dowell
23 at all - a little bit for HCL and some for an
24 organic solvent that I remember.
25 Q Did Dowell sell any products that had

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1 its own name on it?
2 A I don't know.
3 Q Mr. Hoyle, I thought that I was going
4 to find a resume with the exhibits from your
5 deposition done back in 1991 in Florida, and I
6 didn't. Have you prepared one or ever had one
7 over the years, a curriculum vitae or resume?
8 A No.
9 Q Have you published any articles, sir?
10 A My name is on quite a few articles.
11 Q I think you are dodging that bullet.
12 What --
13 A Well, that's the way -- Offhand I
14 don't remember specific articles. I think I
15 remember that - a list that may have been as
16 many as twenty where I was either the author or
17 an author, some of which were published in
18 scientific literature and some in trade journal
19 literature.
20 Q Do you --
21 A None of which had anything to do with
22 asbestos.
23 Q Do you have a list still of these
24 articles?
25 A No, I never -- I don't believe I ever

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1 kept a list.
2 Q Do you have any of your articles?
3 A No. When I left The Dow Chemical
4 Company, I left my files.

5 Q When you were a co-author, would it
6 more often than not have been along with some
7 other Dow scientists?
8 A Yes, always.
9 Q But none on asbestos, huh?
10 A That's right.
11 Q Any on any pneumoconiosis-causing
12 materials?
13 A No. No.
14 Q Any on any occupational carcinogens?
15 A Well, that's -- You'll have to define
16 "an-occupational carcinogen" for me. I don't
17 know how to answer your question in the absence
18 of such a definition.
19 Q Well, were there any where the focus
20 of the article was on the description of a
21 material that the authors --
22 A I don't remember that any of them had
23 that as an emphasis. Not to appear smart aleck --
24 Q No.
25 A --- vinyl chloride has been called ---

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1 Q Yes, sir.
2 A --- and I think maybe vinyl chloride
3 might be one where my name would show up as a
4 co-author in one article, but I'm not even sure
5 about that.
6 Q But the focus of that article was not
7 on the suspected carcinogenicity of that
8 material?
9 A No, it would have been different than
10 that.
11 Q That's the way I meant the question.
12 A And carbon tet is another one that
13 some people say is a carcinogen, and the
14 definition is important at this point. Is
15 anything a carcinogen because you can somehow or
16 other cause an animal to have cancer? Well, if
17 that's your definition, that is almost
18 everything that we worked with. Not all, but
19 many things that animals have been shown to be
20 able to get cancer from.
21 Q Up until 1976 when you retired from
22 Dow, do you recall that the company had
23 identified any particular materials as being
24 carcinogens?
25 A Dow materials, you mean?

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1 Q Either Dow materials or materials used
2 at Dow.
3 A I think that some had been -- There

4 were materials used that had been identified as
5 carcinogens - one in particular that I remember.
6 Q One material that had been used at
7 Dow?
8 A Yes. Not produced by Dow.
9 Q Which one would that have been?
10 A That was a tar that was used in
11 manufacturing electrodes. The electrodes were
12 then used at Dow.
13 Q In the chlorine --
14 A And magnesium.
15 Q And the magnesium unit? Can you
16 recall any other materials that were used at Dow
17 that you believed to be cancer-causing materials
18 before you left?
19 A I didn't even know if that tar was or
20 not. It was simply reported by another company.
21 Arsenicals have been identified, things
22 containing arsenic.
23 Q I thought you said "our cynicals." I
24 was wondering what a cynical was.
25 A Well, I am sometimes. And Dow did

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1 make a Paris Green a long time ago.
2 Q And Paris Green?
3 A That's a material used to kill bugs,
4 barely better than swatting them. There are
5 old-timers that would take issue with me on that
6 last statement. I meant it as a smart remark.
7 I forgot where I was for a minute.
8 Q It may have been the best thing they
9 had at the time.
10 MR. ALMQUIST: We've been
11 going for an hour. This might be
12 a good time for a short break
13 here.
14 Q In these twenty or so articles that
15 your name appears upon, some of which I guess
16 you were the sole author on --
17 A Yes.
18 Q --- would I be correct in believing
19 that what you wrote in those articles was
20 truthful and based on the best information that
21 you had available at the time and accurate in
22 all respects?
23 A I have never done anything on any
24 other basis. I have never been asked to be
25 anything but honest, and I have never been

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1 anything but honest.
2 Q And your expressions of opinions in

3 any of these articles would in fact be your
4 honest opinions based on your education and
5 training and experience and your research?

6 A And information available to me, yes,
7 sir.

8 MR. BLANKS: Thank you.

9 We'll take a brief break.

10 (AT THIS TIME A BRIEF RECESS
11 WAS TAKEN, AND THE PROCEEDINGS
12 THEREAFTER RESUMED AS FOLLOWS:)
13

14 (By Mr. Blanks)

15 Q Mr. Hoyle, do you recall a gentleman
16 named L. J. Richards from Dow from the late
17 '40's or anytime in the '40's?

18 A I do.

19 Q Do you recall him in the role of chief
20 engineer during part of that time?

21 A Yes, sir.

22 Q Did you ever work with that gentleman?

23 A No.

24 Q What generally would a chief engineer
25 have done in the early '40's?

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1 A I guess he would have been in charge
2 of the Engineering Department. I don't know
3 that much about it.

4 Q Were you ever working in the
5 Engineering Department?

6 A No.

7 Q So, when you were doing like your
8 estimating work for --

9 A That was another department.

10 Q What department would that have been,
11 construction?

12 A It was called the Standards
13 Department.

14 Q I guess I'm confused with the titles.
15 They don't seem to be descriptive to my frame of
16 reference. What were you doing in the Standards
17 Department?

18 A I was a pipe shop estimator.

19 Q Okay, and you were estimating
20 quantities for purposes of what, buying
21 materials, fabricating?

22 A The estimates were in terms of how
23 much time, how much material, what would the
24 cost be.

25 Q To do what?

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1 A A specific job.

2 Q Were these maintenance jobs or new
3 construction jobs or what?
4 A Maintenance.
5 Q So, you were doing the task that we
6 would associate normally with, say, a
7 construction estimator who would be doing a
8 material takeoff and making time estimates to
9 do a particular task, like you would be doing if
10 you bid a job for maintenance or a construction
11 project?
12 A Yes.
13 Q But this was being done for internal
14 purposes --
15 A Yes.
16 Q --- to budget and plan?
17 A Yes.
18 Q I see. And this was in the Standards
19 Department?
20 A That was the name of the department
21 that I was in.
22 Q What else did the Standards Department
23 do?
24 A Well, they set standards. They had
25 time study functions there.

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1 Q So, your time -- Let's see. The
2 industrial engineering type of --
3 A That's right.
4 Q --- time motion study work?
5 A That's right. Those standards were
6 basic to my estimating.
7 Q Did the Standards Department also do
8 anything to set standards for maintenance?
9 A Not to my knowledge. I worked there
10 in the summer.
11 Q That was your summer job?
12 A Uh-huh.
13 Q Okay. Could you tell us what
14 department in Dow in the early '40's, if there
15 was one, would have been the one that would have
16 written the specifications for materials used in
17 the plant, such as thermal insulation?
18 A I would think that that was the
19 Engineering Department.
20 Q I was thinking that, too.
21 A I have no specific knowledge to answer
22 your question. I should have answered it
23 differently perhaps because I don't really know.
24 Q Well, you answered me that you think
25 it was the Engineering Department.

1 A I would have guessed that it was.
2 That's the best I can do.
3 Q Do you have any recollection or
4 information that would suggest that at some
5 later period of time at Dow this responsibility
6 was with some other department than Engineering?
7 A No, I have no knowledge of any.
8 Q What kind of dealings did you have
9 with Mr. Richards back in the '40's?
10 A With Mr. Richards in the '40's, none.
11 Q But you did know him to be the chief
12 engineer?
13 A I did.
14 Q Including say around 1942 when you
15 began full-time work with the company?
16 A In 1942 I didn't know that he existed,
17 I suspect.
18 Q Do you have any recollection of when
19 Mr. Richards retired from the company?
20 A I know that he retired. I don't
21 remember when.
22 Q Before you did, I suppose.
23 A Sometime before.
24 Q Do you recall ever seeing in your
25 library or offices at Dow a copy of The Asbestos

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Worker's Journal?

A No.

Q This was not one of the regular
4 publications that came to Dow in any of the
5 offices you were in?

6 A No. I have never heard of it until
7 you mentioned it.

8 Q Do you have any idea whether Mr. Richards
9 is still living?

10 A I believe he is not.

11 Q During your years as the industrial
12 hygienist, did Mr. Richards ever pass on to you
13 any information that he had received from any
14 insulation companies about their products, their
15 suspected or potential toxicity, or that sort of
16 thing?

17 A No.

18 Q So, your recollection is that you
19 found no correspondence there in your office
20 from any of the asbestos or other insulation
21 manufacturers with whom Dow might have been
22 doing business in the '40's?

23 A I don't recall any communications that
24 fit your description you just named.

25 Q Did you inherit any industrial hygiene

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1 files when you took on the job of industrial
2 hygienist in 1948?

3 A There were files.

4 Q These would have been files that would
5 have been developed by your predecessors in that
6 field?

7 A Yes.

8 Q Dr. Adams?

9 A Specifically.

10 Q What did they amount to generally?

11 Were they survey reports or technical literature
12 or memos from the Safety Department? Could you
13 give us a feel for the flavor of it?

14 A The part of the files that I had
15 reason to look at were reports of surveys.

16 Q Do you recall any kind of a file or
17 technical literature that would have been kept
18 in the -- Well, you didn't have an Industrial
19 Hygiene Department before then, but in those
20 offices apart from what would have been your
21 technical library or central index system?

22 A Well, there was no industrial hygiene
23 when I got there. There was toxicology, and I'm
24 sure there were files.

25 Q Focusing on the technical literature,

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1 though, was it the practice back in the late
2 '40's when you became industrial hygienist for
3 your colleagues to tear out articles and keep
4 them in a file at hand, or was it simply you
5 kept the journals on a shelf in some place that
6 would be accessible?

7 A I don't recall ever tearing out
8 articles and filing them.

9 Q You kept the whole journal?

10 A We didn't have extensive journal
11 files, I don't believe. I don't remember
12 tearing any out.

13 Q By the same token, you didn't throw
14 away like the AIHA quarterly. Those were
15 references you kept?

16 A Those were kept.

17 Q Did you ever play any part in the
18 drafting or revising of plant safety manuals,
19 just a general safety handbook for Dow
20 personnel?

21 A Only as a source person. I never
22 wrote any of them.

23 Q Which department had that
24 responsibility?

25 A The Safety Department.

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1 Q And whenever a manual might have been
2 written for contractor employees, would that
3 also have been under the Safety Department?

4 A Yes, sir.

5 Q So, some person from the Safety
6 Department might come to you when it was time to
7 revise a manual and ask you some specific
8 questions or ask you for comments or what you
9 thought might go into it?

10 A Yes.

11 Q Was this revising of the manual
12 something that happened on a regular basis or
13 was it just whenever the whim struck or somebody
14 got around to doing it? How do you remember
15 that, sir?

16 A I don't remember.

17 Q It's not a chore you were faced with
18 on an annual basis?

19 A It doesn't stand out in my mind in
20 terms of the calendar, no.

21 Q Do you remember ever being asked to
22 review the safety manual or handbook to suggest
23 changes in any parts of it?

24 A Well, not in total; but I have acted,
25 as I said, as a source person to the safety

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1 engineers as they went about their job.

2 Q Would that consist of maybe reviewing
3 a section on respiratory protection or something
4 like that and making editorial comments for
5 their benefit?

6 A Respiratory protection would have been
7 an area where I might have been asked to either
8 review - or specific questions. I don't recall
9 in detail enough to answer better than that. I
10 might have been asked a question or I might have
11 been asked, "Hey, read this over and see what
12 you think of it." I don't remember which.

13 Q When you determined with the Bausch &
14 Lomb counter that the asbestos dust levels in
15 connection with the sawing and the tear-off of
16 asbestos insulation were higher than you wanted,
17 you made a recommendation about respiratory
18 protection, I think.

19 A Uh-huh.

20 Q And what generally did that amount to?
21 What was it?

22 A I don't know exactly how that was
23 finalized, as I have testified before. It is a

24 report that I should have written and apparently
25 I didn't, and I am embarrassed about not having

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1 done it. However, I suspect that the whole
2 thing was taken care of over the telephone
3 inasmuch as it didn't go through our regular
4 procedures with the safety engineer in question.
5 And it was a rather minor thing that could
6 easily have happened that way because I was
7 telling him, "There are two parts to the job
8 where we think they ought to wear respirators,"
9 and that's all I had to tell him.
10 Q And the two parts were the sawing of
11 the insulation?
12 A The sawing of the material and the
13 tear-off, as I recall.
14 Q Now, if I understood what you said a
15 moment ago, you were suggesting that you didn't
16 think there was a written report of this
17 sampling that you did and a recommendation?
18 A It did not show up when the files were
19 searched for things having to do with asbestos.
20 I know no more than that about it.
21 Q What you know is apparently it wasn't
22 found during a review of the files?
23 A That's exactly what I know.
24 Q You may have actually made a written
25 report?

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1 A If I did, it's lost. I don't know.
2 Q I think you told us that all the
3 written reports that Industrial Hygiene did make
4 were or should have been filed --
5 A They were.
6 Q And up through the time of your
7 retirement, certainly all of these old industrial
8 hygiene reports that were filed were kept?
9 A That's right.
10 Q And this particular sampling effort or
11 monitoring project with the Bausch & Lomb
12 counter that led to the recommendation for the
13 use of respiratory protection during sawing and
14 tear-out was done in the late '50's? Is that
15 your recollection?
16 A That's my recollection, sometime in
17 the '50's. Probably in the late '50's is the
18 way I think I stated it before.
19 Q Do you recollect whether or not in the
20 late '50's there was at Dow some sort of a data
21 sheet that dealt with asbestos-containing
22 insulation products?

23 A We had industrial hygiene data sheets
24 that we -- And I believe that by the late '50's
25 we had invented this little tool. My recollection

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1 of the date on the one that had to do with
2 asbestos isn't good enough that I can tell you
3 what the date on it is. I have seen the data
4 sheets, so if you want to know, it could be
5 looked up. I think it's in the late '50's:
6 '57, '58, something like that. But it might
7 have been a little later than that.

8 Q Let me make sure that I understood
9 you, sir. You said something about inventing
10 this little tool. I guess you meant the use of
11 the data sheet?

12 A The data sheet itself was a device to
13 report information to knowledgeable people.

14 Q So, this was a reporting form that was
15 developed in Industrial Hygiene or Toxicology or
16 both, I guess, together?

17 A Yeah, that's right.

18 Q As a format to report information to
19 the people at Dow that needed to know?

20 A That needed to know.

21 Q About the hazards and the toxicity of
22 specific materials or products --

23 A Yes, sir.

24 Q --- that would have been in the plant?

25 A Yes, sir.

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1 Q And you're saying that you all began
2 doing this you think in the late '50's?

3 A I rather think that's true.

4 Q And I think my question that led to
5 this discussion was do you remember that data
6 sheets were done, then, around that time in the
7 late '50's for asbestos-containing insulation
8 products or did that come later?

9 A I believe it would have been a little
10 later.

11 Q Do you think that there were any
12 asbestos-containing products that were covered
13 on a data sheet early on; that is, in the late
14 '50's?

15 A I would have to go and look. I can't
16 tell you for sure.

17 Q Where would one look for these?

18 A Well, I believe they are in the
19 exhibits associated with my former deposition.

20 Q Is it your understanding, Mr. Hoyle,
21 that those data sheets that were attached as

22 exhibits to your February 1991 deposition were
23 the only ones that could be located by Dow on
24 asbestos?

25 A I wasn't involved in the search because

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1 I was retired, so I can't answer that question.

2 I can tell you that they were the ones that were
3 presented to me to look at at the deposition.

4 Q That is, those were the ones that the

5 Dow lawyer brought to the deposition?

6 A That's correct. I had nothing

7 whatever to do with getting the collection

8 together. I don't know how it was done.

9 Q You didn't get to go look through the

10 old files?

11 A I didn't know that I was supposed to,

12 and I would have probably objected to it. I'm

13 sorry.

14 Q No, I'm not suggesting that you were

15 supposed to. But you didn't have anything to do

16 with the search for them?

17 A No, nothing. That's what I'm trying

18 to say.

19 Q Were you told that these particular

20 data sheets that ended up being exhibits to your

21 1991 deposition were the only ones that could be

22 located; that there were no others that were

23 found?

24 A I don't remember that I was told

25 anything one way or the other.

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1 MR. ALMQUIST: Let me

2 caution you, Mr. Hoyle. If you

3 start being asked questions that

4 deal - that require you to talk

5 about conversations with Dow's

6 attorneys, then I'm going to

7 instruct you not to reveal the

8 content of any of those

9 conversations.

10 THE WITNESS: Okay.

11 Q When the data sheets were prepared on

12 asbestos-containing materials at Dow, whenever

13 that was - and I suppose we are now necessarily

14 referring to ones that you have seen lately, the

15 ones that were exhibits to your deposition - did

16 the toxicity information about asbestos come

17 from the Toxicology Department or the Industrial

18 Hygiene Department or do you recall?

19 A Both groups would have had a look at

20 the data sheets, so it could have come from

21 either place.

22 Q Where would the author ordinarily be?

23 Who would typically be the author or the little

24 division responsible for drawing them up?

25 A In a certain sense I suppose I should

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1 say that both, because one side of the data

2 sheet was toxicological properties and the other

3 side was proposed precautions.

4 Q So, Industrial Hygiene would have had

5 the precaution side --

6 A Yes, sir.

7 Q --- and the Toxicology people would

8 have had the other part?

9 A Yes, sir.

10 Q Was there a system in place to

11 generate these data sheets? Could you give us a

12 sense of that?

13 A Talking about --

14 Q Talking about early on when you began

15 this --

16 A You mean what triggered the data sheet

17 being made in the first place? Is that what

18 you're asking me?

19 Q Let me rephrase and start over.

20 A Please.

21 Q First of all, what triggered or led to

22 the decision that there would be data sheets at

23 all on potential toxic materials?

24 A This could happen if there was an

25 investigation in the toxicology laboratory that

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led to knowledge. When the report was written,

a data sheet would have been initiated.

Q Let me interrupt and try again so we

4 go in a sequence.

5 A Yeah.

6 Q My first question would be what was it

7 that you remember, Mr. Hoyle, that led to this

8 decision to actually do data sheets at all, to

9 create the form and use that as a way of

10 communicating with your folks at Dow?

11 A That came about because of a felt need

12 by me to interpret the information available in

13 a way that it would be useful to the line

14 supervision who had the responsibility for the

15 safety of the people that worked in their

16 departments.

17 Q So, you perceived a need to have some

18 way to give specific safety information to the

19 line supervisors so that they could take care of

20 their folks?

21 A That's right.

22 Q In a format that would be consistent

23 and familiar to them?

24 A That's right.

25 Q Concise and easy to use?

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1 A That's right.

2 Q Now, I guess this innovation preceded

3 what are now commonly called material safety

4 data sheets. That term had not come into wide

5 use?

6 A That terminology had not been -- That

7 came from OSHA, as I recall.

8 Q What was it, then, that would lead you

9 to prepare or have prepared a data sheet on a

10 particular material? That brings us back to

11 where we were a moment ago.

12 A And I have answered it, partly by

13 saying that if a sample was investigated in the

14 toxicology laboratory, that when the report was

15 written a data sheet would be initiated as a

16 part of that. And the other way -- There were

17 two ways that should be mentioned here. The

18 other way was by activity of the industrial

19 hygiene group, because our first step - or one

20 of our first steps was to inventory all of the

21 materials in a particular work environment before

22 we started to investigate the degrees of exposure.

23 If we didn't have data sheets for all of the

24 materials, then we went about whatever we had

25 to do to initiate one to get information.

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1 Q I suppose at the beginning in the late

2 '50's you had rather a large task of creating

3 data sheets for a lot of different materials.

4 A As fast as we did inventories, as fast

5 as we did our job, then that department would be

6 covered.

7 Q Like so many systems, it's a lot

8 easier to maintain it, once it is in place. But

9 the creating of it would have been very time

10 consuming?

11 A Well, it took a while.

12 Q And you have said that you did

13 inventories, then, as part of this process of

14 creating data sheets?

15 A Which simply means that we have a list

16 of the materials in that work environment,

17 whatever the process.

18 Q In the late '50's, this process of
19 getting inventory from each unit or each plant
20 unit, would this have been the first time that
21 Industrial Hygiene had actually obtained an
22 inventory of materials from the plants at Dow?
23 A Well, the data sheets followed the
24 commencing of industrial hygiene. We didn't
25 have data sheets in 1948. So the answer is

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1 that there were inventories done prior to the
2 data sheets.
3 Q Let me try my question a little better
4 because I have confused both of us, I think.
5 When you became the industrial
6 hygienist in 1948, did you set out then to do
7 inventories of all of the units or were you just
8 dealing with problems as they were thrown at you
9 or a little bit of both?
10 A There were inventories for some
11 departments where Adams had already been when I
12 got there.
13 Q So, he had already done some?
14 A That's right; not too many, but there
15 were some.
16 Q And you continued that process?
17 A We continued it to the day I retired.
18 Q I guess I was picturing sort of an
19 initial inventory.
20 A No, we didn't get it done all at one
21 time.
22 Q So, over the course of that decade,
23 your first decade as industrial hygienist from
24 1948 to the late '50's when the data sheets were
25 devised by you and came to be created, this task

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1 of inventorying the stressors and the potentials
2 for toxic exposures in the Dow facilities were
3 just continued over that whole period?
4 A Yeah, it was an ongoing thing. There
5 was no end to it.
6 Q But then in the late '50's when you
7 began to prepare the data sheets, you
8 specifically requested from the production units
9 a current list of all materials that they were
10 using in the plant so you could assess them for
11 the need for data sheets?
12 A The need for the data sheet was the
13 presence of the material on the site.
14 Q And the inventory from the unit gave
15 you --
16 A Gave us that information.

17 Q About what was on the site?

18 A Yeah.

19 Q And I suppose you looked at those and
20 decided which ones needed the highest priority?

21 A We did put priority on it, yes.

22 Q And got on the worst ones first and
23 worked your way down to the less serious ones?

24 A Uh-huh.

25 Q And then, as new materials were

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1 developed or put into use, then those you would
2 do along with the toxicological work that
3 accompanied every new product or material that
4 was used in the Dow plant or put into a Dow
5 product; is that right?

6 A That's a pretty good description.

7 Q I mean it was the case that Dow was
8 doing toxicological research work on all of the
9 materials that it sold?

10 A Well, now, that's not quite true,
11 although almost, I guess. The samples are
12 usually sent in when the thing was still in
13 research as far as products are concerned, and
14 there are many data sheets for materials that
15 never --

16 Q Never made it.

17 A --- very much beyond the eye of the
18 researcher.

19 Q So, the company's approach was
20 actually to investigate the toxicity of the
21 materials --

22 A Right at the start.

23 Q --- before they even decided that they
24 would make a product ---

25 A Oh, yeah.

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1 Q --- and sell it?

2 A Sure.

3 Q Why?

4 A Well, it's basic information to decide
5 whether it is a suitable material to be sold.

6 Q You mean whether it would be safe for
7 people to use?

8 A Yeah, that's right. You wouldn't want
9 to spend a lot of effort developing a material
10 that couldn't be used.

11 Q I gather it was also, then, the Dow
12 philosophy not to sell materials that couldn't
13 be safely used?

14 A That's true. I think I should say
15 that a little differently.

16 The philosophy was to have information
17 available to the people who would use the
18 materials so that they could safely use it. We
19 weren't in the business of developing their
20 techniques for handling.
21 Q But at least part of your business was
22 telling them about the hazards they would face --
23 A That's right.
24 Q --- when they did handle the material?
25 A That's right.

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1 Q Was this something that Dow started
2 doing late in your career when the OSHA
3 regulations came in?
4 A No. This started with Don Irish's
5 arrival on the scene in 1934 and developed from
6 that. The history is that Toxicology preceded
7 Industrial Hygiene.
8 Q But it's been part of the Dow product
9 development program since the mid '30's?
10 A Well, yes, to an increasing extent in
11 its facilities. That's true.
12 Q To your knowledge was health and
13 safety information about Dow products - that is,
14 products Dow made and sold - was that ever
15 withheld from Dow's customers?
16 A Quite the contrary: It was not
17 withheld. It was made a part of sales
18 literature.
19 Q So, the information actually went out
20 with the products or with the literature that
21 accompanied the sale of the products?
22 A Frequently, if not every time. I
23 presume every time if it presented any
24 particular hazard.
25 Q Did Dow do anything in the way of

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1 following up in the field with some of its
2 customers?
3 A Sometimes.
4 Q To help them to safely handle the Dow
5 products that were being used by the customers?
6 A Yes.
7 Q Did you, yourself, go out on some
8 industrial hygiene --
9 A Oh, yes.
10 Q --- surveys with customers?
11 A Yes.
12 Q And what was the idea behind this?
13 Why was this done?
14 A Well, it was our -- The reason that I

15 had a job was to help make certain that we had
16 available information that would allow people to
17 manufacture the material and use the material
18 safely, and also so we would have the
19 information so that the neighbors would not be
20 adversely affected. That's the three things I
21 was told. That's basically the philosophy, and
22 so all that you are talking about grew out of
23 that philosophy, I guess.
24 Q Surely you approached your own work
25 force with the same attitude of keeping them

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1 well informed about the potentials for harm --
2 A Yes.
3 Q --- that they could encounter at work?
4 A That's right.
5 Q How did you put in the hands of the
6 people that would be working with asbestos
7 insulation in the late '50's this information
8 about the need to use respiratory protection
9 while sawing insulation or while tearing out old
10 insulation, such as they might be doing during
11 maintenance work?
12 A It was presented at safety meetings
13 for the pipe coverers.
14 Q So, the approach was, then, for a Dow
15 safety man armed with the information that you
16 had provided and your recommendations to
17 actually meet with the insulators - the pipe
18 coverers as you called them?
19 A Either that or the foremen. Safety
20 meetings didn't always have a safety engineer
21 present, but the safety engineer would have been
22 the source person for the foremen.
23 Q So, the new rule of "always use a
24 respirator when you are cutting insulation or
25 when you are tearing it out" would have gone from

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1 Industrial Hygiene down to the Safety Department
2 and then been relayed to the men actually doing
3 that work through safety meetings?
4 A Yes.
5 Q Would this rule also have been put
6 into the safety or work manual?
7 A I don't know that they had a work
8 manual. This causes me to think of a thick book
9 of some kind or other. I don't remember that
10 kind of thing. There may have been in some
11 places.
12 Q The only examples I have with me of a -
13 Maybe "work manual" is the wrong term. I've got

14 one called like "safety rules and regulations,"
15 for instance.
16 A The Texas Division.
17 Q Yes, sir.
18 A Well, there were safety rules and
19 regulations booklets which covered general
20 safety items that I remember. I don't know what
21 is in that one.
22 Q But you would call this -- Would this
23 be like the safety book? I mean how would you
24 commonly refer to it at the company, safety
25 manual?

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1 A I don't ...
2 Q I just wonder what your terminology
3 was.
4 A The one that I'm acquainted with at
5 Midland was a thing you could put in your
6 pocket. There was just "Safety" on the outside
7 of it, as I recall.
8 Q Do you recall that there were special
9 handbooks or manuals for the different trades
10 that worked at Dow, such as pipe coverers; that
11 is to say, insulators of pipes?
12 A There were things called key points
13 cards which I think are what you're talking
14 about, and these described the things that
15 needed to be done to do a specific job safely.
16 Q So, they had a safety focus to them?
17 A That's right.
18 Q As opposed to a, "Here's how you fit
19 the insulation or cut your pipe"?
20 A That's right.
21 Q And these key points cards were also
22 specific to different trades or tasks?
23 A Yeah. Generally they were task-oriented,
24 I think.
25 Q Do you recall, Mr. Hoyle, if there were

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1 any kind of special training programs for
2 particular crafts or craft lines in Dow during
3 any of the years that you were there?
4 A I wouldn't have had much reason to
5 know about it after I left the Safety
6 Department, so I don't know the history of it at
7 that point.
8 Q Did you come across any such things
9 before you left the Safety Department?
10 A We had safety meetings.
11 Q I was thinking more in terms of a
12 little training program or course for particular

13 crafts, like an insulator training program or a
14 pipefitter training, that sort of thing.
15 A Well, they had something that they
16 called a tailgate meeting which was before they
17 started the job, they reviewed their key points
18 cards and talked about how they were going to do
19 the job. That was commonly done.
20 Q You mean like before they would start
21 on a particular little maintenance project --
22 A That's right.
23 Q --- they'd take a look at the hazards
24 they would be facing?
25 A That's right.

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1 Q And the approach to it?
2 A That's right.
3 Q But, stepping back a pace or two from
4 the safety issue, do you recall if there were
5 any training manuals used at Dow to train
6 apprentices in a particular craft?
7 A I was never closely enough connected
8 with that vehicle to be able to speak to it.
9 Q And, certainly, if there were such
10 things, at least you in Industrial Hygiene
11 didn't have any input into those that you knew
12 of, I guess?
13 A We were source persons, and our input
14 would have been upon request, if they felt a
15 need for it.
16 Q Sure. And you just don't remember
17 being requested for any help with training
18 manuals, if there were any?
19 A I had -- I guess I just can't
20 remember. I just can't remember specifically at
21 that point.
22 Q Do you remember if there was anything
23 in the nature of actual specifications for
24 thermal insulation materials to be used in Dow
25 plants; whether it was hot or cold or what have

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1 you?
2 A That's a question for the Engineering
3 Department. I don't know. Not that I ever had
4 anything to do with. I didn't write specs, is
5 what I'm trying to say.
6 Q Okay. No --
7 A Nor did it enter into my job much.
8 Q So, even in doing your inventory of
9 materials in the units, you don't recall coming
10 across any kind of specs for, say, a particular
11 kind of insulation?

12 A We would have been looking for
13 specific materials, not the purpose of the
14 material being there. It wouldn't have been
15 very pertinent to us.
16 Q I was just thinking of it in the
17 context that maybe the specification sheet would
18 say the contents or the ingredients of such-and
19 such --
20 A Whether we ever looked at one of those
21 or not, I can't tell you. We would have if we
22 had thought it was of any use to us.
23 Q Were there some materials that were
24 used at Dow for which Dow did not rely on the
25 ACGIH published threshold limit values that you

85

1 can remember?
2 A We had a good many materials that had
3 not yet reached the threshold limit values list,
4 lots of them.
5 Q Did you develop your own --
6 A We did.
7 Q --- standards or limits for those
8 materials?
9 A We did.
10 Q What did you do at Dow to validate or
11 increase your comfort level with the in-house
12 standards for materials that hadn't yet been
13 published on the ACGIH list?
14 A I don't know quite how to answer your
15 question, I guess.
16 Q I guess it goes to --
17 A What is it you are looking for?
18 Q Tell us how you would actually come up
19 with a value to put on your own - your in-house
20 threshold limit figure.
21 A That I can tell you. That was - would
22 have been supervisory people from Medical,
23 Toxicology, Industrial Hygiene and Safety. They
24 would have met together with all of the
25 information we could get together in front of

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1 us, and we would have come to a consensus.
2 Either that or the decision that we could not
3 come to a consensus, and then we would have to
4 find more information. How do you do that? The
5 toxicology laboratory has got some more work to
6 do, or you go back to the supplier if it's an
7 outside material.
8 Q And the data from the toxicology lab
9 would be in the form of results of animal

10 testing --

11 A That's right.

12 Q --- for the most part?

13 A That was their contribution, was

14 meeting that problem.

15 Q So, you would be looking to see

16 perhaps how much of a concentration of a

17 particular particulate or vapor would have a

18 noticeable detectable effect on the laboratory

19 animal and try and generalize from there?

20 A And from that you would come to a

21 number that suited everybody in that group.

22 Q Applying, I suppose, a good dose of

23 margin for error and safety factor in order to

24 reach the final number?

25 A Of course. Safety factors depend on

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1 how good your data is and how serious the

2 consequences are if you mess up.

3 Q Now, since that's the way you would

4 establish a threshold limit value --

5 A Yeah.

6 Q --- I suppose you would use similar

7 steps, similar experiments and information, if

8 you wanted to revisit a particular value and

9 consider making a change in it?

10 A As further information became

11 available, then changes were made accordingly.

12 Q Were there any times when you took the

13 published threshold limit value figure for a

14 material and, based upon your own experience,

15 determined that that was too high and you were

16 going to use a lower standard at Dow? You were

17 going to set the limits down at a lower level

18 because you wanted more of a safety factor or

19 more of a margin for error?

20 A No, I don't remember any. There may

21 have been, but I don't remember any. I don't

22 think there were.

23 Q Certainly you had the capability in

24 your laboratory and with the competent people

25 that worked there to look at any of those

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1 materials that you wanted to --

2 A That's right.

3 Q --- and run your own experiments --

4 A Yeah.

5 Q --- and kind of validate whatever the

6 ACGIH had come up with?

7 A That's true. We could have, but I

8 think we seldom changed those numbers. You see,
9 those were industry wide consensus figures, to
10 begin with. Unless we had reason to actually
11 look at those - I mean to test those materials,
12 I can't imagine what you are describing as being
13 the case.

14 Q I mean you could have had serious
15 adverse health effects at exposure levels that
16 were near the limits or close to them.

17 A We could have, but we didn't have. To
18 my knowledge we didn't have.

19 Q But I mean had you had health effects
20 at or below the published threshold limit
21 values, that would have been a sign to you that
22 you needed to revisit that value?

23 A We would have taken immediate action.

24 Q Just so it's clear, having found
25 evidence that there were cases of disease at

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1 below the threshold limit value would have made
2 you as the industrial hygienist at Dow want to
3 move your exposure level down to a lower point?

4 A Our position was we wanted to use the
5 best information available to us to ensure
6 safety in the work environment.

7 Q And that kind of information, cases of
8 disease at the threshold limit value or below
9 the --

10 A That kind of information.

11 Q --- that would have required a
12 response, in your judgment?

13 A That's right.

14 MR. BLANKS: Could we
15 suggest that this is a good
16 lunchtime?

17 (AT 11:58 A.M. A RECESS WAS
18 TAKEN FOR LUNCH. AT 1:22 P.M.
19 THE DEPOSITION RESUMED AS FOLLOWS:)
20

21 (By Mr. Blanks)

22 Q So, Mr. Hoyle, welcome back from what

23 I am sure was a delightful lunch.

24 A Thank you.

25 Q We were visiting about threshold limit

90

1 values and cases of disease at or near the TLV
2 level and so on when we recessed. And I was
3 reminded that I think you had said the decision
4 making at Dow in the Industrial Hygiene
5 Department depended to a large extent on the
6 MAC's, the maximum allowable concentration

7 values and later the threshold limit values.
8 A We were guided by those guides, yes.
9 Q And where there wasn't a guide, you
10 made your own based on the research done in your
11 labs?
12 A And the opinions from the Medical and
13 Safety Department and Industrial Hygiene.
14 Q And I am recollecting that the Medical
15 Department did relate closely to the activities
16 of the Industrial Hygiene Department and the
17 Safety Department - I mean where the interests
18 were the same. You had access to the Medical
19 Department for support?
20 A Yes.
21 Q And I guess they would --
22 A And vice versa.
23 Q --- call on you from time to time.
24 Now, what is your earliest and best recollection
25 of there being a medical monitoring program at

91
1 Dow for workers potentially exposed to any
2 particular toxic material?
3 A The physical examination program, as
4 it was known, developed over time, I think, all
5 the way from the time when the Medical
6 Department's activities were treating people
7 with complaints associated with the job to the
8 point where it was made available to everyone.
9 So we're not talking about a particular year or
10 day.
11 But I would think that by the '50's
12 sometime that the physical examination program
13 available to the employees, if they wanted it,
14 would have been in place.
15 Q So, this would have been a routine or
16 a periodic --
17 A A periodic --
18 Q --- physical exam for employees who
19 requested it at Dow?
20 A True.
21 Q Beginning in the late '50's?
22 A Sometime in the '50's.
23 Q Approximately?
24 A My memory isn't good enough to put it
25 closer than that.

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1 Q In the '50's. Had there been as far
2 back when you got hired a pre-employment physical
3 as a condition of going to work?
4 A There was.
5 Q Do you recall any particular product

6 lines at Dow for which the men working on that
7 production unit had to have medical monitoring?
8 A I don't know that it was ever made a
9 condition of employment. There were places
10 where it was advised almost to the point of
11 requirement. I don't remember at Dow that we
12 ever had hard and fast rules for things like
13 that, you know, where you would say "either/or."
14 I don't remember that being the case. I think
15 it was generally well accepted.
16 Q Well accepted that one participated?
17 A If it was recommended, most of the
18 people took advantage of it.
19 Q Was this a program that you, yourself,
20 took advantage of regularly; that is, getting a
21 physical examination?
22 A I generally got a physical once a year
23 under that program, I guess, until I reached the
24 place where there was a different program for
25 supervisory responsibility - supervisory people.

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1 I guess they called it an executive program.
2 Q Can you recall, Mr. Hoyle, if there
3 was any time when there was a special program
4 for medical monitoring of workers potentially
5 exposed to asbestos at Dow?
6 A Yes.
7 Q What decade would that have been in?
8 A Around 1960, I would think, in that -
9 Give or take five years either way.
10 Q Did you have anything to do with the
11 proposing of that and causing that to be put
12 into place?
13 A This group that I mentioned to you
14 before - Medical, Safety and Biochemical - or,
15 rather, Toxicology and Industrial Hygiene people -
16 it certainly was planned in that working group.
17 Q Do you recall that the decision to
18 begin this monitoring grew out of the perception
19 of any particular problem or exposure levels
20 that you had detected?
21 A No.
22 Q What would it have been that triggered
23 this?
24 A Just the fact that asbestos and -
25 Silica is another material that would have been -

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1 it was known that people worked with these
2 materials, so they were included in the program.
3 Q How long did this program continue
4 where you monitored the workers potentially

5 exposed to asbestos or to silica?

6 A I think about two or three years, and
7 the medical director decided that the findings
8 were all negative and that the chest X ray
9 wasn't needed under the circumstances.

10 Q So, the medical director decided to
11 terminate that program?

12 A He decided not to expose the people to
13 chest X rays on his recommendation because of
14 their environment.

15 Q Were they also doing pulmonary
16 function testing --

17 A They were.

18 Q --- of these same workers potentially
19 exposed to these dusts?

20 A They did.

21 Q Did that pulmonary function testing
22 stop at the same time that the X rays --

23 A The testing was still there and
24 available. The only thing that stopped was the
25 aggressive selling of the idea to this

95

1 particular group because it was this particular
2 group.

3 Q The particular group being like the
4 insulators or the sandblasters?

5 A The insulators and sandblasters mostly.

6 They had been singled out for a recommendation
7 that they surely take advantage of it when
8 available. They weren't getting anything that
9 was not available to other people, as I recall.

10 Q Are you meaning that the X ray program
11 and the pulmonary function testing program was
12 available to other trades as well?

13 A To anybody that worked there as well.

14 MR. ALMQUIST: We're falling
15 back into the same trap a little
16 bit. Make sure he's through
17 talking before you start.

18 THE WITNESS: Okay.

19 Q So, your recollection is that around
20 the time the medical monitoring program was in
21 place in the '50's - perhaps close to 1960 as
22 may be - that chest X rays and pulmonary function
23 testing were both available to employees who
24 asked for it or who were recommended to have it
25 by someone at Dow?

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1 A That's correct.

2 Q It was just the aggressive program of
3 encouraging insulators and sandblasters to have

4 annual chest X rays that was eliminated by the
5 medical director after a few years of taking
6 films of these men?

7 A True.

8 Q Did you have at that time as you
9 recall any kind of data about the exposure
10 profiles that these workers potentially exposed
11 to asbestos or to silica had had when they were
12 in the X ray program?

13 A There was no industrial hygiene data
14 that described the exposure of these people in
15 detail at that time.

16 Q Do you recall, sir, if you had data
17 that would at least describe for you the number
18 of years that these individuals had been working
19 in their particular trades?

20 A That's a question for the Personnel
21 Department. I don't know what their records
22 looked like. "Probably" is my answer.

23 Q Probably you had it available?

24 A It probably was there. I don't
25 remember specifically going and asking for it.

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1 Q Certainly you would have appreciated
2 the significance of the durations of past
3 exposures in terms of evaluating an occupational
4 disease, wouldn't you?

5 A As well as the levels that they
6 probably were exposed to.

7 Q As well as what?

8 A The levels of probable exposure.

9 Q And you would not have expected -
10 certainly with the insulators - to have seen
11 signs of asbestosis on the X ray films or lung
12 changes suggesting asbestosis after only a few
13 years of exposure, would you?

14 A I don't know how long it would have
15 taken. I suspect it would have been related to
16 the levels of exposure as well. I know that
17 there is some length of time. I don't know that
18 there is a specific length of time.

19 Q Did you appreciate that the medical
20 director at Dow would have had an understanding
21 also of the latency periods involved with
22 asbestosis or silicosis diseases?

23 A I really -- You said would I have
24 expected. The answer is "yes." Do I know, I
25 don't know.

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1 Q Who was this gentleman, the medical
2 director?

3 A There was more than one. Dr. Gay was
4 the first one; Dr. Gordon was the second one,
5 after Dr. Gay retired.
6 Q Dr. Harold Gay?
7 A Harold Gay and Harold Gordon.
8 Q And Harold Hoyle.
9 A And Harold Hoyle. They used to say we
10 had a meeting of Harolds. There was also one
11 from the Safety Department.
12 Q Do you know which of these two doctors
13 would have been the one who terminated the X ray
14 program for the insulators?
15 A Yeah, I think it was Dr. Gay.
16 Q Before you left Dow in 1976, was there
17 a renewal of this sort of periodic monitoring of
18 workers potentially exposed to asbestos for
19 medical exams?
20 A I don't think so. I don't remember
21 that there was.
22 Q Do you recollect, sir, in the last few
23 years you were there - let's say in the '70's -
24 whether there was any specific periodic
25 monitoring done of the gentlemen who worked in

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1 insulating at Dow; that is to say, monitoring of
2 their dust exposure?
3 A There was one careful study done in
4 about 1968 or so.
5 Q Okay. That was your '68 or '69 study --
6 A It may have been '69. There may have
7 been some of it happening in both years. I
8 don't remember.
9 Q That was done by Mr. DeGesero?
10 A DeGesero; Roy DeGesero, correct..
11 Q But in the '70's - at least the '70's
12 while you were with the company - there was no
13 routine industrial hygiene monitoring of the
14 workers potentially exposed to asbestos?
15 A What kind of monitoring?
16 Q You know, you did your detailed study
17 of the insulators in the late '60's. I was
18 wondering if in the '70's you began to do
19 periodic monitoring on a routine basis of
20 workers potentially exposed to asbestos working
21 at Dow.
22 A I don't recall that there was. The
23 findings of that study would not have prompted
24 such a program. They were not above the five
25 million particles on average.

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1 Q So, the average of the time-weighted
2 averages that came out of that study were
3 slightly below the TLV of the time, right?
4 A Yes. And it was -- The study combined
5 with what we knew of the medical histories are
6 the things I'm thinking about when I say I don't
7 think there would have been any reason to change
8 the program as it was existing.
9 Q And by the time you retired some seven
10 or eight years after that detailed study of
11 insulators, had you obtained any new medical
12 data on the men who had been part of the
13 insulator study at Dow?
14 A I'm not sure about that. I think the
15 medical records would have to speak for
16 themselves.
17 Q It didn't come to your attention --
18 A I don't recall that such was done.
19 Q --- such as X rays in the mid '70's
20 that would look for changes over the last few
21 years?
22 A I don't recall that.
23 Q Were there any particular industrial
24 hygiene records that you asked Dow or its
25 lawyers to locate for you before the depositions

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1 you have given?
2 A I didn't ask anybody to get anything
3 for me. I responded to a request that I appear.
4 That's about the size of my activity.
5 Q You didn't suggest that it might be
6 handy to have some of your old files or records
7 or anything like that?
8 A I don't recall making such a request.
9 Q Did you happen to keep any kind of
10 files or old literature or correspondence,
11 diaries, memos; or did you leave everything
12 behind when you left Dow?
13 A I didn't take anything home with me
14 because I was retiring, and whatever I had I
15 felt should be left there for my successor.
16 Q And when you retired, all of the files
17 that you had accumulated over the years were
18 intact in your office or in your filing system?
19 A We had a rather extensive filing
20 system. It was intact when I left.
21 Q Can you give us an approximate
22 quantity of the volume of this, some
23 quantification of the magnitude of the files?
24 A Well, it was pretty close to 30 years
25 work, varying from two people to -- Because soon

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1 after I started, another man came along - up to
2 a dozen people. And we had kept all of the
3 original data and all of the copies of the
4 reports that we had written.

5 Q Would we be speaking in terms of tens
6 of - or dozens of file cabinets full of papers,
7 reports and data and memos?

8 A Oh, I guess probably. It's a hard
9 question for me to answer. There were lots of
10 them, and that's about the way I remember it.

11 Q Okay.

12 A And if I wanted something, I usually
13 asked my secretary to get it for me.

14 Q And, as a general rule, she was able
15 to find it?

16 A Always.

17 Q Always?

18 A Almost always.

19 Q Sometimes you had lost it?

20 A I suddenly put my scientist hat on and
21 remembered that nothing is always.

22 Q There was not any kind of a policy or
23 program in place when you left Dow then in 1976
24 that required the routine review of old
25 documents prior to their being destroyed or

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1 trashed?

2 A There was such a program.

3 Q There was?

4 A Yes.

5 Q When did that go into effect?

6 A I don't know. Before I retired
7 sometime, not too long before. Maybe in the
8 late '60's or so, and I remember it because I
9 was asked what kind of things we needed to keep.

10 It was a matter of maintaining order and
11 usefulness of the files. And my recommendation
12 was that we not dispense with anything that had
13 data in it and records of data or professional
14 opinions. And it was still -- We kept all of
15 those things up until the time I left, I'm sure.

16 Q * And I suppose you don't have any
17 knowledge about what has happened since then to
18 either the policy or the records?

19 A I have had no contact with it.

20 Q Do you recall any kind of communication
21 with anybody in Dow suggesting that any of these
22 records ought to be purged or gotten rid of
23 because of potential litigation problems or
24 exposures ---

25 A No.

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1 Q --- or difficulties?

2 A No. Strictly on the basis of making

3 room for - reducing the quantity of stored

4 records.

5 Q And, as you understood it, this

6 program covered the whole company?

7 A The whole company.

8 Q But there was obviously some room for

9 discretion in terms of maintaining scientific or

10 technical or engineering data, I suppose?

11 A People at my level were asked, "What can

12 you safely not keep and what do you think you

13 have to keep," both sides of the pot.

14 Q And this happened across different

15 departments. I suppose Toxicology and Medical

16 would have been asked the same thing.

17 A I would presume so. My contact was a

18 contact with a fellow that had the program and

19 was trying to reduce the quantity of paper that

20 was around.

21 Q Who was this individual charged with

22 shoveling out the Aegean stables?

23 A It beats me.

24 Q You don't remember the man's name?

25 A His name - his first name was the same

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1 as mine, but I can't tell you his last name. I

2 should be able to, but I don't remember. I

3 didn't know him except in that one contact. He

4 contacted me and told me what he was doing and

5 asked me what we could do.

6 Q Do you recall, sir, taking part in a

7 toxicology symposium in the very early '60's -

8 maybe '60, '61 - along with your colleagues,

9 V. K. Rowe and other gentlemen?

10 A Well, I remember one in Texas where

11 almost all of us were involved, I guess.

12 Q Can you tell me some more about that,

13 please?

14 A My recollection is that it was put on

15 for the benefit of people at the Texas Division

16 and also for the Texas Chemical Society, I

17 believe, if that's the right name. I'm not sure

18 about that.

19 Q How about Texas Chemical Council,

20 perhaps?

21 A It could be. It could be. And we

22 each made a presentation having to do with our

23 own area of interest, and we did it.

24 Q This would have been down in Houston,

25 1 suppose?

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1 A Well, it was in Houston for the Texas

2 Chemical whatever, and it was in the Lake

3 Jackson, Freeport area. The Texas Division.

4 Q So, it was two presentations --

5 A It was the same thing.

6 Q --- of similar material?

7 A The same papers, I think.

8 Q So there were actually papers of a

9 sort or akin to what you might present at a

10 meeting of one of your professional associations?

11 I mean --

12 A Yeah, it could be. It was fairly

13 general as I recall.

14 Q And your talk was printed up into a

15 little booklet, wasn't it?

16 A I'm sure it was, yeah.

17 Q Would you recollect this document that

18 I am going to label in a minute as a reprint of

19 the symposium from the - circa 1960?

20 A Well, it's got pictures of the right

21 people anyhow. Without reading all the words, I

22 can't tell you whether it's - what it is. But

23 it looks to me as though ...

24 Q Do you recognize that fellow there

25 (indicating)?

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1 A I think I've seen him in the mirror.

2 It was an attempt to give people an understanding

3 of the whole field of industrial health and

4 control health problems, as I recall.

5 Q It's a nice general overview with some

6 detail to give them a sense of what services

7 were available at the corporate offices?

8 A Yeah. Actually it was, as it says

9 here, a symposium on toxicology. It was oriented

10 toward the toxicology laboratory, and the rest

11 of the things you see in here were people who

12 used that information to do things in their

13 daily work.

14 Q I could not find a date in here, and

15 I'm not going to ask you to look for one because

16 I don't think there is one. But I was attempting

17 to place it in time, and just from the biographic

18 sketches I was hoping we might find enough to

19 where you could increase our competence level in

20 the date of this.

21 A No.

22 Q For instance, it mentions V. K. Rowe

23 graduating in 1937 and having worked for the

24 past 23 years in toxicological research.

25 A Yes, sir.

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1 Q I add that up to 1960. Here's

2 Mr. Olson - K. J. Olson. What was his first
3 name, Kenneth?

4 A Kenneth.

5 Q It mentions that he got a Ph.D. from

6 Michigan State in 1947 and had spent 13 years in
7 research: seven with Upjohn and the last six at
8 Dow.

9 A That's probably the only markers

10 you're going to find because I think he went

11 directly from Michigan State to Upjohn and

12 directly from Upjohn to Dow. That's my

13 recollection of Ken's history. So it's 1960 is

14 what that comes out to, which is probably what I

15 would have said if you had asked me to guess.

16 Q They don't let me get away with asking

17 you to guess very much, although I don't know

18 why not if you qualify it.

19 This mentions Mr. Hoyle here - for the

20 past 13 years has been engaged in environmental

21 research; now in charge of that program in the

22 biochemical research laboratory at Dow.

23 A Right.

24 Q So, would you say 1960 is probably as

25 close as we can get with the dating of this?

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1 A Well, if you add 13 onto 1948, it

2 comes out to '61.

3 Q Is this Donald D. McCollister

4 illustrated here?

5 A Yes.

6 Q It gives him 15 years of tox research

7 and presently in charge of long-term dietary

8 feeding studies, which I assume he may have been

9 doing for two or three years or so by the time

10 of this paper.

11 A I think the 15 years includes that

12 because the dietary feeding studies was a part

13 of toxicology.

14 Q I guess you worked with all of these

15 people in your job.

16 A All in the same department.

17 Q Charles G. Cramer, M.D. Now, what --

18 A He's a medical doctor in the Medical

19 Department.

20 Q Was he ever the medical director?

21 A No.

22 Q Just on the staff?

23 A He was a staff doctor.
24 Q This has him associated with
25 industrial medicine for the past nine years,

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1 graduated in '49. That still gets us in the
2 same ballpark, I suppose.
3 Did he stay with the company through
4 the years that you were there - Dr. Cramer?
5 A He may have left a little ahead of me.
6 He did leave the company.
7 Q Had he reached retirement age?
8 A I don't know how old Chuck was. He
9 may not have been 65 because the last I heard,
10 he was a physician at an Indian reservation out
11 West, so he is still around and able to practice
12 medicine. I don't know what his age is.
13 Q Did you hear what state he was in?
14 A Yeah, I think it was North Dakota.
15 Q Not too far west, then. It's a little
16 west of here.
17 A Uh-huh.
18 Q Mark Wolfe - did he stay with the
19 industrial hygiene section for very long?
20 A He never was in industrial hygiene.
21 He's a toxicologist.
22 Q Did he stay with the company for long,
23 then?
24 A Until he retired at 65.
25 Q I see. This seems to cover a variety

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1 of topics here: household chemicals, industrial
2 chemicals. Here is Dr. Irish on carcinogenicity.
3 A Uh-huh.
4 Q Do you recall -- This would have been
5 an area that you would have talked about from
6 time to time - industrial chemicals, I suppose.
7 A True.
8 Q Would that be true? That's
9 illustrated in here.
10 MR. BLANKS: I'm going to
11 label this as "60 0000 Dow," seeing
12 as how 1960 is the approximate
13 date, plus or minus a year or so.
14 A I wouldn't quarrel with that.
15 (REPORTER'S NOTE: THE
16 EXHIBIT MARKED BY MR. BLANKS WAS
17 RETAINED BY HIM AT THE CONCLUSION
18 OF THE DEPOSITION.)
19
20 (By Mr. Blanks)
21 Q Do you recall, Mr. Hoyle, were there

22 other times that your talks of the group of you
23 gentlemen from Toxicology and Industrial Hygiene
24 got printed up in this nice fashion or ---
25 A This is the only one I know of. It

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1 was put together. I suppose it was kind of a
2 P.R. effort as well as a scientific effort, in
3 an effort to give people scientific information
4 or a feeling for science. And I think that may
5 account for the fact that it was done up rather
6 carefully and passed out to all of these members
7 of the Texas whatever it was. And I think that
8 would account for its having been done in this
9 way. I don't think there's another like it.
10 Q So, our best knowledge today would be
11 that this booklet with the title "Symposium on
12 Toxicology" would represent the talks presented
13 down in Texas around 1960 that we have been
14 discussing here?
15 A That's right.
16 Q You will be happy to know that at
17 least one copy made its way to the Haskell
18 Laboratory Library, which is where this one came
19 from.
20 A Good. I'm not surprised.
21 Q Sir?
22 A I'm not surprised because V. K. was in
23 contact with Haskell at the time.
24 Q There must have been some times when
25 you were called upon to deal with people from

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1 government that were engaged in regulating or
2 writing regulations to cover Dow products and
3 activities; isn't that right?
4 A Yes.
5 Q Can you place this in time for us?
6 A The last time that I was involved -
7 therefore, I suppose, the first one that comes
8 to mind - was a NIOSH committee that was working
9 up criteria for the chlorine standard, and that
10 was probably - well, certainly had to be late
11 '60's or early '70's because of the date when
12 NIOSH got started.
13 Q Can you explain to me what you're
14 talking about when you speak of the criteria for
15 a standard or the criteria document?
16 A Yeah. Under OSHA there was a
17 requirement that NIOSH prepare basic information
18 needed to set standards. And chlorine - there
19 was a committee for each standard, I believe,
20 and I was involved in the one for chlorine.

21 Q Could you flush it out a little bit
22 with some examples of what kind of information
23 goes into making the criteria for setting
24 standards? What sort of things are you looking
25 at?

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1 A You're looking at whatever can be
2 found in the literature that relates to either
3 animal experiments or to environmental
4 measurements or results of health surveillance,
5 that kind of thing.

6 Q Sort of an attempt to gather together
7 everything that had been published about --

8 A To gather together and evaluate as
9 best we could what was available.

10 Q And then try and come to some agreed
11 number for a standard, exposure standard?

12 A A number, and then I believe that
13 there was also a write-up that summarized the
14 basic information that went along with that
15 standard. It was quite a long while ago, so I
16 can't remember exactly what it looked like.

17 Q But just generally in terms of the
18 process --

19 A This information went to OSHA and they
20 promulgated standards. It was a recommendation
21 to OSHA, I think is another way to say it.

22 Q So, while working with this committee,
23 I suppose it was, you members would have tried
24 to come to a consensus and make a recommendation
25 for a standard?

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1 A It was a matter of evaluating the
2 information that we could find that was put
3 before us and make a recommendation, that's
4 right.

5 Q Pretty much doing what you had done in
6 Dow along with the medical and the toxicology
7 people?

8 A That's true.

9 Q Except on a bigger scale, a national
10 level?

11 A It was on a national level. Maybe it
12 was more wordy, if not more sophisticated.

13 Q I suppose that there were other Dow
14 scientists who did similar things in terms of --

15 A I don't know.

16 Q --- helping develop criteria documents
17 and standard recommendations?

18 A I don't know. I don't remember is
19 what I should say. I don't remember. I

20 remember that one in particular.
21 Q But you don't remember any other Dow
22 scientists --
23 A Other than myself, no, I don't.
24 Q --- doing such things?
25 A No, I don't remember. Whether V. K.

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1 did or not, I don't know.
2 Q It wouldn't surprise you to learn --
3 A Not at all.
4 Q --- that he had?
5 A I don't remember.
6 Q You referred to this NIOSH chlorine
7 standard as the last one you can remember, the
8 most recent in time. Could you recall for us
9 any others?
10 A I don't remember -- I'm fuzzy at this
11 point because I don't remember what I may have
12 worked on for some other entity other than the
13 government.
14 Q And what other entities might that
15 conceivably have been if there were any?
16 A I was on a committee for the American -
17 ANSI, I think they call it - American National
18 Standards something or other. I think this was
19 chlorinated hydrocarbons - to set a standard for
20 the use of chlorinated hydrocarbons for cleaning
21 metals.
22 Q Can you think of any other type thing?
23 A Those are the only two that come to
24 mind right now.
25 Q I think you told us earlier that you

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1 never got involved in the setting of standards
2 for asbestos exposure --
3 A No.
4 Q --- or the revision of that standard?
5 A No. The only contact I had with that
6 standard was to use it.
7 Q Do you recall, sir, if any of the
8 trade associations you knew Dow to belong to or
9 Dow employees to belong to were engaged in any
10 efforts to, let's say, influence or direct or
11 suggest standards or changes in standards for
12 occupational exposures to toxic materials?
13 A I had no contact with trade associations
14 in that sense except the Chlorine Institute.
15 That's in my other testimony.
16 Q The Chlorine Institute. That sounds
17 kind of strange. Was it a big organization,
18 quite a few companies involved?

19 A Well, those who made chlorine and a
20 few who used it. And there was some pretty good
21 research done on chlorine from an industrial
22 hygiene point of view.

23 Q Did you have anything to do with any
24 of the activities of the MCA or CMA?

25 A I was never on a committee of either

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1 of those organizations that I can remember.

2 Q Certainly Dow would have had members
3 or at least maybe the company was a member of
4 the --

5 A Quite likely. In fact, probably. I
6 don't know if they were.

7 Q Mr. Hoyle, there were some studies
8 done that we have learned of in the '50's that
9 were published in the late '50's, around the
10 time you did your first asbestos monitoring,
11 that came from another trade association called
12 the American Petroleum Institute. And these
13 studies dealt with the incidence of cancer in
14 people working in the petroleum industry.
15 Did any of these papers ever reach you
16 or your office that you know of?

17 A Didn't have a whole lot of contact
18 with the American Petroleum Institute; like
19 none, that I can remember. If you asked me if
20 any of the papers came to my desk, I can't
21 remember any specific paper in that time.

22 Q Do you recall getting any kind of
23 materials that were sent out by the medical
24 advisory committee of the API that dealt with
25 industrial hygiene matters or disease in the

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1 petrochemical work force?

2 A I don't remember any specifically.

3 Q Who was your main contact at Dowell
4 during the late '50's and early '60's; do you
5 remember?

6 A I had contact with their safety
7 director. His name was Perry Arnot.

8 Q How do you spell his last name?

9 A A-r-n-o-t, I think.

10 Q He was the safety director?

11 A And anything else having to do with
12 safety. He was a one-man Safety Department.

13 Q I guess he would have sent information
14 on to you whenever he had information that he
15 thought would be helpful to you, like you would
16 do to him?

17 A I don't remember sending him anything.

18 I remember him more seeking advice; but that's
19 what I recall mostly of our contacts.
20 Q Did you ever hear of anybody at Dow
21 being involved in the proposed revision of the
22 asbestos standards?
23 A I don't recall that we were ever
24 involved in that, the reason being we probably
25 had nothing to contribute. I can say positively

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1 that as far as industrial hygiene is concerned,
2 there was no such contact. I shouldn't speculate
3 about anything beyond that.
4 Q And your clear recollection is that
5 before 1970 at least, you had no reports of
6 asbestos-related disease in any Dow employees or
7 former employees. Is that true?
8 A That's true.
9 Q Nor any reports of allegations of
10 asbestos disease in Dow employees or employees
11 by 1970?
12 A I had had none.
13 Q That's what I'm asking.
14 A If you're asking me, I had heard of
15 none, and I don't know beyond that point.
16 Q When was it that the epidemiology
17 study was done that contrasted the Dow
18 pipefitters with the Dow insulators? Would that
19 have been in the '70's?
20 A That wasn't in the '70's. It was
21 before that. It was when Jerry Ott first came
22 to work for Dow. It was the first exercise he
23 did. He was a biostatistician, and the study
24 involved Medical Department records and did not
25 involve any industrial hygiene records, as I

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1 remember. That's my recollection of that.
2 Q He was working strictly on what
3 records he could find in the doctors' files?
4 A Doctors' files, medical records.
5 Q And his study was not based on any
6 sort of quantitative exposure data about either
7 the insulators or the pipefitters or whoever was
8 the control group?
9 A We didn't have that kind of data, so
10 he could not have used it. I'm talking now
11 about good industrial hygiene studies.
12 Q Yes, sir.
13 A We had some information that you have
14 already asked me about having to do with
15 specific things that pipe coverers did. And, of
16 course, it had to do, as I told you, with pipe

17 coverers.
18 Q Yes, sir, what I have been calling
19 insulators.
20 A Yeah. Okay.
21 Q Well --
22 A That's our jargon. Yeah, they are
23 insulators.
24 Q And I have been using that because
25 "pipe coverer" sounds too much like "pipefitter,"

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1 and I just wanted to distinguish them clearly.
2 A They covered the pipes, and the
3 fitters put them together.
4 Q Most of the insulating at Dow was
5 actually of pipes?
6 A Pipes and vessels.
7 Q And vessels as well. Okay. So the
8 guy you call a pipe coverer did both?
9 A He might have covered some vessels.
10 Q Sure.
11 MR. ALMQUIST: Could we take
12 a short break?
13 MR. BLANKS: Certainly.
14 (AT 2:10 P.M. A RECESS WAS
15 TAKEN. AT 2:22 P.M. THE DEPOSITION
16 RESUMED AS FOLLOWS:)
17
18 (By Mr. Blanks)
19 Q Let me trouble you about a few more
20 trade association organizations, just in the off
21 chance that Dow was a member.
22 Do you recall or know of any insulation
23 related associations, such as the National
24 Insulation Manufacturers Association, something
25 of that nature, to which Dow belonged at any time?

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1 A Not that I know of.
2 Q When was it that Dow began making the
3 urethane insulation products or the -- Is it
4 isocyanates?
5 A Well, I guess I can't put a time on it
6 for you; but it was probably in the '60's.
7 Q Is there anything that you can recall
8 to connect Dow in any way with the Asbestos
9 Textile Institute?
10 A Nothing. That one I would be real
11 surprised if there was any connection.
12 Q Dow never made any textile products,
13 did they?
14 A Not out of asbestos.

15 Q I mean any at all.

16 A Well, no. I don't think we made any
17 textiles at the Dow Chemical Company.

18 Q Did you make chemicals that ended up
19 being used in textiles, like a nylon or a rayon
20 or something like that?

21 A Well, that's why I answered you the
22 way I did. There may have been some of the
23 resins that got into the textile business.

24 Q If Dow sold the resins, none of them
25 included any mineral fibers?

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1 A No.

2 Q Like asbestos?

3 A No.

4 Q And Dow didn't manufacture any
5 finished fiber goods like we mean when we speak
6 of textiles?

7 A I don't remember any -- I guess there
8 was one that for a while may have reached the
9 market.

10 Q What would that have been?

11 A It was called Rovana.

12 Q R-o-v-a-n-a?

13 A Uh-huh.

14 Q Just for curiosity's sake, what was it
15 and what was it used for?

16 A Well, it was a fiber that was, I
17 suppose, woven into something or other.

18 Q A chemical fiber?

19 A It would have been a plastic fiber.

20 Q Do you have any association in your
21 mind between Dow and the Rubber Manufacturers
22 Association or any of its prior forms or
23 organizations?

24 A I don't know quite how to answer your
25 question. I do not know that Dow ever belonged

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1 to that organization. I can answer that much.

2 I don't know about it.

3 Q Is there anything more that comes to
4 mind regarding the Rubber Manufacturers
5 Association?

6 A Not unless we started to try to think
7 of all the things rubber manufacturers use, and
8 I'm not an expert at that point. I don't know.
9 I know that to make rubber, you have to have
10 something to make it, but I can't answer your
11 question. I am not knowledgeable at that point.

12 Q So, it is logically possible that Dow
13 might have sold some raw materials or some

14 chemicals that would be used in that industry, I
15 suppose, is what you are allowing?
16 A ~ I'm saying I couldn't say it's
17 impossible, but I don't know.
18 Q But you don't recall anything that
19 suggests that Dow ever belonged to the Rubber
20 Manufacturers Association?
21 A I have no knowledge that the company
22 ever belonged to it. That's to my personal
23 knowledge.
24 Q You do remember Dow being a member of
25 the National Safety Council ---

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1 A Oh, yes.
2 Q --- even back when you were first
3 employed there?
4 A Oh, yes.
5 Q And it had been, to your understanding,
6 for a number of years?
7 A I don't know how long before I came to
8 work that Dow had been a member. But I can say
9 with certainty that Dow was a member of the
10 National Safety Council in 1944.
11 Q Were there any times when the Zurich
12 Insurance Company did any kind of audits or
13 surveys of a Dow facility that you know of?
14 A Yes.
15 Q Could you tell us about those, please,
16 sir?
17 A Zurich was the Dow insurance carrier
18 for a couple of years, and one I remember is an
19 industrial hygiene survey of a foundry, magnesium
20 foundry, that we operated.
21 Q This was one that you went on along
22 with Mr. Warren Cook?
23 A That's correct.
24 Q And this would have been after you
25 became an industrial hygienist?

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1 A Yes.
2 Q So, after 1948?
3 A Yes.
4 Q But not too much after, I suppose.
5 A Fairly soon after, I would think.
6 Q Was Mr. Cook at that time, then,
7 associated with or an employee of Zurich
8 Insurance Company?
9 A He was in charge of their industrial
10 hygiene unit.
11 Q He after that moved to the University
12 of Michigan and set up a program in industrial

13 hygiene, did he not?

14 A Yes, sir.

15 Q I suppose they would know at the
16 university, but do you recall approximately when
17 that would have been?

18 A As far as I can recall, that's where
19 he went from Zurich, but I don't remember dates
20 too well. Probably in the '50's.

21 Q Can you recall any other industrial
22 hygiene survey or inspection that Zurich did at
23 Dow besides the magnesium foundry?

24 A That's the only hands-on activity that
25 he had at Dow. The rest of his contacts would

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1 have been in the way of audits or their
2 programs.

3 Q I'm sorry, the rest?

4 A In the way of audits of our program,
5 "What are you doing and how are you doing it,"
6 that kind of thing.

7 Q Could you elaborate on that just a
8 little bit, what an audit consisted of? An
9 audit of the industrial hygiene program?
10 A Well, as they were done by Cook for
11 Zurich, they weren't very extensive. And he
12 asked whatever questions he wanted to ask about
13 our industrial hygiene program. I have no idea
14 what he decided to ask or what he did ask. But
15 it was in that context that he was interested in
16 what we were doing.

17 Q Was this something that would happen
18 periodically?

19 A Oh, I think they were the carrier for
20 two, three, four years.

21 Q Maybe longer?

22 A Not longer, I don't think. I don't
23 think he came around more than once a year.

24 Q So, he would come around and visit
25 with you about the industrial hygiene program at

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1 Dow?

2 A Uh-huh.

3 Q Odds and ends, "What are you doing,
4 how are things going, what have you been working
5 on"?

6 A Uh-huh.

7 Q That general professional discourse?

8 A He did whatever he needed to do to
9 satisfy himself that we were adequate.

10 Q Do you remember that there were times
11 when he would make recommendations to you and

12 say, "Harold, I think you ought to be doing this
13 and such or maybe you ought to be looking at
14 that," or anything like that?
15 A I don't think he ever had much to say
16 in that -- I think we were doing pretty much
17 what he had in mind.
18 Q After Zurich ceased to write the
19 insurance for Dow, who took their place; do you
20 remember?
21 A I don't know. There were a number of
22 different insurance companies. I had no contact
23 with the Insurance Department. My recollection
24 is he was the only industrial hygienist from the
25 insurance company that we saw.

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1 Q That you ever saw?
2 A Uh-huh.
3 Q So, when Mr. Cook and Zurich no longer
4 had the Dow account, the industrial hygiene
5 audits from the outside ceased?
6 A From the insurance companies, yes.
7 Q Nobody else was doing any kind of
8 industrial hygiene audits of you, were they?
9 A Well, not unless you want to call
10 visits by the state engineer that we talked
11 about this morning. I don't know that that was
12 an audit, but I saw him, so ...
13 Q So, they would drop by and --
14 A We weren't operating in a vacuum, but ...
15 Q They weren't coming by in response to
16 any complaint; they were just coming by to --
17 A Sometimes. And once in response to a
18 complaint maybe. I don't remember. Not very
19 often, anyway.
20 Q Do you remember that Zurich ever put
21 any conditions on Dow, you know, relating to
22 industrial hygiene?
23 A No.
24 Q Or health hazards?
25 A I don't remember any such thing.

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1 Q Would Mr. Cook prepare any sort of a
2 written report of his meetings with you or
3 survey or audits that would end up crossing your
4 desk thereafter?
5 A I don't remember any reports. Zurich
6 was on the - was Dow's carrier when I first
7 became an industrial hygienist, in that period
8 of time.
9 Q And you don't know how far back
10 in time they had the coverage?

11 A I really don't know. I'm having
12 trouble answering your questions because of how
13 long ago it was and also there's a point that I
14 don't know whether they were on it or not. I
15 just don't know.

16 Q Do you know if Metropolitan was
17 providing coverage for Dow employees in the
18 early part of the '40's when you began working
19 for the company?

20 A As soon as we had employee health
21 insurance, Metropolitan was the carrier. That I
22 remember.

23 Q Did they remain the carrier for a
24 number of years or was it a short-lived thing,
25 too?

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1 A Well, I think they still are. I don't
2 know the intricacies of the insurance business,
3 but I think they are.

4 Q I just ask it because their name
5 appeared in the 1941 Texas Division safety rules
6 and regulations on Page 3. It just mentions
7 insurance and Metropolitan Life, Health and
8 Accident Insurance Company. Let me see if that
9 jives with your recollection.

10 A Yeah, that's the insurance company
11 that has been the carrier of the employee
12 insurance program all the time that I have been
13 associated with such a program; in other words,
14 a participant, I should say.

15 Q Yes. Do you remember, sir, ever
16 having the benefit of any consultations from the
17 Metropolitan Life Insurance Company's Medical
18 Department or its industrial hygienist, if it
19 had any such thing?

20 A I don't know whether they had one or
21 not.

22 Q How about from their doctors?

23 A I had no contact with the doctors.

24 Q Do you remember that information from
25 Metropolitan came to you at Dow or to your

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1 colleagues at Dow that would deal with
2 occupational health or occupational disease?

3 A I don't recall -- I don't recall any
4 such information.

5 Q Mr. Hoyle, you've told us how in the
6 late 1950's - '58, '59, thereabouts - you did
7 some monitoring of asbestos exposures and found
8 levels that you thought were higher than you
9 wanted to have in the plant while the men were

10 sawing or tearing off old insulation.
11 A I don't think that I can agree with
12 your terminology because those measurements were
13 not measurements of the degree of exposure of
14 people. Those were specifically set up so that
15 I could get some data that would allow me to
16 tell the Safety Department which jobs I thought
17 they ought to have respiratory protection on.
18 It's a little different than making an
19 evaluation of somebody's health hazard. I
20 didn't do that.
21 Q That's fair. Did Safety actually ask
22 you to go take some samples of --
23 A My recollection of the thing is they
24 didn't ask me to take samples. What I recall is
25 that Harold Lindsey called me up and said, "We

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1 want to talk about respiratory protection in the
2 shops in general." And in the shops was the
3 covering crew. And I felt a need to get a
4 little bit of data before I answered him on
5 which ones of their jobs they maybe ought to
6 have respiratory protection. And I made a
7 recommendation, in my recollection, that I
8 considered to be very conservative at the time,
9 partly because I did - got the numbers from a
10 method that counts a lot more dust than the
11 regular method. It didn't bother me a bit at
12 the time because I was being conservative.
13 Q And that was using the Bausch & Lomb
14 tool?
15 A The Bausch & Lomb tool. It never was,
16 in my opinion, a suitable piece of equipment to
17 count dust and compare with five million
18 particles. And I didn't use it that way. I
19 used it as a measurement of dirtiness, and in a
20 way that's what I was looking at.
21 Q Because the values you get using the
22 Bausch & Lomb --
23 A Were much too high. You see much more
24 particles with that technique.
25 Q I see.

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1 A And many of those are probably too
2 small to be significant.
3 Q And you were understanding that
4 actually you had enough magnification, then,
5 with that tool to see particles that were too
6 small to cause any harm to the lung?
7 A Let's say optics, the magnification
8 plus the type of illumination.

9 Q That was a dark light - dark field --
10 A Dark field technique.
11 Q --- technique. Well, going back then
12 to the 1958 or ' 59 effort of measuring for
13 dirtiness in the shop so you could advise the
14 insulator crews where they should be using
15 respiratory protection -- And we've talked about
16 that at length. I'm just wondering, using that
17 information and what you found there, when was
18 it after that time that Dow made it its rule
19 that contractors' employees working in the Dow
20 plants should also have to use respiratory
21 protection when they were sawing or tearing off
22 asbestos insulation?
23 A I don't have that information. The
24 Safety Department administered that program.
25 Q So, that would have been up to the

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1 Safety Department to make that rule and to --
2 A That would have been the only contact
3 in that context with the contractor.
4 Q Would have been through the Safety
5 Department?
6 A Through the Safety Department.
7 Q And i f --
8 A My function was to act as a source of
9 information if asked.
10 Q Did you ever act as a source of
11 information with respect to potential contractor
12 exposures in Dow premises?
13 A I don't believe that I had any -- I
14 think that whole thing was handled with
15 information that was already available to the
16 Safety Department for internal use. So I had no
17 direct contact at that point.
18 Q Do you know if Dow, through the Safety
19 Department or otherwise, ever made it the rule
20 that contractors' employees working in Dow
21 plants had to be warned about the potential
22 health hazards of asbestos dust exposures?
23 A At what time?
24 Q Well, whenever.
25 A Well, to begin with, the relationship

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1 between Dow and the contractors was that Dow
2 would provide the contractors with a work
3 environment that was not hazardous due to the
4 presence of chemicals. But the contractors were
5 pretty much independent as far as things
6 associated with their trade: in other words,
7 insulating materials for pipe coverers or

8 insulators and so on. That's my recollection of
9 the way it was.

10 Later on there was developed a
11 contractor safety program that I had very little
12 contact with.

13 Q Did that contractor safety program
14 begin before you left the company?

15 A Yes, in Midland. I'm not acquainted
16 with -- I presume probably at the same time
17 other places, but I don't know.

18 Q Am I right then in concluding that you
19 don't really know one way or the other whether
20 contractors and their employees were told in
21 that same time in the late '50's that
22 respiratory protection should be worn while
23 sawing or removing, tearing off asbestos
24 insulation?

25 A What I know about it myself is that

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1 the information was given to a Dow safety
2 engineer for use in a Dow meeting. Other than
3 that, I can't say, except to say - as I just did -
4 that the information was available when the
5 program did start that you know about.

6 Q The contractor safety program?

7 A Contractor safety program.

8 Q Is it true that the first knowledge
9 that you have of asbestos health warnings or
10 proper handling instructions going to
11 contractors and their employees was by means of
12 the contractor safety program that came in the
13 '70's?

14 A So far as I know, that is the conduit
15 for that information. That's all down there.

16 Q Mr. Hoyle, in dealing with the Dow
17 Corning Company, was there any kind of routine
18 program for giving to them or sending to them
19 industrial hygiene information or toxicology
20 information, or were you simply there on an
21 as-needed basis to help them when asked?

22 A We acted as consultants when we were
23 asked.

24 Q Was there ever a time when you were
25 asked by the Corning Company - not Dow Corning -

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1 but the other partner or.--

2 A No.

3 Q --- member of that venture for
4 industrial hygiene help or services?

5 A I never had any conversation with
6 anybody from Corning that I can remember.

7 Q Do you believe that the results of
8 Mr. Jerry Ott's epidemiology study comparing the
9 pipe coverers, insulators, and pipefitters and
10 others were ever passed on outside of Dow, like
11 to any other organization or trade association
12 or professional group?
13 A Not to my knowledge.
14 Q Surely this study by Mr. Ott was
15 written up in a paper or report of some form,
16 was it not?
17 A Well, I have seen it in the documents
18 from my last deposition.
19 Q Now you're trying to embarrass me.
20 A No, it's there. I think so.
21 Q But this information, to your
22 knowledge, never went, for example, to the
23 American Petroleum Institute?
24 A I don't remember that it was ever
25 published.

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1 Q Published outside of Dow?
2 A Outside of Dow. What I'm saying is it
3 could have been and I wouldn't have known
4 necessarily.
5 Q Did you make the acquaintance at any
6 time of Roy S. Bonsib?
7 A No.
8 Q From Standard Oil?
9 A No.
10 Q How about Clyde Berry?
11 A I know Clyde Berry well.
12 Q Did you know him in the late '40's
13 when you began the practice of industrial
14 hygiene?
15 A I don't remember when I first met him.
16 It was at an AIHA meeting. It may have been the
17 first one, for all I know. I've known him over
18 the years.
19 Q Do you remember him in any context
20 with Standard Oil for however briefly?
21 A No.
22 Q You don't know one way or the other?
23 A Not one way or the other. I knew him
24 as an industrial hygienist and as a guy I saw in
25 the hospitality rooms and the like. You know,

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1 I'm just saying socially.
2 Q Yes, sir. Mr. Hoyle, besides
3 recommending the use of respiratory protection
4 for the insulators sawing and removing asbestos
5 insulation, can you recall any other

6 recommendations you made to perhaps control or
7 eliminate the exposures that those men in those
8 crafts were having at Dow?

9 A No, I didn't make any other
10 recommendations.

11 Q Was that group of workmen then using
12 other traditional measures to control the amount
13 of asbestos dust generated when they were doing
14 their work, such as wet methods for handling the
15 material?

16 A Whether they ever wet some down or
17 not, I don't know. Based on what I knew about
18 it from this rather limited dust counting that I
19 did, plus the fact that I had observed them at
20 work casually, this all led me to believe that
21 the use of respirators under those two
22 circumstances that I mentioned and for the
23 coverers themselves would be more than enough to
24 cover their exposures. That's a professional
25 judgment based on observations and limited data,

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1 you might say. And the medical records seem to
2 have borne me out.

3 Q At least --

4 A I'm -- In other words, at this point
5 my judgment is that that was never properly
6 done, and the only -- You see, pipefitters,
7 operators in the area and so on, as a part of
8 this same judgment would not have been at risk
9 based on the data we had at the time - I mean on
10 the standards that were available at the time -
11 or the guides, I should say. And that's why
12 nothing more was recommended.

13 Q And the only data that you had in the
14 late '50's was what you got from your few Bausch &
15 Lomb samples?

16 A That I described to you, that's right.
17 It confirmed my notion that there wasn't a high
18 priority problem with asbestos with our pipe
19 coverers because not all insulation, by any
20 means, has any asbestos in it. Most of it
21 doesn't. In fact, the dustiest of it doesn't.

22 Q You're speaking of the insulation used
23 by Dow in its plants that its own people put on?

24 A That's all I know anything about.

25 Q That is to say the insulation Dow

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1 mechanics actually installed?

2 A Yeah, which would have been the same,

3 I presume, that contractors installed on similar

4 equipment, because Dow insulators normally were

5 at work making small repairs on bigger
6 installations that would have gone in when the
7 thing was built in the first place; and smaller
8 projects - they may have done the whole thing.
9 So I don't think there would be a difference as
10 far as materials are concerned, not to my
11 knowledge.
12 Q There was no time while you were in
13 charge of Industrial Hygiene that dust
14 monitoring was done of other crafts working with
15 asbestos insulation or in the vicinity of the
16 asbestos insulators, was there?
17 A No, I have just explained why we
18 didn't. And that was a low priority in my
19 professional time. We spent the majority of our
20 time doing other things.
21 Q And so, by 1976 when you retired, Dow
22 had still not gathered any hard data about the
23 dust concentrations that might be faced by other
24 crafts besides insulators who would be working
25 in the plants?

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1 A No, we didn't, because we knew what
2 the case was by our - in our worst case
3 situation. So, it would have been a low
4 priority thing.
5 Q The worst case scenario being what you
6 had measured --
7 A People that actually worked with the
8 material. By that time we had a good study, in
9 my opinion, by DeGesero that told us what the
10 levels of exposure were.
11 Q The 1969 study?
12 A Something like that.
13 Q And that was the one that found
14 average time-weighted exposure levels at 4.9
15 million particles for indoor work and 4.7
16 average for outdoor work?
17 A Those are reasonable numbers. I have
18 forgotten them. Below 5, but close to 5.
19 MR. ALMQUIST: Whatever the
20 report reflects ---
21 A Whatever the report says, that's
22 right.
23 Q You mean I could be proven wrong
24 again? No, I think I recited them accurately.
25 A Off the top of my head I don't know

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1 what the numbers are. I. do know they
2 approached, but did not exceed, that. I can say
3 that with certainty.

4 Q There is no data that you gathered at
5 Dow prior to your retirement, anyway, that would
6 show that the exposures of other crafts working
7 near, below or beside insulators would
8 necessarily be lower or significantly lower than
9 those measurements you made of the insulators
10 themselves, is there?

11 A Based on my experience as an
12 industrial hygienist over the years, my judgment
13 at the time was it wasn't worth doing the
14 measurements.

15 Q Because if you reduced the exposure
16 levels for the insulators, then necessarily you
17 would have lower levels for any bystanders that --

18 A They would have gotten the highest
19 exposures, I'm sure; and certainly more
20 frequently than would have any other group of
21 people in the area where they might be.

22 I guess what I'm saying is that there
23 weren't pipe coverers that were every day where
24 they were at work. There's a large number of
25 pipefitters, for instance, and a relatively

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1 small number of pipe coverers.

2 Q Speaking of the Dow work force?

3 A Yeah, that's right. So they just
4 wouldn't be around because there weren't that
5 many of them. They were around enough to do
6 their job. Maybe another way to say it is that
7 certainly not all piping is covered, is what I'm
8 saying.

9 Q And certainly your staff never took
10 any dust samples around contractor employees who
11 were --

12 A No.

13 Q --- working with asbestos or handling
14 it?

15 A We did not.

16 Q Did you ever give any instruction to
17 contractors or contractor employees on the need
18 for monitoring for dust exposures?

19 A As I have told you, I had no contact
20 with the contractors except to the contractor
21 safety program. And I was not asked to do it,
22 so I didn't do it.

23 Q Okay.

24 A And if I -- Well ...

25 Q If you had been asked, what then?

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1 A I would have told them the same thing

2 I told the Dow people: That information was

3 already available in the program.

4 Q In the Dow program, you mean?

5 A Yes, and, therefore, in the contractor

6 safety program as soon as it got started.

7 Q And available actually in the Safety

8 Department at Dow from whenever you gave them
9 that information?

10 A From that time I was there.

11 Q So they could have shared that same

12 information with the contractor --

13 A Probably did.

14 Q --- that the safety men had available

15 for Dow employees?

16 A True.

17 Q How high up in the Dow management

18 hierarchy were you when you retired, I mean

19 relative to --

20 A My boss was Edsel Blair who retired as

21 a vice-president. I don't know whether he had

22 gotten that title when he was my boss or not.

23 It was sort of about that time.

24 Q How many vice-presidents were there at

25 Dow around then?

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1 A Beats me. I don't know.

2 Q Was it a company that had many vice

3 presidents, like Braniff used to have more

4 vice-presidents than it had planes or ...

5 A No, it's not quite like a bank. There

6 were not very many. His responsibility was

7 Health and Environmental Services.

8 Q Wasn't there a time when you worked

9 for or technically under V. K. Rowe?

10 A I think two different times. He got

11 there ahead of me and he progressed a little

12 faster, on that basis.

13 Q Was Health and Environmental Services

14 a position he filled at some time or other?

15 A V. K. was -- Before Blair was my boss,

16 V. K. was my boss.

17 Q But he wasn't a vice-president?

18 A No. He also worked for Blair. Our

19 curves went something like this: Here was V. K.;

20 here was Toxicology and here was Industrial

21 Hygiene. And they would be parallel and then

22 they would be nonparallel.

23 Q I see.

24 A And so V. K. was my supervisor until

25 there was a reorganization, and I became a

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1 director in the laboratory.

2 Q Where did the Safety Department fit
3 into this organization when you retired?
4 A The Safety Department was part of the
5 Personnel Department.
6 Q Did that Personnel Department have its
7 own V.P., too?
8 A I don't remember the organization at
9 that time. They did if you went far enough up
10 the line; everybody does, but the safety -- I
11 can't remember who McCutchin -- McCutchin was
12 the safety director at the time I retired, and I
13 don't know who he reported to.
14 Q Where did medical fit into this
15 scheme?
16 A They were in the Personnel Department.
17 Then they became both in Personnel and Health
18 and Environmental Services. I believe that's
19 the way it is now. I don't know. There were
20 two functions, is what I'm trying to say to you.
21 Q And then Toxicology was also under
22 Health and Environmental Services?
23 A Uh-huh.
24 Q Most of the time?
25 A Uh-huh.

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1 Q Or its equivalent?
2 A It started out being Biochemical
3 Research and went through a number of different
4 names. The functions stayed the same.
5 Q At any rate, as you have told us, the
6 Safety Department was separate from the
7 Industrial Hygiene Department?
8 A As far as lines of management are
9 concerned, they went to the General Manager by a
10 different route than we did.
11 Q And you didn't have any authority or
12 control over the Safety Department, did you?
13 A I'm not sure I had control over
14 anybody.
15 Q I know the feeling.
16 A I tried to influence them.
17 Q But I mean --
18 A There was no line responsibility.
19 There was a shared responsibility that I have
20 described to you in terms of the four groups
21 regularly having contacts.
22 Q Yes, sir. You shared information, but
23 you didn't -- These four groups didn't have the
24 same function to play in the company, and they
25 acted independently in doing their specific and

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1 particular jobs?
2 A I think that's fair to say.
3 Q So, Medical didn't really tell you
4 what to do, and you didn't tell Safety what to
5 do and so forth; but you did share information?
6 A It probably was more than just sharing
7 information. We probably influenced each
8 other's decision.
9 Q I would think it goes without saying
10 that among rational men, the sharing of
11 information must surely influence.
12 A That's what I'm trying to say.
13 Q That's the idea. Yeah. But, for
14 instance, you haven't been able to tell us what
15 the Safety Department did specifically with --
16 A On a day-to-day basis, no.
17 Q Or what they did with recommendations
18 you made to them --
19 A I didn't have a policing function. Is
20 that what we're getting at?
21 Q Well, no, sir. I mean you've been
22 careful to make clear the things about which you
23 have actual knowledge, yourself, and those about
24 which you don't.
25 A Yes.

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1 Q And I just wanted to clarify that.
2 A Okay.
3 Q A lot of the things or maybe most of
4 the things the Safety Department did are outside
5 your personal knowledge?
6 A On a day-to-day basis, that is true.
7 Q And the same would be true, wouldn't
8 it, about the Medical Department and what did
9 doctors do and --
10 A I certainly had nothing to do with the
11 treatment of patients or any of that kind, which
12 is what they did more than anything else.
13 Q But it would also apply to their
14 medical monitoring program when it existed? I
15 mean you're familiar with it generally, but --
16 A I was familiar with it and a party to
17 its organization in the terms that I have
18 already described to you.
19 Q Right. But, for example, you don't
20 know what the total extent of the reports or the
21 documents that the doctors might have prepared
22 would be or what they did with them or who they
23 sent them to or didn't send them to, would you?
24 A I had no control over where they sent
25 reports.

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1 Q Or any knowledge, really, of where
2 they went, other than the ones that came to you
3 yourself?

4 A That's right. If they had to do with
5 my business, then I probably saw them.

6 Q And the same thing would be true to
7 some extent with the Toxicology Department:
8 that that which they did and they wrote up and
9 sent to you, you knew of. But you don't really
10 know personally about all of the things that Tox
11 did?

12 A I'm probably closer to knowing what
13 they did than I am the Medical Department
14 because we are both in the same department. I
15 was a member of the staff of that group.

16 Q But not having been present at all of
17 the meetings that all of the chiefs of
18 toxicology or the assistant chiefs went to, you
19 couldn't --

20 A What they said in their meetings,
21 unless they wrote it up in the minutes I
22 wouldn't know about it.

23 Q Right. And, certainly, the same would
24 be true with respect to the actions of any of
25 the officers of Dow that did not report to you -

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1 and I guess that would be all of them.

2 A That's all of them.

3 Q Would you remind me, please, Mr. Hoyle,
4 where was it that the 1969 industrial hygiene
5 study of insulators took place? What plant was
6 that in?

7 A Midland.

8 Q Was the report from that survey
9 provided to the Michigan State Health
10 Department?

11 A Probably not. They weren't on our
12 regular distribution list.

13 Q I think you already told me that you
14 don't recall that that report of that survey was
15 ever provided to anybody outside of Dow.

16 A It was not published, to my knowledge.

17 Q Nor was a copy of it, to your
18 knowledge, sent, for example, to the American
19 Petroleum Institute?

20 A No. I don't know why we would have.

21 We had no contact with them that I know of in
22 this plant. As I told you before, I had no
23 business with the American Petroleum Institute.

24 Q You were unaware that one of the Dow
25 divisions was, in fact, a member in the API?

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1 A If they were, I was unaware of it.

2 Q And that would have been --

3 A The Texas Division, you're talking

4 about?

5 Q Actually I was speaking of the Dowell

6 Division.

7 A They may have been. I don't have any

8 knowledge about what they were members of. It

9 seems logical.

10 Q Now, you left Dow in 1976, you said

11 repeatedly, and that was the end of the year?

12 A No, it was the end of September. The

13 Dow rule is the end of the month you get to be 65,

14 you commence being a retiree. That's the way

15 it was. So my life of leisure started on

16 November 1st, 1976.

17 Q You certainly would not claim to have

18 any kind of knowledge about what Dow has done

19 with any of your files or records that you left

20 there in 1976 when you retired, would you?

21 A I would have no way of knowing

22 anything about them. I just haven't been there.

23 I should clarify that last statement. I did

24 some consulting three different summers after I

25 retired, so the statement I made is totally true

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1 after that point in time. Up until then I did

2 see the files, those summers.

3 Q What areas did you consult in those

4 three times?

5 A It was mostly a matter of bringing

6 order out of chaos as far as the early records

7 are concerned. I tried to help bridge the time

8 from the first industrial hygiene data to the

9 more modern which would have been '77, '78, '79,

10 the way things were being done then. And the

11 data had been acquired with far different

12 techniques just because far different techniques

13 were available then, and I was working in that

14 area.

15 Q What was it that triggered this effort

16 to straighten out the old records --

17 A I hadn't gotten the job done when I

18 retired, I think is the right way to say it.

19 It's the kind of thing that we had wanted to get

20 done and had pretty well done, and that's to get

21 the information in the position so it could be

22 handled on computers.

23 Q This was an effort that began before

24 you left in '76?

25 A Oh, yes, I promoted the idea and did a

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1 little, and so did others. And we had improved
2 over the period of time that I was there, so I
3 didn't do a heck of a lot with what had happened
4 ten years prior to my retirement, but rather
5 some of the old stuff I was working with.

6 Q Was this in response to any change in
7 the regulations --

8 A None.

9 Q --- that Dow was operating under?

10 A None. Strictly part of our attempt
11 from day one to study environments in such a way
12 that we would have a good record of what was
13 there.

14 Q And the goal was to put in computer
15 form all of the records of early surveys?

16 A That's all we were trying to do.

17 Q Surveys only, reports as well?

18 A Not reports. Just data. We're
19 talking data.

20 Q Just numbers?

21 A Just numbers.

22 Q Well, after three years of part-time
23 on this, were you able to bring order out of
24 chaos?

25 A I think so. I haven't had any complaints

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1 in the last 12 or 15 years.

2 MR. BLANKS: Let's take a

3 quick break here.

4 (AT THIS TIME A BRIEF RECESS

5 WAS TAKEN, AND THE PROCEEDINGS

6 THEREAFTER RESUMED AS FOLLOWS:)

7

8 (By Mr. Blanks)

9 Q Mr. Hoyle, do you recall whether Dow
10 had any of the oil companies as its customers,
11 sir?

12 A I have no knowledge of who the Dow
13 customers were. It's a big company with a lot
14 of different products. I can't answer a
15 question like that.

16 Q Did you have personal contact with the
17 industrial hygienists from the oil companies
18 when you were a member of the American
19 Industrial Hygiene Association?

20 A I did with some of them; maybe with
21 all of them. I don't know.

22 Q Are there any specific ones that we
23 haven't talked about already that pop into your

24 mind readily?

25 A I can't remember.

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1 Q Either individuals or companies?

2 A I can't remember who we have talked

3 about today. I'm confused by what we talked

4 about today and that other deposition I just

5 read.

6 Q Or we can count that one, too, so we

7 don't have to --

8 A None that I recall one way or the

9 other.

10 Q Did Dow have any other chemical

11 companies among its customers? Did it buy or

12 sell products with duPont or from duPont or to

13 duPont, for example?

14 A I'm sure the answer to that is "yes."

15 Q Did you have any dealings with their

16 industrial hygienists?

17 A I was acquainted with them. I have

18 talked with them about sampling techniques and

19 the like. I have asked questions concerning

20 their materials; for instance, work that Haskell

21 had done or work that they had done in their own

22 plants on materials that we both had onsite. In

23 that context I talked to them.

24 Q In a similar context did you have any

25 dealings with men from Union Carbide Corporation?

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1 A I'm well acquainted with people from

2 Union Carbide. The answer would be the same.

3 Q Do you remember Knute Ketchum from

4 Carbide?

5 A I do.

6 Q You knew him from professional

7 associations and --

8 A That's right.

9 Q Because you were working in Industrial

10 Hygiene since 1948 until 1976 and had your

11 responsibilities there and were not an officer

12 of Dow --

13 A Yes.

14 Q --- isn't it fair to say that your

15 personal knowledge really is limited to

16 knowledge about what you and your own employees

17 did or didn't do in your job, rather than what

18 Dow as a company did or may not have done and so

19 forth?

20 A I think -- How do I answer that? I

21 didn't spend all my time in the industrial

22 hygiene laboratory. The nature of industrial

23 hygiene caused me to be acquainted with
24 particularly the manufacturing of Dow materials.
25 We had another program which is mentioned in the

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1 other deposition which had to do with customer
2 service industrial hygiene, I think I called
3 it at that time, which caused me to know quite
4 a bit about Dow materials and to make some
5 contribution to the process of letting our
6 customers know about the materials, even with
7 suggestion as to how to control exposures.

8 Q With respect to communiques that Dow
9 or any of its executives may have had with other
10 chemical companies or oil companies or
11 petrochemical companies about any number of
12 things, I mean you don't claim to have any
13 personal knowledge of that, do you?

14 A Well, not unless it had to do with
15 industrial hygiene. Then I would say that it's
16 quite likely - although I can't make any
17 guarantees - that I would have known about
18 anything specifically having to do with
19 industrial hygiene.

20 Q You think it likely?

21 A It is quite likely.

22 Q But you can't say it with certainty?

23 A No, I didn't follow all the officers
24 of the company around. So for a positive answer
25 that I knew everything that happened, obviously

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1 the answer to that is "no."

2 Q Certainly with respect to whatever the
3 Dow Legal Department was doing in its dealings
4 with other companies or with other lawyers or
5 with their insureds, you wouldn't have any
6 reason to have any personal knowledge of that
7 activity, would you?

8 A Unless it had to do with industrial
9 hygiene and industrial hygiene records, in which
10 case I was in charge of that and I would have
11 known about anything that they were doing in
12 that area that required action as far as I'm
13 concerned.

14 Q Including, say, the purging or
15 destruction of your industrial hygiene records?
16 That's something, for example, you would have
17 had knowledge of?

18 A I would have had knowledge of, that's
19 right.

20 Q At least up until 1976 when you
21 retired?

22 A You'd have to stop in 1976 as far as I
23 am concerned.
24 Q Now, your connection or involvement or
25 contact with the document retention/destruction

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1 program of Dow, which you think came into being
2 sometime in the '70's, did you say?
3 A I think I said I didn't know.
4 Q Let's start over, then.
5 Your involvement to the extent there
6 was any involvement with the Dow document
7 retention and destruction program was limited,
8 wasn't it, to just your reviewing the sort of
9 files that you thought could be purged from
10 industrial hygiene and telling --
11 A My contact with that program was just
12 that. It had to do with industrial hygiene.
13 Q And you decided which industrial
14 hygiene records were going to be kept and which
15 could be disposed of?
16 A Yes, and I characterized that for you.
17 Q But you don't know about any other
18 aspects of the document retention or destruction
19 program as it might have related to other
20 departments in the company, correct?
21 A No, I can only speak about industrial
22 hygiene records.
23 Q And, again, only as of or through
24 1976?
25 A Uh-huh. Yes.

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1 Q Where did Mr. Ott come from before he
2 joined Dow?
3 A I don't know.
4 Q I have the sense that he transferred
5 in from another company or hired in from another
6 company.
7 A He may have worked somewhere else. He
8 was hired by the Medical Department.
9 Q In your affidavit from February 10th
10 of 1993, you state that Dow never destroyed
11 records of premises inspections or preliminary
12 toxicology or epidemiology reports because of
13 the conspiracy or because of the lawsuit. And
14 I'm curious whether you are distinguishing
15 between preliminary and final tox reports,
16 for example.
17 A Well, in the process of writing a
18 report, you write a report and then it is
19 reviewed by yourself and others, and you end up
20 with a well marked-up report usually. And then

21 an acceptable final copy is arrived at which you
22 sign, and I'm not sure that working papers were
23 not destroyed. In fact, I know they were, just
24 working papers that you would scribble on,
25 misspelled words and things of that kind.

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1 Q So, you are making clear then that
2 preliminary tox or epi reports would have been
3 disposed of as working papers and draft papers,
4 but not --
5 A Not necessarily. -The working papers
6 might have been, is what I'm trying to say. In
7 fact, I would consider they usually would be,
8 just because of appearances; but the content
9 would not have been changed.
10 Q So, to the extent preliminary reports
11 were destroyed, it was just because they were
12 not needed anymore and there was a later version
13 done?
14 A It was because the more recent version
15 was more readable, probably.
16 Q Was there a period, Mr. Hoyle, when
17 the policy of Dow or the instructions from the
18 Legal Department or that branch of the company
19 were to the extent that you weren't to worry
20 about contractor employees; just leave them
21 alone and take care of Dow people only?
22 A Never heard that at all, no.
23 Q Were you ever told that the contracts
24 were written with the contractors to where Dow
25 wouldn't have any responsibility for contractor

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1 employees working in your plant?
2 A No, never got into liability much
3 in the practice of industrial hygiene. The
4 emphasis as far as I was concerned was -- I've
5 already described that.
6 Q And that is to be sure that you --
7 A Be sure we had the information
8 necessary to make materials without hurting
9 ourselves and similar information for the
10 customers so they wouldn't hurt themselves and
11 information enough so we could take care of our
12 neighbors. And that would include railroads and
13 truckers and things like that.
14 Q And also people that Dow invited into
15 its plants to do maintenance work or construction
16 work, I suppose?
17 A I have told you that the responsibility
18 as I understood it was to be sure that the work
19 environment would be safe from the standpoint of

20 the chemical content. Also early on prior to
21 the contractor safety program, it was my
22 understanding that things that were associated
23 with the practice of the trade were something
24 that they assumed for themselves and didn't want
25 us to have anything to do with, actually. This

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1 is like what kind of wrench they were going to
2 use to take a bolt off or whatever kind of
3 hazards. They were competent and had their own
4 safety programs.

5 Q And Dow required them to have a safety
6 program?

7 A I don't think Dow required them to,
8 but I know they did have.

9 Q But as to any material that was
10 already in the plant or that Dow was causing to
11 be brought into the plant, if you had
12 information about its health hazards --

13 A If it was specific to the Dow plant,
14 certainly we felt a great responsibility to
15 furnish information. If it had to do with their
16 trade - and to be specific, because I'm thinking
17 in terms of the insulators - we would have
18 expected that they would be knowledgeable
19 concerning the materials with which they were
20 working and how they should handle them early
21 on. Now, to what extent that changed with the
22 contractor's safety program, I am not the one to
23 talk to.

24 Q Did you also expect the contractor
25 workers from other trades - be they laborers or

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1 electricians or carpenters - to have a full
2 appreciation of the health hazards of materials
3 like asbestos insulation they would encounter in
4 the Dow plant while they were doing their job?

5 A I would have thought the contractor
6 would be responsible. They were all his
7 employees. You know, they weren't Dow
8 employees. They were on Dow property. And
9 whether we had a responsibility to say that we
10 didn't have any chemicals in the environment or
11 forms of energy, for that matter, that they
12 wouldn't know about, we felt a great
13 responsibility at that point.

14 Q Thinking that you certainly knew more
15 about those hazards --

16 A That's exactly right.

17 Q --- than the contractor?

18 A So we accepted responsibility at that

19 point. Frequently what happened was that they
20 were given clean equipment and areas to work in.
21 Q And if you knew of potential for
22 hazardous exposures in the work area that you
23 were handing over to them, if you had not
24 eliminated the potential for that exposure, then
25 you felt obliged to tell them about it?

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1 A We would have told them exactly about
2 it. I've done that myself in terms of
3 respiratory protection.
4 MR. BLANKS: Mr. Hoyle, I
5 think that covers everything we
6 need to cover, and I'll pass the
7 Witness at this time.

8

9 EXAMINATION BY MR. ALMQUIST:

10 Q I have a couple of quick questions.
11 You have mentioned a few times about the
12 contractor safety program. Do you know when
13 that contractor safety program actually started?
14 A I don't know exactly.
15 Q You were asked some questions about
16 evaluating hazards, and I think some of those
17 questions dealt with testing capabilities.
18 Before 1970 did you in the toxicology
19 lab or industrial hygiene lab have the
20 capability to test dusts of any sort?
21 A No. You're talking about animal
22 testing?
23 Q Yes, sir.
24 A The answer is "no."
25 Q And wasn't that the testing you were

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1 talking about earlier today?
2 A Yes.
3 Q Evaluating risks. Mr. Blanks talked
4 to you about a symposium on toxicology, and you
5 had a chance to look briefly at that material.
6 What was the topic that you spoke on
7 at that symposium?
8 A Industrial chemicals, industrial
9 hygiene aspects.
10 Q Was that article directed in any way
11 towards asbestos exposure or dust exposure?
12 A No.
13 Q You also have testified about some
14 work that was done in 1959, monitoring around
15 pipe coverers. And you have described cutting
16 and also you have described tearing out of
17 insulation.

18 Can you tell us what you meant and
19 what you found with respect to tearing out and
20 your recommendations with respect to tearing
21 out?
22 A Well, it was in the context of pipe
23 coverers or insulators. And the recommendations
24 were made considering the possibility that they
25 might be doing that a good portion of the day.

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1 In other words, it wasn't that there was a great
2 risk in a short-term few minutes of tearing out.
3 That is also what we were aiming at. We were
4 thinking in terms of the whole day for pipe
5 coverers.

6 MR. ALMQUIST: I'll pass the

7 Witness.

8

9 RE-EXAMINATION BY MR. BLANKS:

10 Q Mr. Hoyle, speaking of your symposium
11 on toxicology from around 1960, you told
12 Mr. Almquist that your talk on industrial
13 chemicals wasn't directed to asbestos exposure
14 or dust exposure.

15 A Well, asbestos exposures for certain
16 we were not talking about, and it was largely
17 aimed at the vapor exposure of people.

18 Q You're not saying that the general
19 principles which you articulated in your talk on
20 industrial chemicals and industrial hygiene
21 aspects of dealing with them specifically
22 excluded dust exposures or asbestos exposure,
23 are you, sir?

24 A Let me put it this way: I think in
25 preparing that thing, the term "asbestos" never

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1 entered my mind. I know what the orientation
2 was, and it had to do with toxicology at Dow,
3 and toxicology at Dow was by mouth, by
4 inhalation of vapors, by skin, but not -- We had
5 no capability as far as dust is concerned. We
6 did have capability to measure the amounts of
7 dust in the air of chemicals.

8 Q So, are you saying to us now that the
9 general principles you discussed in this paper
10 that you had a chance to look over at the break
11 and the concepts of maximum allowable
12 concentrations and sampling for exposures don't
13 apply today?

14 A Not having gone through that thing in
15 detail, I don't know if I remember well enough
16 to answer you. I do remember well enough to

17 know that the orientation of the symposium was
18 towards Dow's activity in toxicology. And I was
19 talking with respect to the use of that
20 information in the work environment. And it
21 should be looked upon as general, whatever I
22 have said there, and not specific to any
23 chemical.

24 Q Be it vapor ---

25 A These are general -- This is general.

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1 I can't remember whether I used examples like
2 chlorinated hydrocarbons in the paper or not. I
3 might have and might not have. I don't know. I
4 can't remember. I didn't look at it that
5 carefully. But I guess the point that I'm
6 trying to make is whatever is said there is not
7 specific to insulating trades or to asbestos.

8 Q Or to any other trade?

9 A Yeah.

10 Q Or to any specific material?

11 A I think that's true, but I'm not that
12 sure because I may have used organic solvents as
13 examples in there somewhere.
14 For instance, we talked lots of times
15 about odors, you know. And I suspect that in
16 there somewhere it says something about what you
17 need to do in the way of monitoring when you
18 don't have warning properties. I don't think
19 that would apply very well as far as asbestos is
20 concerned, the statement that I made there. It
21 applies far better to carbon tetrachloride where
22 you do have the capability to monitor continuously.
23 I know that up until 1976 nobody had the capability
24 to monitor and count dust continuously. So if that
25 statement is in there - and I think it is - it

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1 would be ridiculous to apply it to asbestos
2 because the capability didn't exist.

3 Q To monitor continuously?

4 A Yeah. It just didn't exist. That I
5 know. I don't know if it does now or not. I
6 don't think so.

7 Q Would it surprise you to know that
8 during the time period you were giving this
9 talk, that Dow personnel were actually doing
10 continuous monitoring in other Dow workplaces
11 for other toxic dusts such as beryllium?

12 A I don't think they were doing it on a
13 continuous basis. I think I know what you're
14 talking about. We took long-term samples. By
15 definition that's not what I'm talking about in

16 the statement that I think is in there. In
17 other words, if you take a sample for all day,
18 that's a long-term sample, but it's not a
19 continuous sample. It doesn't describe
20 continuously the environment. What I'm talking
21 about when I say "continuous" is a system that
22 allows you to follow the ups and downs during
23 the day. It's a control technique.
24 Q I see your point.
25 A I get into a long-winded discussion,

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1 but that's what I was having trouble answering
2 your question.
3 Q You would not say, though, that either
4 asbestos dust or silica dust have good warning
5 properties in themselves, would you?
6 A Oh, no, I wouldn't say they do. You'd
7 have to gather data enough to satisfy yourself
8 that your environment was all right. Neither
9 would I say that you needed to continuously
10 sample them because I don't think it can be
11 done.
12 Q You don't think it can be done?
13 A That's right.
14 Q You say you had an inhalation
15 toxicology capability in your labs not before
16 1970?
17 A Not for dust.
18 Q There were labs that did such
19 toxicology work --
20 A Yes, but I'm just talking about Dow.
21 Q I mean they were contract labs that
22 did this type of dust inhalation toxicology work
23 that has been reported in the literature back
24 into the '30's?
25 A Yes, sir. That's right.

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1 Q Even down in Detroit some experiments
2 were done by Mr. Bradley and published before
3 the beginning of World War II, you may recall.
4 A Yes, other people knew how to do it.
5 It wasn't important enough to us to have
6 invested in it.
7 Q And, finally, your paper on industrial
8 chemicals in the symposium on toxicology does in
9 any event set out general basic principles --
10 A Yeah, the general basic principles I
11 stand by. They haven't changed much.
12 MR. BLANKS: Very good, sir.
13 Thank you.
14 (WHEREUPON, THE DEPOSITION

15 WAS CONCLUDED.)

16 17 18 19 20 21 22 23 24 25

1 B-126,986
2 RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
3 VS. * JEFFERSON COUNTY, TEXAS
4 AMERICAN PETROFINA, ET AL * 60TH JUDICIAL DISTRICT

5 A-134,614
6 FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
7 VS. * JEFFERSON COUNTY, TEXAS
8 BETHLEHEM STEEL CORP., ET AL * 58TH JUDICIAL DISTRICT

10 B-141,242
11 ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
12 VS. * JEFFERSON COUNTY, TEXAS
13 AMERICAN OPTICAL CORP., ET AL * 60TH JUDICIAL DISTRICT

14 A-136,143
15 KEITH GIBLIN, ET AL * IN THE DISTRICT COURT OF
16 VS. * JEFFERSON COUNTY, TEXAS
17 MOBIL OIL CORPORATION, ET AL * 58TH JUDICIAL DISTRICT

19 E-141,216
20 JOSEPH E. BARNARD, ET UX * IN THE DISTRICT COURT OF
21 VS. * JEFFERSON COUNTY, TEXAS
22 ALLIED-SIGNAL, INC., ET AL * 172ND JUDICIAL DISTRICT

23 VIDEO DEPOSITION OF JACK E. PETERSON, P.E., Ph.D.

24

TAKEN ON MARCH 26TH, 1993

25

1 A-140,498
2 JOYCE A. BORNE, ET AL * IN THE DISTRICT COURT OF
3 *
4 VS. * JEFFERSON COUNTY, TEXAS
5 *
6 ALLIED-SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT
7 * * * * *
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20 VIDEO DEPOSITION OF
21 JACK E. PETERSON, P.E., Ph.D.
22
23

20 On March 26th, 1993, the video deposition of
21 Jack E. Peterson, a Witness in the above-styled cause,
22 was taken at the instance of the Plaintiffs at the
23 Marriott Suites, 701 A. Street, San Diego, California,

24 pursuant to Stipulation of Counsel contained herein.

25

1 Those counsel present, representing their
 2 respective client or clients in the cause of action or
 3 causes of action in which he/she has filed an answer,
 4 were as follow:

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VIDEOTAPE OPERATOR/TECHNICIAN:
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24

25

1 S T I P U L A T I O N

2

3

4 IT IS STIPULATED AND AGREED between Counsel
5 for the parties hereto that the deposition of the
6 Witness named herein is taken pursuant to Notice
7 attached hereto.

8

9

10 IT IS FURTHER STIPULATED AND AGREED that
11 the Witness may sign said deposition before any duly
12 authorized and acting Notary Public for the appropriate
13 area in which signature is obtained.

14

15

16 IT IS FURTHER STIPULATED AND AGREED that
17 this deposition, or any part of same, may be used upon
18 the trial of this cause with the same force and effect
19 as if the Witness were present in Court and testifying
20 in person.

21

22

23 IT IS FURTHER STIPULATED AND AGREED that

24 all objections, other than those that relate to the form

25 of the question and responsiveness of the answer, are

1 hereby preserved and may be made at the time any
 2 testimony herein is sought to be offered upon the trial
 3 of this cause, despite no objection having been made at
 4 the time the testimony was taken.

5

6

7 IT IS FURTHER STIPULATED AND AGREED that
 8 Rick Smith, a Certified Shorthand Reporter in and for
 9 the State of Texas, may act as a Certified Shorthand
 10 Reporter in and for the State of California for purposes
 11 of swearing the witness in this deposition.

12

13

14 IT IS FURTHER STIPULATED AND AGREED that
 15 the original deposition will be given To Joseph C.
 16 Blanks for safekeeping and for use at the time of trial.

17

18

19 * * * * *

20

21

22

23

24

25

1	EXHIBITS INDEX		
2			
3			
4	DEPOSITION OF JACK E. PETERSON, P.E., Ph.D.		
5			
6			
7	March 26th, 1993		
8			
9			
10			
11	EXHIBIT NO.	DESCRIPTION	PAGE
12			
13			
14	280207	"Resume" of Jack E.	
15		Peterson, P.E., Ph.D.	213
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20			
21			
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23			

24

25

1 JACK E. PETERSON, P.E., Ph.D.,

2 having been duly sworn, testified as follows, to-wit:

3 EXAMINATION BY MR. BLANKS:

4 Q. Good morning, sir. Would you please
5 introduce yourself to the Ladies and Gentlemen of the
6 Jury.

7 A. I am Jack Edwin Peterson.

8 Q. How old a man are you, Mr. Peterson?

9 A. Just 65 a couple of months ago.

10 Q. And what is your profession, sir?

11 A. I am a consulting industrial hygienist.

12 Q. How long have you been doing that kind of
13 work?

14 A. I -- I have been in industrial hygiene
15 since 1953. I have been a consultant since - oh, about
16 1970 or so.

17 Q. So that we can get acquainted, would you be
18 kind enough to just summarize in a chronological manner
19 your educational background leading on up to when you
20 started to - to go to work as an industrial hygienist.

21 A. I have a Bachelor's degree with honors in
22 chemical engineering from Washington State College, now
23 the university, in 1951; a Master of science in chemical

- 24 engineering from the University of Michigan in 1952,
- 25 and a Ph.D in industrial health from the University of

1 Michigan in 1965 - 1968. I will get these years

2 properly. I -- That is my educational background. I

3 have done other things obviously.

4 Q. Now, I see I have already gotten off on the

5 wrong foot with you by not referring to you as

6 Dr. Peterson. You will have to forgive me.

7 A. You are forgiven.

8 Q. Oh, thank you. Could you tell us then

9 about your work career and again in summary fashion ---

10 A. (Interrupting) All right.

11 Q. --- so that we can have an overview.

12 A. After I got my Masters degree in 1952, I

13 went to work for Dow Chemical in Midland, Michigan on a

14 special assignments program. This is a program where I

15 worked six weeks here and six weeks there for about a

16 year. My last such assignment was with the industrial

17 hygiene group. And I stayed with that group for the

18 remainder of my time at Dow until I left in 1965 to go

19 back to school to work on my Ph.D. in industrial health.

20 After receiving my Ph.D., I went across the

21 lake to Milwaukee where I had a joint appointment with

22 Marquette University and the Medical College of

23 Wisconsin.

24 In 1980 I left the - 1975 I left the

25 Medical College in favor of half-time consulting. In

1 1980 I left the medical - or left Marquette University
2 in favor of full-time consulting.

3 In the meantime in 1977 I had accepted a
4 10-percent-of-the-time appointment as professor in
5 occupational and environmental health sciences at the
6 University of Illinois. And that sort of petered out
7 over the years. I'm still called a visiting professor
8 with that school.

9 And in that period of time I also became a
10 clinical professor of preventive medicine at the Medical
11 College of Wisconsin. In 1984 I began doing some
12 teaching at the University of Wisconsin Parkside campus
13 in addition to consulting full time.

14 I -- I actually taught at Parkside for
15 three years as a professor of allied health. I left
16 Parkside in 1986, and I have been simply a full-time
17 consultant ever since then.

18 Q. I missed the date when you left Marquette
19 and began full-time consulting. I'm sorry.

20 A. 1980.

21 Q. And I gather you are still working as a
22 consultant in the industrial hygiene area today?

23 A. I am.

24 Q. Since you left Dow, have you served as a
25 consultant for Dow?

1 A. Yes.

2 Q. Are you currently serving as a consultant
3 for Dow in any matters?

4 A. Only in litigation.

5 Q. What - what areas of - or what sort of
6 problem areas does the litigation that you are
7 consulting on involve?

8 A. Currently there is only one case, and
9 that's one of the ones that you are involved in, the
10 Brown case; and I am retained as an expert by Dow.

11 Q. How long have you been functioning on - on
12 that case?

13 A. Oh, a week maybe, two weeks.

14 Q. Have you been retained by any other
15 companies in litigation as a consultant currently?

16 A. At any one time I'm probably working on 12
17 to 15 cases, and that is certainly the situation today.

18 Q. Any of these cases out of Beaumont?

19 A. No, none except for the Brown case.

20 Q. Have you been in the past hired as a
21 consultant or an expert in connection with a Beaumont
22 asbestos case called Thibodeaux?

23 A. No, sir.

24 Q. You don't recall ---

25 A. (Interrupting) I don't recall it.

1 Q. --- roughly this time last year being -
 2 being hired as a - as a testifying expert in connection
 3 with that mesothelioma case out of Jefferson County,
 4 Texas?

5 A. Gee, I may have been. I don't recall it.
 6 Sorry.

7 Q. Do you keep your litigation files after the
 8 cases are disposed of?

9 A. Generally not.

10 Q. Are you hired to - to testify in connection
 11 with this Beaumont case that we have been speaking of,
 12 the current one?

13 A. Nobody has talked about testimony. I'm
 14 simply consulting with the attorneys representing Dow at
 15 the moment.

16 Q. So, you understand that you are serving as
 17 a consulting rather than a testifying expert?

18 A. I may testify. I just don't know yet.

19 Q. I see.

20 A. We haven't talked about that.

21 Q. What - what kind of papers and things did
 22 you look at to prepare for your deposition today?

23 A. Just the Brown deposition transcript.

24 Q. Did you bring a copy of that with you

25 today?

1 A. No.

2 Q. Whose testimony was it that you looked at?

3 A. Mr. Brown.

4 Q. And what - what did you learn from reading
5 that transcript that - that you can share with us now?

6 A. Not a great deal. It's very difficult to
7 get much information from that transcript. Of most
8 interest was that Mr. Brown had apparently spent some
9 time in Michigan at a Dow establishment. The amount of
10 time is not at all apparent from his deposition. It was
11 in 1964, however, I believe.

12 Q. And you were just barely still with Dow at
13 that time?

14 A. Yes, I left Dow in '65, actually in August.

15 Q. So, you spent the next roughly two to three
16 years working on your doctorate?

17 A. Yes, it took me three years.

18 Q. You weren't employed during that time?

19 A. No, I was not.

20 Q. Nor doing any consulting work for Dow
21 during that time?

22 A. No, I did no consulting work of any kind in
23 that period.

24 Q. Did you form any opinions about Mr. Brice

25 Brown and his exposures at the - or alleged exposures at

1 the Dow plant in Michigan?

2 A. I have some opinions. Mr. Brown was a
3 pipefitter and apparently was working on new
4 construction wherever he was working. He said both
5 Saginaw and Mayville. I don't know of any Dow
6 establishment in Saginaw. And I don't know of any in
7 Mayville, Michigan. I assume it was Midland. I --
8 Since he was working in new construction as a
9 pipefitter, my opinion is that his exposures to asbestos
10 would have been minimal.

11 Q. What do you base that on, sir?

12 MR. PAPPAS: Excuse me,
13 Mr. Blanks. Could I ask you to speak
14 up just a hair, please, so that we can
15 hear you down here.

16 MR. BLANKS: You may ask.

17 MR. PAPPAS: I'm asking.

18 MR. BLANKS: Okay.

19 A. The knowledge that I have of the exposures
20 of insulators handling insulation that contains asbestos
21 is that probably most of them were exposed to
22 concentrations of asbestos well below the threshold
23 limit value for asbestos at that time. And also my

24 knowledge as an industrial hygienist tells me that

25 people who were not directly handling the material were

1 exposed undoubtedly to far less than were the
2 insulators.

3 (By Mr. Blanks)

4 Q. What aspects of your experience leads you
5 to that last conclusion?

6 A. Several. First is the fact that I have had
7 occasion to measure breathing zone concentrations of
8 people doing various things, and to measure
9 concentrations of the same kinds of things in the
10 breathing zones of people who weren't doing those
11 things. Secondary people always have much lower
12 exposures than the primary people. So, that's been my
13 direct experience as an industrial hygienist.

14 Furthermore, I know something about the
15 habits of small particles or fibers drifting in the air,
16 and know that in general they disperse as a gas or a
17 vapor would; and the further you get from the source,
18 the smaller the exposure that you will have because of
19 this dispersion.

20 Q. You've mentioned measuring the breathing
21 zones of people doing different tasks. And I know you
22 are speaking somewhat generally now. Could you be more
23 specific. Have you measured - taken dust samples in the

24 breathing zones of people doing asbestos insulation

25 work? Is that what you meant to say?

1 A. No. In fact, I have not. It has been
2 other kinds of work.

3 Q. What other kinds of work would we be
4 talking about that you are generalizing from?

5 A. In the asbestos area, measuring the
6 breathing zones of people around where
7 asbestos-containing gaskets are being handled. These
8 are not insulation materials, but they do contain
9 asbestos. I have measured the breathing zones of
10 welders for welding fume and the breathing zones of
11 people in the vicinity of welders for welding fume.
12 Those are the two circumstances that come to mind.

13 Q. So, you have done no monitoring of people
14 working directly with asbestos-containing thermal
15 insulations or the cement products or the - the other
16 related products in - in an industrial setting; is that
17 so?

18 A. That's true. The only - the closest I came
19 to that was directing some work in that area.

20 Q. When and where would that have been, sir?

21 A. That was in 1984 at the Long Beach Naval
22 shipyard where I directed the activities of a group of
23 industrial hygienists monitoring the removal of

24 asbestos-containing materials from the battleship

25 MISSOURI.

1 Q. What sort of techniques were being used in
2 that task to control the dust from the - the handling or
3 removal of the insulation?

4 A. The generalized modern techniques were
5 being used; that is, the insulation was soaked with what
6 is called amended water prior to be - prior to being
7 touched. The people doing the job wore what is
8 euphemistically called moon suits and respiratory
9 protective equipment while doing the job.

10 Q. And the respiratory protective equipment
11 would have consisted of what - what sort of gear?

12 A. I don't remember at the moment.

13 Q. I mean are we talking about like an airline
14 respirator, a supplied-air source or a mechanical filter
15 respirator or what?

16 A. My recollection is that some of the people
17 wore some - the airline respirators and others did not.
18 They wore the air-purifying respirators.

19 Q. So, like the people in the moon suits that
20 were in the direct proximity or handling the insulation
21 probably had the - the air-fed respirators?

22 A. Yes.

23 Q. And those that were disposing of the

- 24 asbestos in the bags and - and handling it after it had
- 25 been removed and put in a bag were wearing filtering

1 respirators?

2 A. That's my recollection, yes.

3 Q. The amended water that you spoke of, what
4 was that; something that had like wetting agents in it?

5 A. That's correct.

6 Q. And what is the purpose of that,
7 Dr. Peterson?

8 A. The purpose of it is to wet the insulation
9 which sometimes is difficult to wet particularly if it
10 contains amosite asbestos.

11 Q. And that was the kind of insulation that
12 was in this battleship, amosite-containing insulation?

13 A. Oh, yes, certainly.

14 Q. What, like a Unibestos product?

15 A. I have no idea whose product it was. But I
16 know that when the battleship MISSOURI was insulated,
17 that the Navy called for amosite-containing insulation;
18 so, it must have been.

19 Q. What - what other industrial hygiene
20 controls or hygienic controls were used during this
21 removal besides the wetting, the wet methods and the -
22 the air-fed respirators and special clothing?

23 A. We isolated the areas that the people were

24 working in, specifically the engine room and boiler

25 room, depending upon where they were working, from the

1 rest of the ship using polyethylene sheet and made
2 sure that these areas had lower air pressures within
3 them than did the remainder of the ship so that any
4 leaks through the seals were in toward the contaminated
5 area.

6 Q. You accomplished this by means of some sort
7 of an exhaust ventilation system I suppose to maintain a
8 suction?

9 A. My memory of this is not real good because
10 I didn't plan that part of it at all. The only thing
11 that I was in charge of was monitoring the exposures of
12 these people.

13 Q. Uh-huh.

14 A. And I was only on the ship once when the
15 removal was taking place. And I don't recall a great
16 deal about how these things were accomplished.

17 Q. You have seen other asbestos abatement
18 projects along the way in the last few years I would
19 suppose?

20 A. That's correct.

21 Q. How would one -- After - after you've
22 isolated the work area, how would one maintain a
23 negative air pressure inside that work space typically?

24 A. Typically one uses a blower that takes air
25 from inside the containment volume and discharges that

1 air through high efficiency particulate aerosol filters
2 or Hepa filters to the outdoors or to the remainder of
3 the space.

4 Q. So, this would be an example of a form of
5 exhaust ventilation if we are speaking in terms of
6 general principles I suppose?

7 A. It certainly is a form of exhaust
8 ventilation. We would call it general exhaust
9 ventilation.

10 Q. And - and besides maintaining a negative
11 air pressure to where you would be not allowing any of
12 the asbestos dust to escape outside the enclosed area,
13 you are also I suppose removing the dust that is being
14 generated in the removal of the insulation and capturing
15 it in - in this high efficiency filter that you
16 mentioned?

17 A. That's the theory of what's going on.
18 Actually very little dust is generated if this job is
19 being done properly.

20 Q. Because of the wetting?

21 A. Because of the wetting and the careful
22 removal techniques that people use.

23 Q. Could you describe what you observed

24 about - in the nature of careful removal techniques.

25 A. Rather than describing how they do it, I

1 can tell you how they don't do it; that is, they don't
2 take pieces of insulation off and throw them on the
3 floor and walk on them and so forth. Instead they
4 handle each piece of insulation rather carefully,
5 removing it from the pipe or the boiler or whatever and
6 putting it in a plastic bag. The plastic bag before
7 being removed from the area is then encased in another
8 plastic bag, both of them being sealed, so that
9 asbestos-containing materials are not allowed to - to
10 get out of the area directly, except within a sealed
11 bag.

12 Q. What - what is the problem with just
13 dropping the asbestos insulation on the floor and then
14 someone stepping on it? I mean what is the consequence
15 of that?

16 A. It gets spread around is all.

17 Q. Does this end up - what, generating more
18 particles that can be turned into airborne dust at some
19 point?

20 A. Not necessarily. Just a mess to clean up.
21 And the clean up itself may do things, depending upon
22 whether the asbestos-containing material has dried out.

23 Q. I see. So, if it is dry, then just the

24 sweeping or shoveling it up in itself is a - a bit of a

25 dust-making activity, isn't it, when it's dry?

1 A. I -- I suppose it can be. I have never
2 observed it; so, I don't know.

3 Q. Did you ever observe the removal or
4 installation of asbestos insulation in a chemical plant
5 or a refinery?

6 A. No.

7 Q. So, you were telling us then that you were
8 monitoring for dust in the air where these men were
9 doing the removal in the battleship in Long Beach is
10 where we started on this digression.

11 A. That's what I was doing, yes. Or what the
12 crew was doing. I wasn't actually there doing it.

13 Q. All right, sir. Well, have you ever
14 personally monitored and - for airborne dust-containing
15 asbestos yourself?

16 A. Sure, several times.

17 Q. This would have been in connection with the
18 asbestos-containing gaskets?

19 A. Well, that's one such instance, yes.

20 Q. Can - can you tell us about any other times
21 that you recall?

22 A. I have monitored the breathing zones of
23 people installing these asbestos-containing gaskets in

- 24 small engines. I have monitored the brake jobs being
- 25 done on buses two or three times where the brake shoes

1 are asbestos-containing materials.

2 I have monitored the turning of such brake
3 shoes on lathes for buses. I recall one time when I
4 simulated or had an exposure simulated in a building
5 where a maintenance man did some work wearing air
6 sampling equipment. And there undoubtedly were more,
7 but those are the ones that come to mind.

8 Q. What was the point or the reason for -- The
9 point of or the reason for your doing the monitoring of
10 the men who were removing the asbestos insulation on the
11 battleship? And I say "you are doing it," I mean your -
12 your crew or staff doing it.

13 A. It was part of our contract.

14 Q. Well, I mean why would anybody spend money
15 doing something like that when you are using all of
16 these controls that you spoke of that - that were aimed
17 at eliminating the dust generation?

18 A. The Navy was interested in determining what
19 their - the exposures of the people would have been had
20 they not been wearing the respiratory protective
21 equipment.

22 Q. You feel like based on 30 years of
23 experience that you could have told the Navy what those

24 exposures would have been in the absence of doing

25 monitoring with any - any high level of accuracy or

1 certainty?

2 A. Probably.

3 Q. You could express it in terms of the number
4 of fibers per cc of asbestos dust in the air?

5 A. Based upon work that I had observed or had
6 been doing previously, yes. If the job is done properly
7 with the asbestos-containing material being wetted
8 properly and handled carefully, exposures even without
9 respiratory protective equipment would be quite low.

10 MR. BLANKS: I will have to
11 object to the responsiveness of that.

12 (By Mr. Blanks)

13 Q. And I will ask you, then, if that opinion
14 is based on these examples of asbestos monitoring that
15 you have personally done; that is, the gasket
16 installation and the brake work?

17 A. No. Because as I was talking, I remembered
18 another one; and that is where I monitored the removal
19 of asbestos-containing material from a building in
20 Milwaukee. And I was working with the results of that
21 monitoring and know what those results were.

22 Q. And what - what year, approximately, would
23 that have been in? Sometime in the '80's I suppose?

24 A. Probably the early '80's. I -- I just

25 don't remember.

1 Q. All right, sir.

2 A. Sorry.

3 Q. This would have been removing building
4 materials containing asbestos?

5 A. Yes.

6 Q. Can you tell us generally what kind of
7 materials we are talking about? Would it have been like
8 ceiling tiles or plasters, or do you recollect at all?

9 A. The material removed was ceiling tile,
10 acoustical plaster, thermal insulation. I'm not sure
11 whether they removed any floor tile or not.

12 Q. You say "thermal insulation," are you
13 talking like insulation that would have been used on
14 pipes or - or insulation you would put in walls and
15 ceilings?

16 A. This would be pipe insulation.

17 Q. And was this work in Milwaukee in probably
18 the early '80's done under controlled conditions as
19 well with wet - wet methods and respiratory protection
20 and so on?

21 A. Oh, yes. The method used was very similar
22 to that that was used on the MISSOURI.

23 Q. I see. So, you think you could have given

24 the Navy an accurate value for the asbestos exposures

25 that would have been - they would have had inside the

1 ship areas where they were removing the insulation
2 without doing monitoring?

3 A. Not an accurate value, no. I think I could
4 have told them that based upon the experience that I had
5 had and the material I had read, that if the work is
6 done carefully, that exposures would be below the
7 threshold limit value. But exactly what the levels
8 would be, I certainly couldn't tell them without
9 monitoring.

10 Q. And the reasons that you think the
11 exposures would have been below the threshold limit
12 values would have been in large part because the wet
13 methods were used to prevent the creation of dust I
14 suppose. Would that be true?

15 A. Well, it's - it's the whole method that -
16 that's being used that would result in relatively low
17 concentrations of asbestos-containing materials.

18 And as we talk, I can remember a couple of
19 other cases where I or people working with me monitored
20 the breathing zones of people doing such removal. And
21 almost always the concentrations that we found in the
22 breathing zones of such people were well below the
23 T.L.V. or the P.E.L. at the time.

24 Q. And that would be in cases where you are
25 using wet methods to suppress the dust creation;

1 isolation of the work space from the surrounding area;
2 exhaust ventilation as we have just discussed and
3 careful handling techniques so as not to create any more
4 dust than - than absolutely necessary in the removal of
5 materials; isn't that true?

6 A. I -- More or less true. However, the
7 isolation and the exhaust ventilation don't do anything
8 at all for the workers who are doing the job. They
9 simply prevent the spread of asbestos-containing
10 materials from the contained area to elsewhere in the
11 building or ship or wherever.

12 Q. Oh, the ventilation isn't a factor here
13 because the wet methods result in such a low amount of
14 dust in the air?

15 A. Essential ---

16 Q. (Interrupting) Is that what you are saying?

17 A. Yeah, essentially. That's right.

18 Q. I see. Now, if wet methods were not being
19 used in the ventilation by removing the - or changing
20 out the air in the room and thereby taking dust out,
21 too, would - would help to keep the exposures down, keep
22 the level down, true?

23 A. It depends on where you are making the

24 measurements and so forth. I -- I really can't give you

25 a generalized answer.

1 Q. That means that even with ventilation,
2 there would be some areas in the work space where the
3 dust concentrations would be higher than - than in
4 others?

5 A. Well, sure. In general the closer to where
6 the source is, the higher the concentration is going to
7 be. So, there will obviously be a gradation of
8 concentrations.

9 Q. In a space like the ones you have monitored
10 in, have you done area monitoring within the area so
11 that you can tell us how quickly a dust concentration
12 will decline as the distance from the - you are calling
13 the source increases?

14 A. Only those circumstances that we discussed
15 previously.

16 Q. You mean like the removals in the Milwaukee
17 building and the brake jobs and the gasket installation
18 and that sort of thing?

19 A. No, the welding and that kind of thing that
20 I was talking about. I can't recall any circumstance
21 where I or people working for me monitored the general
22 area in a containment area, if you will. We always
23 monitored outside the containment area as well as the

24 breathing zone of the people doing the work.

25 Q. Okay. So, your monitoring would be very

1 close to the - the person doing the work. That's what
2 you called a breathing zone. What - what does that
3 mean anyway? I mean I have got a picture that's just
4 right around your - your nose, your mouth. But what -
5 what do you mean when you say "breathing zone"?

6 A. Well, the Occupational Safety and Health
7 Administration defines the breathing zone as an area
8 encompassed in a one foot radius of the nose and mouth.

9 Q. So, you would monitor within a one foot
10 radius of the nose or mouth of the person that was
11 actually generating this dust?

12 A. Yes.

13 Q. And then the only other monitoring that was
14 done would have been outside the - the containment area,
15 outside the polyethylene wall or whatever it would be to
16 see if there was any leakage outside?

17 A. Yes, when we are talking about the removing
18 of asbestos-containing material.

19 Q. Okay. But you can't tell us then that
20 within the containment area or even within a work area
21 that is not contained, how - how quickly the
22 concentrations drop off as you move away from what you
23 are calling the source of the dust, can you?

24 A. Not for asbestos, no. I have never made

25 that measurement.

1 Q. Now, you apparently have done a good bit of
2 sampling in connection with welding operations.

3 A. I have.

4 Q. And this is - what, arc welding?

5 A. Yes.

6 Q. Who were you doing these for?

7 A. Mainly welding rod manufacturers in
8 litigation.

9 Q. Any of those in particular or just all of
10 them? There is not too many of them, are there?

11 A. Gee, I don't know. Most of the work that I
12 have done has been for attorneys working for Lincoln
13 Electric, sometimes others. That's been the main one,
14 however.

15 Q. So, what - what did you learn generally
16 about the behavior of particulates that are generated by
17 electric arc welding?

18 A. Quite a lot. Do you have anything more
19 specific in mind?

20 Q. Well, no. I was just trying to get a quick
21 education here and see how it might apply to our
22 asbestos problems since you have offered it as a
23 metaphor.

24 A. Well, when welding fume is freshly
25 generated, it is very small; that is, each particle is

1 very small. These particles for the most part are
2 respirable particles because they are small.
3 "Respirable" referring to the ability of the particle
4 to reach the deep lung on inhalation. Therefore,
5 because of their size, their low mass, they tend to move
6 with air currents.

7 In welding, arc welding, the source of the
8 particles is a source also of heat. And, therefore,
9 everything tends to rise in a plume of heated air. This
10 material readily disperses, however, once the plume
11 expands and cools; so that as the materials drift in
12 air, they can be found elsewhere within the building
13 usually, but in much lower concentration than they are
14 found in the breathing zone of the welder.

15 Q. So, these particles you say are mostly in
16 the respirable size; and that's what - what diameter
17 and - and less?

18 A. Respirable refers to particles that have an
19 aerodynamic diameter of about five micrometers or less.
20 Usually we have a lower cut off at about a tenth of a
21 micrometer because materials that are smaller than that
22 tend to behave like gas molecules; that is, they go in
23 and come right back out again.

24 Those materials that have the greatest

25 ability to remain within the lung once inhaled have

1 aerodynamic diameters on the order of two or three
2 micrometers.

3 Q. Can you tell us anything about the density
4 of these respirable particles that - that are generated
5 in electric arc welding?

6 A. The density varies to a certain extent
7 because the particles that are generated are in general
8 spherical in nature; many of them are hollow. But
9 density is one of those factors that is taken into
10 consideration when one determines aerodynamic diameter.
11 And, therefore, it is not an independent variable.

12 Q. So, you can't tell us what the density of
13 the welding particles are?

14 A. Not right offhand. I don't recall.

15 Q. How do they compare with the density of
16 asbestos fibers of the sort that you would find in
17 thermal insulation materials?

18 A. Well, again, the question really doesn't
19 arise when one is talking aerodynamic diameter because
20 the aerodynamic diameter of a particle refers to its
21 terminal velocity; that is, its settling velocity in air
22 or on other fluid. And everything is referred to a
23 sphere having a unit density, a density of one.

24 And, therefore, if a particle the same

25 diameter as this sphere we are talking about has a

1 density of three, it will fall three times as fast. It
2 will have a settling velocity greater than the density
3 of one particle will have. But when we look at
4 aerodynamic diameter rather than physical diameter,
5 density is part of the equation, if you will. So, it is
6 not independent. And it really doesn't make any
7 difference what the density is.

8 Q. How does the - the fact that these
9 particles are both heated and in a hot gas plume make a
10 difference to their dispersion?

11 A. In welding, in arc welding, the plume
12 rises. This is a common experience of lots of people
13 seeing a plume rise from a hot source. The plume then
14 disperses. As it gets cooler, the plume gets bigger and
15 bigger and bigger until eventually it just goes as much
16 horizontally as it does vertically. So, that's the way
17 we get dispersion with that kind of a plume.

18 Q. So, in fact, because of the heat factor,
19 the welding particles are going to move in still air in
20 a fashion that is in - in some important respects
21 different from what you - you would see with an asbestos
22 fiber in still air, isn't it?

23 A. Yes, because ordinarily the asbestos fiber

24 from asbestos-containing insulation doesn't have any

25 thermal source associated with it.

1 Q. Right. Now, how does wetting the
2 asbestos-containing insulation affect the behavior of
3 the particles that must inevitably be generated or
4 created when the material is being torn apart or sawed
5 or what have you to get it off?

6 MR. CELBA: Well, I'm going to
7 object to the argumentative point of
8 that.

9 MR. BLANKS: Who are you
10 representing?

11 MR. CELBA: Owens-Corning
12 Fiberglas.

13 MR. BLANKS: I should have known.

14 (By Mr. Blanks)

15 Q. All right, sir. We were saying.

16 A. If the particle is wet, then the particle
17 is very large because of the water associated with it;
18 and it probably just drops to the floor if it gets loose
19 from the asbestos-containing material. However, the
20 wetting tends to make sure that particles stick
21 together. They conglomerate. They tend to form one big
22 mass rather than a bunch of little particles no matter
23 what you do with the stuff.

24 Q. Okay. So, even in sawing it or tearing

25 pieces apart, breaking the connections, the wetting

1 tends to - to keep the material sort of cemented
2 together?

3 A. In general, that's correct.

4 Q. And the particles that do get knocked off
5 because they are wet, they tend to be heavier and bigger
6 and fall to the floor instead of being suspended in the
7 air; is that so?

8 A. Well, again, we have this tendency to stick
9 together because of the wetting; and, therefore, we
10 generate very few particles of respirable size if the
11 wetting is done properly.

12 Q. Now, when was it in Dow plants that these
13 methods of isolation, ventilation, wet methods, careful
14 handling of asbestos insulation materials, the use of
15 respiratory protective equipment such as you have
16 described, when did all of these controls come to be
17 used at Dow in connection with - with asbestos
18 insulating work?

19 A. I don't know.

20 Q. Would it be the case then that as of the
21 time you left the company in 1965 that these techniques
22 had not by then been adopted for all asbestos insulation
23 work in Dow plants?

24 A. I don't know.

25 Q. Then I gather that you don't know if any of

1 these methods were being used in Dow plants in 1965 one
2 way or the other, huh?

3 A. That's correct.

4 Q. And I'm wondering, Dr. Peterson, if your
5 consulting work for Dow since you have left them in '65
6 has - has for any reason had you back into Dow plants or
7 facilities where you would have a chance to see what
8 they have been doing in the - in the later years; that
9 is to say the last almost 30 years in handling asbestos
10 insulation materials.

11 A. No.

12 Q. Where did you actually get your training in
13 industrial hygiene?

14 A. At Dow.

15 Q. Okay. So, you really weren't introduced to
16 industrial hygiene in any depth at all in your chemical
17 engineering education?

18 A. That's correct.

19 Q. And, so, you actually learned on the job as
20 it were at Dow beginning somewhere in '52 or '53 -
21 perhaps '53 when you got into that six-week section with
22 the I. H. department, true?

23 A. That's correct.

24 Q. What other special assignments did you have
25 during that first year? What other kind of things did

1 you work on before you migrated to industrial hygiene?

2 A. Oh, I haven't thought about this for a long
3 time. I worked for -- I had one project. My first one
4 was with the -- Oh, my. I have forgotten the
5 department. My job with them was to work on the
6 distillation of benzoic acid.

7 I worked in the glycol plant where glycol
8 ethers were being made. That was the only production
9 job that I had. All the rest of them were research
10 laboratory jobs. I did some research with a material
11 called sulfan for the physical research laboratory.

12 I had a project in the metallurgical
13 laboratory dealing with the breakage of specimens of
14 metal. Those are the only ones that I recall at the
15 moment.

16 Q. What was the point of this - this variety
17 of special assignments? Was this just to help you find
18 some area of interest or help Dow to see if you had any
19 special expertise or potential or what - what was the
20 idea behind this program?

21 A. There were two ideas behind the program.
22 One was to let me become acquainted with Dow and what
23 was going on there; and, secondly, to let at least some

24 Dow people become acquainted with me and my abilities.

25 Q. Well, let's move then to your introduction

1 to industrial hygiene in the last part of your first
2 year with Dow, which I'm surmising would have been
3 sometime in 1953 probably.

4 A. That's correct.

5 Q. Who did you go to work for there?

6 A. Mr. Hoyle, Harold Hoyle.

7 Q. And what was Mr. Hoyle's position at that
8 time in 1953?

9 A. He ran the industrial hygiene group. I
10 don't know what his position was called, but he was the
11 manager of the industrial hygiene group.

12 Q. Could you tell us roughly how large the
13 group was when you started there.

14 A. The group consisted of Harold and two other
15 people: Ed Schneider and Jerry Clock when I became a
16 member of the group.

17 Q. Jerry who, sir?

18 A. Clock.

19 Q. Clock?

20 A. Yeah, C-I-o-c-k, just like o'clock.

21 Q. And were both of those gentlemen industrial
22 hygienists?

23 A. Neither one started out that way. Ed had

24 been with Harold for several years. Jerry had been
25 there for a few months; and, in fact, was only there for

1 a few months after I came on board. He was not in the
2 group very long.

3 Q. So, you ended up in effect replacing him or
4 taking his place in that he did leave soon thereafter?

5 A. In effect, yes.

6 Q. What was Mr. Schneider's background? I
7 mean had he had some professional training before he
8 joined up with Mr. Hoyle in the industrial hygiene
9 department?

10 A. I really don't recall. I don't remember.

11 Q. Had he been a long-term Dow employee to
12 your understanding?

13 A. I just don't recall. It's too long ago.

14 Q. Now, wait a minute. If we were talking
15 about 1943, I would have to give you that point. All
16 right, sir. So, sometime either in 1963 or '64 then you
17 became the No. 3 industrial hygienist in the group?

18 A. No, '53. Not '63.

19 Q. I'm sorry. I'm sorry. Excuse me. Can you
20 tell us about the other people that hired on after you
21 that you can remember, knowing that there will probably
22 be some that you can't recall and some that came and
23 went?

24 A. The person who came after me was Lawrence

25 Silverstein, Larry Silverstein. The person who came

1 after Larry was Arnold Schaffer. And by the time I
2 left, those were the only more or less permanent
3 additions to our staff. We had a number of people come
4 through the group and worked there on their own six-week
5 or eight-week assignments with their group. But
6 there -- I don't recall there being any other permanent
7 additions.

8 We had -- Oh, sorry. Charlie Powell,
9 Charles Powell was there for a few months. He was
10 supposedly going to be a permanent addition to the
11 group, but he left in favor of going to the Public
12 Health Service or someplace.

13 Q. So, by 1965 when you departed the
14 industrial hygiene group, it consisted of - what,
15 Mr. Hoyle, Mr. Schneider was still there,
16 Mr. Silverstein and Mr. Schaffer and ...

17 A. Oh, yes. We had a young lady, Lorna
18 Stolpe, who was working as an analyst for us as well.

19 Q. S-t-o-l-p-e?

20 A. Yes.

21 Q. But to my earlier question, the department
22 consisted of four or five industrial hygienists by 1965
23 and then in addition this lady who was an analyst?

24 A. Yes. That was the group in Midland. By
25 the time I left, there were industrial hygienists at

1 other Dow divisions but not in Midland.

2 Q. And when you described this lady as being
3 an analyst, what - what does that entail? Was she a
4 chemist? What - what was she?

5 A. Lorna was a chemist, yes.

6 Q. What sort of work did she do for you?

7 A. Basically analytical chemistry. She also
8 helped maintain the equipment that we had, did some
9 calibrating of equipment and so forth.

10 Q. Now, did the Midland industrial hygiene
11 group function as sort of a corporate industrial hygiene
12 group; or was its responsibility limited to the plant or
13 plants in the Michigan area?

14 A. Depends on the time frame. When I was
15 there most of the time, the Midland group functioned as
16 the industrial hygiene group for Dow Chemical regardless
17 of division or whatever. When the other divisions began
18 to have their own industrial hygiene people, we became
19 still a corporate group, but more or less in a staff
20 responsibility to the others.

21 Q. So, in the beginning this Midland
22 industrial hygiene group was the group of industrial
23 hygienists responsible for all of the Dow facilities.

24 Then as time passed, some hygienists were hired to

25 actually work in particular plants assigned to - to

1 those plants?

2 A. Yes.

3 Q. And then the Midland group sort of

4 transformed into more of a staff consulting group for

5 these individual plants, is that ...

6 A. That's as I recall it, yes.

7 Q. All right, sir. Do you recall when it was

8 that along the way that hygienists were hired to go work

9 in specific plants, even approximately?

10 A. I don't recall. I really don't - don't

11 remember.

12 Q. I'm assuming perhaps incorrectly that by

13 1965 when you left Dow to go into full-time academia,

14 that there were at least a few industrial hygienists

15 assigned to specific Dow plants. Would that be so?

16 A. That was so, yes.

17 Q. Would you recall, sir, if by 1965 there was

18 an industrial hygienist in any of the Dow Texas plants?

19 A. Yes, I believe there was.

20 Q. Can you recollect who that person was?

21 A. That was Dr. Ralph Langner. Actually Larry

22 Silverstein went to Freeport for a while to work down

23 there. It may have just been a few months. And it was

24 after that I believe that Dr. Langner was hired.

25 Q. And what is this gentleman's first name?

1 A. Ralph.

2 Q. How do you spell the last name,
3 Dr. Peterson?

4 A. L-a-n-g-n-e-r. Ralph is dead. He died of
5 cancer sometime.

6 Q. Now, was Dr. Langner a physician or a
7 Ph.D.; or what - what was his background?

8 A. I know he was not a physician. He had a
9 Ph.D., and I don't recall what in.

10 Q. Can you associate any other industrial
11 hygienists with the Dow Freeport facility?

12 A. No.

13 Q. Were there any other Dow facilities in
14 Texas that you knew of?

15 A. No.

16 Q. Did you yourself ever go to the Dow
17 Freeport plant?

18 A. Yes.

19 Q. Approximately when was that? Sometime
20 between 1953 and 1965, I know.

21 A. Probably in the early '60's, but I -- I
22 don't recall when I went.

23 Q. And what was it that - that would have

- 24 caused you to go down there? Instructions from above,
- 25 yeah. No. What - what sort of a problem would you have

1 been confronted with?

2 A. I'm not really sure. I -- I don't have any
3 recollection of why I went there. I remember going, and
4 that's about it.

5 Q. What in those years were the principal
6 products of that plant in Texas?

7 A. As I recall the products, the main products
8 were associated with the chlorination of materials found
9 in petroleum along with magnesium.

10 Q. Are you remembering that at the time you
11 first went to the Freeport plant that there wasn't
12 already an industrial hygienist assigned to that plant?

13 A. No, there was no industrial hygienist there
14 when I went there.

15 Q. So, if your recollection about going in the
16 early '60's is right, then it would follow that
17 Dr. Langner was assigned there sometime around or after
18 the early '60's, but probably before '65, huh?

19 A. That sounds logical.

20 Q. Okay.

21 A. I sure can't vouch for it, however.

22 Q. All right.

23 A. I just don't know.

24 Q. Based on your best recollection, and that's

25 all we have got to work with, what kind of uses were

1 made of asbestos in the Freeport plant?

2 A. I don't know.

3 Q. Were there any uses of asbestos in the
4 chlorination processes?

5 A. Not that I'm aware of, no.

6 Q. Did Dow make its own chlorine there?

7 A. I don't recall. I -- Oh, yes, Dow did make
8 chlorine there.

9 Q. Did they use hooker cells?

10 A. I don't know.

11 Q. Are you familiar with what hooker cells
12 are?

13 A. At one time I could have drawn you a
14 picture, but I can't anymore.

15 Q. Do you recall that they used asbestos as
16 a - as a media in those cells?

17 A. I -- I really don't. I know that there
18 were two or three kinds of electrolytic cells that used
19 asbestos; but whether the hooker cell did, I don't
20 recall.

21 Q. And you don't recall whether Dow's process
22 did or not I suppose?

23 A. I -- I never got involved with that. I

24 just don't remember.

25 Q. Do you recall that you did any kind of

1 sampling or monitoring while you were down at Freeport?

2 A. I don't recall doing so; I might well have,
3 however.

4 Q. Well, during this approximately 12 years
5 that you were with the industrial hygiene group in
6 Midland, how many different plants did you men have to
7 cover?

8 A. My recollection is that Mr. Hoyle did most
9 of the work outside of Midland. But I know that I got
10 over to Ludington once, Freeport once or twice. I'm not
11 sure. Over to Sarnia once and to Dow's Bay City plant
12 several times.

13 Q. Well, where is the Bay City plant?

14 A. In Bay City, Michigan.

15 Q. And in Midland I gather there is at least
16 one Dow production plant?

17 A. Yes.

18 Q. Be there more than one?

19 A. Well, at one time we thought that the Dow
20 plant in Midland was the largest chemical plant inside
21 one fence in the United States if not the world.

22 Q. Is that to say that there were several
23 different production units within this one - one piece

24 of property?

25 A. Many.

1 Q. But there weren't locations away from
2 Midland or away from this - this one spot in Midland? I
3 mean if we are talking about the Midland plant, we are
4 talking about many units; but - but one place, one in
5 the same place?

6 A. Well, we had wells for brine that were
7 outside of the confines of the plant. But all chemical
8 processing was done within a fence really, a fenced
9 area.

10 Q. So, during this period '53 through '65, Dow
11 had plants in about - what, five different places?

12 A. Oh, there were others as well that I didn't
13 get to.

14 Q. I'm sorry. You were just listing the ones
15 you had been to?

16 A. Yes.

17 Q. Excuse me. Can you -- Can you tell us the
18 others that you recall; that is to say ones in addition
19 to these, ones that you didn't go to?

20 A. Well, Dow was running the plant at Rocky
21 Flats, Colorado for the Atomic Energy Commission. Dow
22 had a facility in California in Pittsburg I believe.
23 There was Cliffs-Dow in Canada. Those are the only ones

24 I remember.

25 Q. What was the Dowell division, D-o-w-e-l-l?

1 A. This was a group that did fracturing of
2 strata for oil production as well I believe as the
3 refurbishing of some kinds of equipment such as heat
4 exchangers and so forth.

5 Q. So, this would be oil production
6 related ---

7 A. (Interrupting) Yes, all - all of it.

8 Q. --- equipment? Okay. Now, did you also
9 provide industrial hygiene services out of Midland for
10 the Dowell division in that period '53 to '65 or any
11 part of it?

12 A. I didn't, no.

13 Q. Did the industrial hygiene group?

14 A. Yes.

15 Q. Was there any particular person responsible
16 for that?

17 A. There was, but I don't remember who it was.

18 Q. Do you recall, Dr. Peterson, any other
19 divisions of Dow Chemical Company that got their
20 industrial hygiene services from the Midland group while
21 you were there?

22 A. No, I don't recall. There probably were,
23 but I just don't remember because I wasn't involved in

24 it.

25 Q. I see.

1 MR. ALMQUIST: Joe, why don't we
2 take a break.

3 MR. BLANKS: Well, all right.

4

5 (A BRIEF RECESS WAS TAKEN.)

6

7 (By Mr. Blanks)

8 Q. Dr. Peterson, the work you did in
9 connection with asbestos gasket installation monitoring,
10 was that done at Briggs & Stratton?

11 A. It was done at Briggs & Stratton, yes.

12 Q. They were concerned in their plant about
13 any possible asbestos exposures from the use of these
14 gaskets when they were putting their engines together?

15 A. Correct.

16 Q. Or I guess the installation of the gaskets,
17 wasn't it?

18 A. There were two kinds of jobs: One was
19 installing the gaskets; the other one was unpacking the
20 gaskets and then repackaging gaskets to be sent out as
21 replacements, if you will.

22 Q. These were gaskets that Briggs & Stratton
23 was buying from - from other vendors?

24 A. Yes.

25 Q. What did you find in connection with the

1 unpackaging of these gaskets?

2 A. In none of the jobs did I find an
3 overexposure compared to the T.L.V. or P.E.L. at the
4 time.

5 Q. This work would have been done after '68 I
6 suppose?

7 A. Yes, definitely.

8 Q. After you had left Dow and gotten your
9 Ph.D.?

10 A. Yes.

11 Q. Did you find measurable asbestos fiber dust
12 in the air, though, in connection with these - the
13 handling of these asbestos gaskets?

14 A. I don't recall whether I did or not. I
15 know if I did, the concentrations were very low; but
16 that's the only memory that I have.

17 Q. None of this - this monitoring involved the
18 removal of old gaskets I gather? It was all new - new
19 materials?

20 A. Oh, yes, at Briggs it was all new
21 material.

22 Q. What did -- What did you learn in your
23 studies of the bus brake work?

24 A. There in Milwaukee I recall that there were
25 measurable concentrations of asbestos fiber that were

1 again low. When I did this kind of work in St. Louis,
2 Missouri where they were turning the gaskets on a
3 lathe -- Or not the gaskets, turning the brake shoes on
4 a lathe, I don't recall whether I found any measurable
5 asbestos fiber or not. Again, concentrations were very
6 low.

7 Q. What sort of controls were they using to
8 deal with any dust that was being generated in - in
9 connection with the lathe work, the machining of the
10 asbestos brake parts?

11 A. None.

12 Q. This was done - what, for the city of
13 St. Louis, the municipal bus company?

14 A. Yeah, it was municipal buses. I did the
15 work for an insurance company.

16 Q. Which company was that?

17 A. I believe at that time it was Fred S. James
18 Insurance Brokers.

19 Q. Oh, okay. Did you recommend any - any sort
20 of controls be used in connection with that machining of
21 the asbestos brake parts?

22 A. I don't recall that I did. I may have. I
23 just don't know. I don't remember.

24 Q. You mentioned sampling in connection with
25 the simulated exposure of a maintenance man. Could you

1 describe that scenario to us.

2 A. That was in Kansas City. It was in
3 conjunction with a Worker's Compensation case. And
4 everything took place in a building that had quite a bit
5 of asbestos-containing insulation in it. And what I did
6 was to equip a maintenance man with an air sampling
7 device where I changed the filter two or three times on
8 his shift and had him perform those activities where he
9 might be exposed to asbestos to determine what the
10 concentrations were.

11 Q. So, if I understand you, you equipped him
12 with a personal or personnel monitoring device of some
13 sort?

14 A. Yes, he wore a pump and a filter in his
15 breathing zone.

16 Q. And then he would just go about doing his
17 normal work as a maintenance man, and you were
18 basically sampling for whatever would be ambient
19 asbestos dust in - in his workplace?

20 A. No, it wasn't quite like that. He went
21 about doing his normal work only in that I asked him to
22 do work that would expose him to places where we knew
23 there were - there was asbestos-containing insulation.

24 Q. So, you were sampling him while he was in
25 areas where the asbestos insulation was present?

1 A. Yes.

2 Q. But the work that he was doing when he was
3 being monitored didn't involve the installation or the
4 removal of the asbestos insulation? He was simply
5 working in those - those areas?

6 A. Yeah. Again, it's more complex than that.

7 One of the areas was a soffit area where he simulated
8 doing some work in the soffit area where he actually had
9 to get through about six inches of loose insulation that
10 he was walking through.

11 I also -- In that job they had had a - a
12 rain storm, and material that had been sprayed onto the
13 under side of the roof of the top floor, the ceiling of
14 the top floor, which was the machinery floor, had in
15 many areas dropped onto the floor. It had little piles
16 of asbestos-containing material on the floor of the
17 machinery room. And there I was the simulator. I put a
18 pump and a filter on me and wandered around up there for
19 an hour or so to get an air sample to see what the
20 average would be in that area. So, it was a combination
21 of the two things that I did.

22 Q. So, when you acted as the - I won't say the
23 guinea pig, but the person carrying the pump, you were

24 in an area where sprayed-on, asbestos-containing

25 insulation had fallen off from a roof deck on account of

1 some water damage?

2 A. That's right.

3 Q. And you were just moving about in that area
4 for an entertaining hour?

5 A. For an entertaining hour, yes.

6 Q. Now, the soffit area where this maintenance
7 man was working that had loose insulation in it, are we
8 talking about the kind of insulation like you would have
9 in a - above a ceiling; some sort of a mineral wool
10 insulation or fiberglass, or what - what was it?

11 A. Well, it was supposedly asbestos-containing
12 insulation. I didn't analyze any of the material. I
13 was simply told that it contained asbestos.

14 Q. On top of the soffit?

15 A. Yes, blown-in insulation just as you would
16 have in your home, except that in this case it
17 supposedly contained asbestos.

18 Q. You didn't verify that and really
19 couldn't - didn't even determine what - what the base
20 material was I suppose?

21 A. That's right. It didn't matter. What I
22 cared about was what kind of an exposure he would get to
23 asbestos by wandering through the material.

24 Q. And if there weren't, in fact, any asbestos
25 in that blown-in insulation, then naturally you wouldn't

1 be expecting to find any - any asbestos fiber or much
2 asbestos fiber in your samples?

3 A. That's correct.

4 Q. So, not knowing actually what it was, the
5 only conclusion you can really draw from those samples
6 in the soffit area is that you didn't see much asbestos
7 fiber?

8 A. In none of the samples on - on the
9 maintenance man or myself did I see much asbestos fiber.
10 And that was really the question involved in the
11 compensation suit.

12 Q. This maintenance man was alleging an
13 asbestos-related disease?

14 A. No, it was not that one. It was one of his
15 co-workers.

16 Q. I see. All right, sir. On the ship - the
17 ship project, the battleship and the removal of the
18 asbestos insulation from in the ship, was it the case
19 that the people that were wearing the - the cartridge
20 respirators I guess they were, the mechanical filter
21 respirators, were actually working outside the ship in
22 dealing with the disposal of the - the asbestos
23 insulation?

24 A. My memory is awfully vague about this

25 because as I said, I was only on board the ship once

1 when they were working there.

2 Q. Uh-huh.

3 A. And I'm not even positive that we had
4 airline respirators and air-purifying respirators. I
5 know that some people were wearing air-purifying
6 respirators, that is cartridge filters; or they might
7 even have been powered air-purifying respirators. I
8 don't remember. But I do recall that some of the people
9 I saw outside of the contained area, which I didn't
10 enter ---

11 Q. (Interrupting) Uh-huh.

12 A. --- and elsewhere on the ship were wearing
13 respirators that would allow them to move around and ---

14 Q. (Interrupting) Okay.

15 A. --- therefore, they couldn't be airline
16 respirators.

17 Q. Right. So, your best recollection would be
18 then that the - the use of the mechanical respirators
19 was outside the containment area?

20 A. Oh, certainly.

21 Q. Yeah.

22 A. They may have been used inside the
23 containment area as well. I don't know. I didn't go

24 in. They also had a - a building on the shore where all

25 of the materials were handled; that is, sometimes they

1 wouldn't remove the insulation from a pipe. They would
2 simply remove the pipe and put it in a bag and send it
3 to the shore where they had a facility set up much the
4 same way ---

5 Q. (Interrupting) Uh-huh.

6 A. --- where the insulation would actually be
7 removed.

8 Q. Under the same sort of conditions with an
9 isolated work space, negative air pressure, wet methods,
10 moon suits and so on?

11 A. Yes.

12 Q. Now, the moon suit as you call it, that
13 would be just a basic form of protective clothing I
14 guess? Is that the way you would describe it?

15 A. Well, a plastic coverall would be a - a
16 good description of it.

17 Q. What - what is the point in - in doing
18 that? I mean why would an industrial hygienist use that
19 as a - as a protective method?

20 A. Well, it actually doesn't protect that
21 person particularly. But it allows him to be cleaned
22 off so that he doesn't carry asbestos-containing
23 material outside of the containment area. This can be

24 done rather easily; that is, one can either remove the

25 coverall and throw it away; that is, dispose of it

1 properly.

2 Q. Right.

3 A. Or one can clean off the coverall.

4 Actually I don't recall which technique was used here.

5 Q. But the idea would be then to - to prevent
6 the workman who would be in the asbestos atmosphere from
7 carrying the asbestos dust that was in the air that
8 would get into his clothing out of that area and taking
9 it elsewhere?

10 A. You - you keep using asbestos as a - as a
11 characterization of this. It's asbestos-containing
12 material.

13 Q. Okay.

14 A. And to the best of my knowledge asbestos
15 only comprised about 15 percent of it. So, most of it
16 is something else ---

17 Q. (Interrupting) Uh-huh.

18 A. --- other than asbestos. But, of course,
19 asbestos is what we are concerned about.

20 Q. Right. And even a 15 percent level would
21 be - obviously you were concerned about it ---

22 MR. CELBA: (Interrupting) I'm
23 going to object to the ...

24 (By Mr. Blanks)

25 Q. --- enough to - to be using protective

1 clothing and respiratory protection and so on?

2 MR. ALMQUIST: I'm going to

3 object to the form of this one as

4 well with respect -- Are you talking

5 about on this job in 1984?

6 A. I had nothing to do with that. This was

7 set up by the Navy ---

8 (By Mr. Blanks)

9 Q. (Interrupting) Okay.

10 A. --- and the Navy was doing the job. And

11 their people were doing the job or the Navy yard people.

12 I had nothing whatsoever to do with setting up the job.

13 I simply was there to make sure that we could sample

14 breathing zones or simulated breathing zones, if you

15 will, while the people were doing the job. That's the

16 only thing I had to do with it.

17 Q. What - what do you mean by "simulated

18 breathing zones"?

19 A. Well, actually we couldn't sample in the

20 breathing zone if they were wearing respirators. We

21 sampled outside the respirators, not inside the

22 respirators ---

23 Q. (Interrupting) Oh, I see.

24 A. --- which is the true breathing zone.

25 Q. Okay. Now, you had the technique to sample

1 inside the respirator as well, didn't you?

2 A. Oh, one could do that. We - we did not do
3 it.

4 Q. Right. You were sampling outside to see
5 what they would be breathing if they weren't wearing the
6 airline respirators?

7 A. Or respirators of any kind, yes.

8 Q. But again, the point then of the protective
9 clothing is to - to leave the contaminant behind at the
10 worksite or to allow for it to be disposed of rather
11 than carried away by the workman on his clothing?
12 That - that fairly would sum up the point of that
13 control method, wouldn't it?

14 A. Sure.

15 Q. Was this a - a technique that was used at
16 Dow at anytime, the use of protective clothing or work
17 clothes that would be left at the plant and laundered so
18 the men would go home in clean clothes?

19 A. There were cases where this was done, yes.

20 Q. Even back in the - in the '50's when you
21 began working at Dow?

22 A. Yes.

23 Q. Could you think back for us to yesteryear,

- 24 back to that time when you started working with
- 25 Mr. Hoyle and recount for us what your training

1 consisted of as best you can recall.

2 A. There was several phases of my training in
3 this field. One was that I did some research on air
4 sampling methods for vapors and gases. Another was that
5 Mr. Hoyle gave me a copy of the - I think it's the 1949
6 edition of Industrial Hygiene and Toxicology written by
7 Mr. Patty to read.

8 Another was that I spent quite a bit of
9 time going out and doing jobs with Mr. Hoyle or with
10 Mr. Schneider within the confines of the Midland
11 division until I found out a little bit about what the
12 jobs entailed and how to do them.

13 Another phase was learning to give the
14 slide talk that we used quite a bit throughout the
15 plant. And I had to learn about the toxicity and
16 hazards of the various materials that were being
17 handled. That's about it. This was what I did in my
18 first year or so at Dow.

19 Q. I suppose it's obvious that in your - your
20 education up to that point that you had become familiar
21 generally with chemicals and chemistry and the toxicity
22 of - of a variety of chemicals such as you would
23 encounter in - in the Dow facilities.

24 A. It may be obviously, but it wasn't so.

25 Q. Oh, okay. Well, then, please, correct me.

1 A. In my education at the university level, we
2 learned nothing whatsoever about the toxicity and
3 hazards or hazards of materials. We probably learned a
4 very little bit in chemistry courses that some materials
5 could be more dangerous than others, but that was the
6 extent of it.

7 Q. So, even - even as to those different
8 chemicals you would be using in your laboratory classes,
9 you weren't educated about their toxicity or the harmful
10 properties that they could have?

11 A. That is correct.

12 Q. And you weren't I guess in - provided with
13 any kind of protective gear in - in the labs other than
14 maybe some gloves to keep from burning yourself or that
15 sort of thing? I mean I have not -- I have not been
16 there; so, I'm ...

17 A. I ---

18 Q. (Interrupting) I'm relying on you to tell
19 us.

20 A. I recall that we did have splash shields
21 available sometimes. Sometimes we had goggles that we
22 could wear. I recall using asbestos gloves to keep from
23 burning my hands. I can't recall any other protective

24 gear. Oh, an apron now and then, yes.

25 Q. Did you use asbestos to make Gooch filters

1 when you were in the university doing lab work?

2 A. Gee, I can't recall doing so. I -- I know
3 what a Gooch filter is, but I can't recall ever doing
4 that.

5 Q. That's something you - you would have
6 encountered at Dow in the laboratories there?

7 A. No. They may have used such things, but I
8 have encountered it in reading much more so than in
9 actual practice.

10 Q. Who was it that taught you to do air
11 sampling for contaminants?

12 A. Mr. Hoyle, Mr. Schneider.

13 Q. So, you - you were given instruction there
14 either in the lab or I guess as well as in the -
15 actually in the plant?

16 A. Yes.

17 Q. On an on-the-job training basis?

18 A. Yes.

19 Q. What - what kind of equipment did you have
20 back in the first half of the 1950's to sample for dust
21 in air?

22 A. Oh, we had several pieces of gear that
23 could be used. We had midjet impingers with hand

24 cranked pumps, which could be used to take breathing
25 zone samples. We had Cascade impacters. We had the

1 A.I.S.I. paper tape sampler. We had fiberglass -
2 fibrous glass filters that we could draw air through.
3 We had the Bausch & Lomb dust counting microscope.
4 There may have been others. There are lots of ways of
5 determining particulate material in the air.

6 Q. I am just wondering what - what you would
7 have been using back in the '50's.

8 A. All of those pieces of equipment.

9 Q. How about in the '60's, did you acquire
10 some additional equipment, newer equipment for dust
11 counting or dust sampling and counting?

12 A. Well, the - the biggest acquisition was
13 that of battery powered pumps so that we could take
14 longer breathing zone samples. And most of the work
15 that we did was with gases and vapors. So, we didn't
16 concentrate on particulate sampling gear.

17 But in the '60's we - at least I was aware
18 that we began to have available to us devices that
19 provided more or less direct and automatic readout of
20 dust concentrations. Whether we actually had one of
21 those at Dow, I don't recall. I don't think so. I
22 think that that came later.

23 I -- I don't recall anything specifically

24 in the early '60's that would pertain - that was new and

25 that would pertain to dust sampling. Oh, an

1 electrostatic precipitator. We had those all the time.

2 Q. Were there any places in the Dow plant
3 during the - or any of the Dow plants during the years
4 you were there where you had built-in air sampling
5 equipment?

6 A. Yes.

7 Q. What - what would those have been?

8 A. We had one such installation. This was in
9 a plant handling vinyl and vinylidene chloride, where we
10 had a - a central - oh, we had two of them; we had one
11 in the aspirin plant well - where we had a central pump
12 that drew air from various places within the plant to
13 that central location on a serial basis where the
14 analysis was done automatically.

15 Q. I felt like my description of - of this
16 system was a little bit crude. But how did you -- How
17 would you technically refer to that - that sort of a
18 built-in monitoring system?

19 A. An automatic monitoring system.

20 Q. So, you had pumps that were drawing in air
21 through pipes that had filters at the end that you would
22 collect - take for analysis? I mean was that the ...

23 A. No.

24 Q. Okay. Well, help me out.

25 A. Basically this -- We had a pump generally,

1 one pump, that was connected to plastic tubing through a
2 manifold that was electrically operated so that the pump
3 was sampling first through one tube and then through
4 another tube, then through another tube, then through
5 another tube. The air was drawn through a series --
6 Well, each tube was connected to a quartz tube. And the
7 quartz tubes were held at red heat. And the heat caused
8 the chlorinated hydrocarbon to burn. The chlorine part
9 of it was absorbed in a solution. The conductivity of
10 that solution was measured and recorded and was
11 proportional to the concentration of the material.

12 Q. Okay. And that - that was done that way
13 because of the sort of materials that you - you were
14 sampling for?

15 A. Yes, sir.

16 Q. In other words, that was just a way of
17 collecting or of separating out the contaminant that you
18 wanted to look for?

19 A. Yes.

20 Q. Yeah. And this gave you a way then of
21 continually or periodically at least monitoring these
22 particular work areas that would have the potential
23 for - for harmful exposures to the people working there

24 I guess?

25 A. Yes.

1 Q. What sort of research did you do on air
2 sampling?

3 A. The first research I did was in conjunction
4 with the use of silica gel as an absorbent for vapors of
5 mainly halogenated hydrocarbon materials. This led to
6 the publication of my first paper in 1956.

7 Q. So, this was - was aimed at finding a new
8 medium to - to collect the material in? Is that what it
9 amounted to ---

10 A. (Interrupting) No.

11 Q. --- using a silica gel to collect it?

12 A. Yeah; that's right. But it wasn't new for
13 us. The group had been using it for quite awhile. And
14 basically the research was done to establish the
15 parameters of its proper use. What flow rates could we
16 used with what materials; how much silica gel do we need
17 to use and so forth.

18 Q. All right, sir. Did you do any other
19 research on air sampling?

20 A. I may have. I don't recall any right at
21 the moment.

22 Q. So, this would have been the one that you
23 did, the silica gel project was the one that you did

24 during that first year?

25 A. I believe so. It continued on until - when

1 I had the time to work on it, until about 1955. And
2 then I had enough data so that I could write a paper.

3 Q. In addition to Patty's 1949 text, did you -
4 did you get any other textbooks to work with or study
5 from?

6 A. Oh, yes. We had Fairhall's either
7 Toxicology or Industrial Toxicology that I recall. I
8 believe we had the Johnstone and Miller book which might
9 have been titled Occupational Medicine or something on
10 that order. There may have been others. Those are the
11 ones that come to mind.

12 Q. Do you recall any of Drinker's texts from -
13 from that time?

14 A. We may -- Well, that - that wasn't -- I
15 don't think we had any Drinker text or Hatch text in the
16 early '50's. That came in the mid to later '50's as I
17 recall.

18 Q. Are you thinking that when it came out that
19 you did, in fact, have a copy of that available to - to
20 study from?

21 A. No, I don't remember. I don't remember
22 what - what books we had. I consulted books
23 occasionally for when I needed specific information.

24 But that's -- I just don't remember beyond what I have

25 told you.

1 Q. Well, I'm -- I'm just trying to get a feel
2 for the different things that you tried to soak up in
3 that first year and how you went about acquiring the
4 expertise for this - this somewhat new field to you.

5 A. Oh, it was a very new field. No, it was
6 the apprenticeship route, followed mainly by reading
7 Patty, which was a pretty big book. And there was a lot
8 of material in there to understand and to discuss with
9 the other two fellows.

10 Q. What - what did the field work amount to
11 that you did with Mr. Hoyle and Mr. Schneider during
12 this first year in Midland?

13 A. I can't particularize it to the first year.
14 I just can't.

15 Q. Can you -- Can you generalize it for us
16 then in those first few years when you were undergoing
17 your apprenticeship?

18 A. I had a couple of kinds of field work. One
19 was to go out with one of the more experienced fellows
20 to plants and see what they were doing and how they did
21 it. Once I learned a little bit about that, I could go
22 out on my own and come back and ask questions if
23 necessary. For another, I - I went around and visited

24 all of the various plants in the Midland division.

25 Q. When you say the "Midland division," what -

1 what do you mean by that? Did that ---

2 A. (Interrupting) Those chemical processing
3 plants that were physically in Midland, Michigan.

4 Q. In the fence?

5 A. Within the fence, yes.

6 Q. Okay. That's what I thought you meant.

7 Well, I mean what - what sort of things were - were you
8 and your colleagues doing then in that middle part of
9 the '50's when you would actually go into the plants? I
10 mean were you just making walk-throughs? Were you doing
11 surveys for specific problems? Were you -- Were you
12 doing monitoring or all of the above?

13 A. All of the above.

14 Q. Were there any particular problems that you
15 recall that impressed you in those first years?

16 A. No. What I do recall is that almost
17 everything we did was on the basis of a request from a
18 plant superintendent or from the union to investigate a
19 particular plant or process to determine what the
20 exposures may have been there.

21 Q. Now, at this time in the '50's, did Dow
22 also have toxicologists working there in Midland?

23 A. Yes.

24 Q. Were they in the same organizational group

25 that industrial hygiene was in, or how did they fit

1 together?

2 A. Both toxicology and industrial hygiene

3 and - oh, three or four other groups were in the

4 biochemical research laboratory.

5 Q. Can you recall what those other - others

6 were or some of them?

7 A. One of them was the wood lab that worked

8 with wood chemicals or chemicals to use with wood. They

9 were just down the hall when we finally moved into our

10 new building.

11 Q. Like - like for treating woods,

12 preservatives, that sort of thing?

13 A. Yes.

14 Q. Okay.

15 A. We had a very small group dealing with the

16 synthesis of new chemicals that might have biological

17 activity. We had eventually a small pharmaceutical

18 group. And I think that is about it. There may have

19 been one or two others. I had very little to do with

20 them. So, I -- I just don't know.

21 Q. How -- And you called this the biochemical

22 research ...

23 A. Laboratory.

24 Q. ... laboratory.

25 A. Uh-huh.

1 Q. Did you rise to some level of
2 administrative responsibility before you left in 1965?

3 A. No.

4 Q. Can you tell us, Dr. Peterson, how the
5 industrial hygiene group in the biochemical research
6 laboratory, section or group or division or whatever it
7 was, how industrial hygiene related to the medical
8 department at Dow, if there was one?

9 A. There certainly was one, and we had no
10 direct relationship at all. As I recall, medical was
11 part of the personnel department; and we were in the
12 research area, if you will.

13 Q. How did you interact with the toxicology
14 department, if you did, in the industrial hygiene group?

15 A. Several ways. One of the ways was that
16 shortly after I was hired, maybe a year and a half or
17 two, I traded jobs with a new toxicologist, who
18 subsequently got his doctorate, which was Ted Torkelson.
19 He became an industrial hygienist for a while and I
20 became an animal inhalation toxicologist for a while.
21 So, I worked directly in the toxicology lab for that
22 period.

23 We sometimes worked with the people in

24 toxicology who were concerned with the formation of

25 labels. We had a rather close relationship with

1 toxicology throughout the time I was there anyhow. We
2 knew all of the toxicology people and they knew us well.
3 We were aware of what they were doing in general,
4 although not the details and so forth.

5 Q. So, you actually did inhalation toxicology
6 work for this period of time you were swapping out with
7 Mr. Torkelson?

8 A. Yes.

9 Q. And that would have been '53, '54, '55,
10 somewhere in - in there as best you recall?

11 A. Somewhere in the mid-'50's, yes.

12 Q. How long had Dow had an inhalation
13 toxicology lab or the capability to do inhalation
14 studies?

15 A. I don't know. It was present when I was
16 hired, and I don't recall how much before that Dow had
17 had the ability to do animal inhalation work.

18 Q. Now, you have mentioned that you worked
19 closely with the toxicology folks on labeling matters
20 among other things I think.

21 A. I mentioned that we did work sometimes on
22 that. It wasn't very often. But we would be asked what
23 our experience was with materials in the plant.

24 Q. So, the fact that they were working on

25 labels suggests to me that these would have been labels

1 for Dow products?

2 A. Always.

3 Q. And what -- What was -- What was the reason
4 that the toxicology people were concerned with that? I
5 mean were they working on warnings to go on these
6 labels?

7 A. Generally that was the area of the label
8 that we would get involved in. They wanted the label to
9 reflect knowledge we had about handling hazards of the
10 material.

11 Q. Was this the - the policy at Dow to pass on
12 to their customers the information that Dow had
13 developed about the hazards of handling these different
14 chemicals or products that you were selling?

15 A. Certainly in the formation of labels, Dow
16 was at the forefront of this. And Dow was always -
17 while I was there at any rate - completely open with
18 materials we had. At a customer's request, we would
19 always furnish any kind of information we had to Dow
20 customers.

21 Q. But I gather that in addition to waiting
22 for requests for information by putting health hazard
23 information on the labels, you were actually taking a

- 24 positive step to - to get that information out to the -
- 25 to the buyers and the users without waiting for - for a

1 question to come in?

2 A. Well, yes and no; in that labels have great
3 problems in trying to convey information. I mean there
4 is only so much you can put ---

5 Q. (Interrupting) Sure.

6 A. --- on a label, so many words that can go
7 on a label; so that we regarded the labels as being
8 supplemental to other information, if you will. We
9 weren't trying to teach with labels, let's put it that
10 way.

11 Q. You were trying to at least alert the users
12 to possible problems or hazards so that they could at
13 least inquire for additional information?

14 A. That's one way a label can be used.
15 Another is simply as reminders of material - of
16 information they already have, if you will.

17 Q. Why do you think this is an important thing
18 to do when you are selling materials that - that have
19 potential health hazards?

20 A. I didn't make this decision. This had
21 nothing to do with me. I was simply helping to provide
22 information to the tox lab about things that I knew
23 about in the plant as were the other industrial

24 hygienists.

25 Q. All right, sir. But speaking as a - as an

1 industrial hygienist and as a chemical engineer, what -
2 what is the value to the customer of having this
3 information of the sort that Dow was passing on to its
4 customers?

5 A. The most valuable part of such labels is in
6 two pieces: One is what is the material, what its name
7 is; and the other is what to do in an emergency with the
8 material. You can put all sorts of other things on the
9 label as well. But I regard these as being the most
10 important parts of labels.

11 Q. What about those materials that have
12 chronic hazards rather than acute hazards?

13 A. Boy, that's difficult. That's a tremendous
14 problem to try and get information that is useful on a
15 label.

16 Q. Was it -- Was it Dow's approach to just
17 ignore chronic health hazards associated with particular
18 products because it was difficult to get it on a label,
19 or did - was this addressed back in the '50's?

20 A. Well, basically if you have a material, a
21 solvent, for instance, that has a chronic hazard such as
22 say carbon tetrachloride, you can't really put much on a
23 label that is much more than what you put on a label for

- 24 a material with an acute hazard. Basically you say
- 25 "avoid breathing the vapor" or something on this order,

1 which would apply under either circumstance. You can't
2 really get a great deal more specific than that.

3 Q. So, I suppose if Dow, for instance, had
4 done some toxicology studies and learned that - that
5 some particular product that it was selling could cause
6 chronic health effects in laboratory animals, that this
7 is the sort of information that one way or another Dow
8 would have - would have tried to get to its customers?

9 A. All I can ---

10 MR. CELBA: (Interrupting) I am
11 going to object to the lack of
12 foundation.

13 A. Yeah. I -- I really don't know. I had
14 nothing to do with the preparation of the labels except
15 to provide to the tox person who was working on labels
16 the information that we had from the plant where people
17 were handling the stuff. And this didn't happen very
18 often.

19 (By Mr. Blanks)

20 Q. Uh-huh.

21 A. So, the philosophy is something that I
22 really can't talk about. I just don't know.

23 Q. Well, based on what you were taught at Dow

24 and in your own experience, is it - is it your view that

25 in that period that it was the - the proper thing to do

1 to pass on to customers information that you had
2 developed about the hazards of handling materials that
3 perhaps you had learned from experience in your own work
4 force? Is that something that would be appropriate to
5 tell your customers?

6 MR. CELBA: I'm going to object
7 again; lack of foundation, vague and
8 ambiguous and overly broad.

9 A. As I indicated, we were free with the kind
10 of information we developed. We had some people who
11 called us about every week asking for information, and
12 we always provided that information. So that, sure,
13 that was our philosophy, to be free, open and above
14 board with what we knew.

15 (By Mr. Blanks)

16 Q. I mean that was really the point of having
17 the tox lab in the first place, wasn't it, to learn
18 about the hazards associated with the materials that you
19 were either using in your own plants or putting out into
20 the marketplace; isn't that true?

21 A. No. The tox lab investigated the property
22 of toxicity. The industrial hygiene group investigated
23 hazard. So that what the tox lab did was to determine

24 the toxicity of materials.

25 Q. So, you had two - two different approaches

1 to what ends up being kind of a similar problem, didn't
2 you? I mean industrial hygiene was looking for
3 potential exposures and hazards in the handling of
4 materials in the plant as used - as handled in the
5 plant; right?

6 A. Hazard to our way of thinking was the
7 likelihood of injury.

8 Q. All right.

9 A. And this is what the industrial hygiene
10 group was involved with. The tox lab was involved in
11 the determination of toxicity of materials. Everything
12 has toxicity. Some things have more toxicity than
13 others.

14 Q. So, for instance, if you learned through
15 experience with your own workers that in the handling
16 of - of some material they were developing some sort of
17 a chronic disease, this is information that would be the
18 sort that a customer using the same material would need
19 to know, too, in order to work safely with it, wouldn't
20 they?

21 MR. CELBA: Well, I'm going to
22 object again. It is repetitious to
23 the previous question. Lack of

24 foundation, vague, ambiguous and
25 overly broad.

1 A. This kind of information generally was
2 published by either the tox lab or the industrial
3 hygiene group. We -- As I said, we were very open with
4 what we knew.

5 (By Mr. Blanks)

6 Q. I ...

7 A. We tried to tell people.

8 Q. All right, sir. I'm not taking issue with
9 that at all I assure you. So, for instance, if you had
10 known that your own workers were developing let's say a
11 chronic progressive lung disease as a result of handling
12 a particular material, this is not the sort of
13 information that Dow would have kept secret either from
14 its own employees or from customers who would be
15 handling the same product; is that true?

16 A. That's true.

17 Q. And if we look at it from a toxicology
18 standpoint, if Dow had done tox studies of some product
19 that it was selling and found that the inhalation of the
20 material in laboratory animals could cause a permanent
21 progressive lung disease such as, let's say asbestosis
22 as an example, then this is information that Dow, too,
23 would have properly passed on to its customers, is it

24 not?

25 MR. CELBA: Again, the same

1 objection; it's also argumentative.

2 A. The -- This is the kind of information that
3 Dow routinely published. We had -- The tox lab would
4 have two or three papers a year that would have this
5 kind of information in them. And this was the main
6 technique we had of disseminating this kind of
7 information other than answering questions that came in
8 to us from our peers and others in industry.

9 (By Mr. Blanks)

10 Q. All right, sir. And based upon what you
11 knew and what you had been taught at Dow and - and
12 before you got there, from the time frame of the
13 mid-1950's, wouldn't you agree that it would be improper
14 to keep from your customers information that you had -
15 had developed about the toxicity of materials you were
16 selling to them?

17 MR. CELBA: The same objection.

18 It's all speculation at this point in
19 time.

20 (By Mr. Blanks)

21 Q. Now, Dr. Peterson, the lawyer from
22 Owens-Corning Fiberglas Company is objecting that you
23 have to speculate. I'm not asking you to speculate,

24 sir. I'm asking you about your professional opinion or
25 your viewpoint from that time frame.

1 A. Well ---

2 MR. CELBA: (Interrupting)

3 Counsel, also my objection is based on

4 lack of foundation, vague, ambiguous,

5 overly board and argumentative.

6 A. I wasn't in the tox lab. I was - except

7 for a few months. I can't speak to tox lab policy. I

8 can't speak even to industrial hygiene policy because I

9 didn't set it. All I can report are my observations.

10 And I have reported to you my observations in this area

11 I believe.

12 (By Mr. Blanks)

13 Q. Speaking as an industrial hygienist, would

14 it have been important to you to know in the 1950's when

15 you were beginning your career that there had been

16 toxicological work done even a decade earlier reporting

17 on the potential of asbestos-containing insulation to

18 cause asbestosis in laboratory animals?

19 MR. CELBA: I'm going to object,

20 Counsel, on all the basis I've

21 previously stated in this record.

22 A. Probably not because I had nothing to do

23 with asbestos at Dow. Therefore, I had no particular

24 interest in this subject.

25

1 (By Mr. Blanks)

2 Q. If you had been responsible for people at
3 Dow working with asbestos-containing insulation, is this
4 the sort of information that - that would have been
5 useful to you in - in the mid-1950's?

6 MR. CELBA: The same objection
7 and improper hypothetical.

8 A. If I had been in that situation, I would
9 have gone to the literature to find what I could find in
10 the literature, yes.

11 (By Mr. Blanks)

12 Q. Dr. Peterson, do you recall being provided
13 any information in the 1950's by either Owens-Corning
14 Fiberglas Company or the Owens-Illinois Company about
15 toxicology studies done regarding Kaylo insulation and
16 its ability to cause asbestosis in laboratory animals?

17 MR. CELBA: Objection; lack of
18 foundation.

19 A. I -- I certainly didn't request such
20 information; therefore, I didn't receive it. I --
21 Subsequently I, of course, am aware that such
22 information was published in 1951 and was available in
23 the literature. I wasn't -- I wasn't aware of that at

24 the time because I was not particularly interested in

25 asbestos.

1 (By Mr. Blanks)

2 Q. So, this information you say was published
3 in the literature and was thus available to Dow in the
4 early 1950's?

5 A. Yes.

6 Q. Have you ever served as a consultant or an
7 expert witness to Owens-Corning Fiberglas Company?

8 A. I have served as an expert witness for
9 attorneys that are working for Owens-Corning Fiberglas,
10 yes.

11 Q. Are you currently, Dr. Peterson?

12 A. I don't think so. I don't recall any of
13 the cases that I'm working on that are O.C.F. cases, no.

14 Q. When was the last time as best you can
15 recollect that you did work for Owens-Corning Fiberglas
16 Company in connection with an asbestosis or an asbestos
17 disease case?

18 A. This Spring.

19 Q. Is that case over with?

20 A. Yes.

21 Q. What - what did they hire you to do?

22 A. To talk about ---

23 MR. CELBA: (Interrupting) I'm

24 going to object, Counsel. Who are you

25 referring to hiring, Counsel,

1 attorneys I assume? You have to ---

2 (By Mr. Blanks)

3 Q. (Interrupting) Sir?

4 MR. CELBA: It's vague and

5 ambiguous as to "they." My objection

6 stands on the record.

7 (By Mr. Blanks)

8 Q. The Owens-Corning Fiberglas lawyer is

9 objecting as to who hired you, the vagueness of the

10 question. As I understood it, you were being paid by

11 lawyers being paid by Owens-Corning Fiberglas Company or

12 one of their insurance companies to testify in

13 connection with asbestos disease cases; is that correct?

14 MR. CELBA: I'm going to object,

15 Counsel. You are argumentative at

16 this point in time.

17 (By Mr. Blanks)

18 Q. Is that correct, sir?

19 A. I have testified in deposition and trial

20 regarding industrial hygiene of asbestos for attorneys

21 working for Owens-Corning Fiberglas, yes.

22 Q. All right, sir. And what - what generally

23 are - are the nature of the opinions that you express

- 24 when you are testifying on behalf of Owens-Corning
- 25 Fiberglas Company in asbestos disease cases?

1 MR. CELBA: I'm going to object
2 as vague and overly broad,
3 indefinite.

4 A. Well, in the first place, the - my
5 testimony is a matter of public record. And, therefore,
6 you can easily find it. In the second place, just about
7 everything that I testified to is to what we knew about
8 in industrial hygiene in the '50's and '60's.

9 (By Mr. Blanks)

10 Q. All right, sir. So, what testimony do you
11 give on behalf of Owens-Corning Fiberglas as to what is
12 known about industrial hygiene aspects of asbestos in
13 the 1950's?

14 MR. CELBA: The same objections;
15 overly broad.

16 A. Basically what the threshold limit value
17 is; what are threshold limit values; where do they come
18 from; what techniques does one use to sample air for
19 asbestos and why - this kind of thing. It's industrial
20 hygiene with relationship - relationship to asbestos.

21 (By Mr. Blanks)

22 Q. Do you give opinions in this testimony
23 about the reasonableness of the conduct of Owens-Corning

24 Fiberglas Company in - in connection with its marketing

25 and production of asbestos insulation, its failure to

1 warn about the hazards of asbestos insulation that were
2 known to it in the 1940's and 1950's?

3 MR. CELBA: I think that's a bit
4 argumentative, Counsel, don't you
5 think? That's one objection. I also
6 object to the lack of foundation and
7 vague and ambiguous as to the
8 reasonableness.

9 (By Mr. Blanks)

10 Q. We can certainly appreciate why the lawyer
11 for Owens-Corning Fiberglas here today is objecting,
12 Dr. Peterson. But I would like an answer about the kind
13 of opinions that you expressed about the conduct of that
14 company in the sale of asbestos insulation materials.

15 A. In general ---

16 MR. CELBA: (Interrupting) The
17 same objection.

18 A. In general I don't express opinions about
19 the conduct of any asbestos manufacturing company.

20 (By Mr. Blanks)

21 Q. Have you served as an expert witness for
22 any other asbestos insulation company in litigation?

23 A. Yes, I -- I was at one time retained by

24 attorneys representing Owens-Illinois. I -- That was in

25 the early '80's, and I haven't done that for quite

1 awhile.

2 Q. So, you say you testified for
3 Owens-Illinois in asbestos litigation in the early '80's
4 but don't recall having done so since then?

5 A. That's correct.

6 Q. You will recall their product was one that
7 went under the trade name of Kaylo?

8 A. Yes.

9 Q. Is this a product that was used in Dow
10 facilities at anytime that you know of?

11 A. I don't know.

12 Q. Do you have any personal knowledge about
13 what particular brands of asbestos insulation materials
14 were used in Dow plants during any years at all?

15 A. No.

16 Q. How many times or in how many cases do you
17 recollect that you were retained by Owens-Illinois or
18 lawyers that were trying to defend them in asbestos
19 litigation?

20 A. One.

21 Q. All right, sir. And did you testify in a
22 trial?

23 A. No.

24 Q. When was it that you started testifying on
25 behalf of Owens-Corning Fiberglas Company in asbestos

1 litigation?

2 A. The late '80's is the best I can estimate
3 that.

4 Q. So, there was a half a decade gap in there
5 more or less when you weren't testifying for asbestos
6 companies?

7 A. I did some testifying on behalf ---

8 MR. CELBA: (Interrupting) I'm
9 going to object to the form of the
10 question. It's argumentative.

11 A. --- on behalf of a group of asbestos
12 companies, and I don't have the slightest idea who
13 comprised that group in that period of time.

14 (By Mr. Blanks)

15 Q. So, in the mid-'80's you recall testifying
16 for a group of asbestos companies?

17 A. Yes.

18 Q. All right, sir. Did you express opinions
19 about the reasonableness of their conduct in failing to
20 put warnings on their products to the effect that
21 asbestos dust inhalation could cause permanent or fatal
22 lung disease?

23 MR. CELBA: I object to the form,

24 and it's argumentative.

25 A. I testified as to nothing about warnings or

1 labels or whatever. This is not my area of expertise.

2 (By Mr. Blanks)

3 Q. Did you testify that the products were safe
4 to use, that the normal handling of the asbestos
5 insulations didn't pose any - any risk of harm to
6 workers?

7 MR. CELBA: I object;
8 argumentative.

9 A. My testimony in general was with regard to
10 the industrial hygiene aspects of evaluating exposures
11 to asbestos when handling asbestos-containing materials.

12 (By Mr. Blanks)

13 Q. And what - what is the gist of this
14 testimony, Dr. Peterson; that - that there is no hazard
15 posed to workers from an industrial hygiene standpoint
16 when handling asbestos insulation?

17 MR. CELBA: I object;
18 argumentative. Also it's vague,
19 ambiguous, overly broad.

20 (By Mr. Blanks)

21 Q. Are you looking up for divine inspiration?

22 A. No, I'm listening to the rain.

23 MR. CELBA: I object to the form

24 of that last question about divine
25 inspiration.

1 A. The fact of the matter is that I have
2 testified about the information that we had available in
3 the literature. It was concerned with the relationship
4 of handling asbestos-containing insulation materials and
5 the potential hazards that this handling posed
6 particularly with reference to the Fleischer paper and
7 so forth.

8 (By Mr. Blanks)

9 Q. So, was the - the substance of this
10 testimony that in the '50's when you came on the scene
11 that - that there wasn't information in the literature
12 that would suggest that asbestos insulation posed any
13 hazard to people working with it or around it?

14 A. The -- Not necessarily. The best piece of
15 information we had was the Fleischer, Viles, Gade and
16 Drinker paper, which was a rather complete industrial
17 hygiene survey of the use of asbestos-containing
18 materials in shipyards. And the conclusion of that
19 paper was that these materials could be handled with
20 little or no hazard to the people involved.

21 Q. That being people that had been involved
22 with it for only the war time years; correct?

23 A. The paper was published in 1946; and that

24 was the period involved, yeah.

25 Q. And most of workers that were studied in

1 that paper had only worked with asbestos insulation
2 during that war time period; isn't that true?

3 A. I recall some of the workers had had 20 or
4 30 years such experience. So ---

5 Q. (Interrupting) Yes, sir.

6 A. --- most of them had not; that's correct.

7 Q. And the ones that had had the 20 or 30
8 years experience did, in fact, have asbestos, didn't
9 they?

10 MR. CELBA: Well, I object;
11 argumentative.

12 A. It's been a long time since I have read the
13 paper. I don't recall that much detail about it.

14 (By Mr. Blanks)

15 Q. In any event, you would not just rely on
16 the - the concluding paragraphs or paragraphs of a -
17 what you'd call a rather complete industrial hygiene
18 survey to - to relay the full meaning of the study,
19 would you?

20 MR. CELBA: Well, I object;
21 argumentative.

22 A. No. In general when I read a paper, I read
23 a paper.

24 (By Mr. Blanks)

25 Q. All right, sir. So, it would be misleading

1 to just rely solely on the concluding paragraph for the
2 findings of the paper?

3 MR. CELBA: Object;
4 argumentative. And also it's vague
5 and ambiguous as to who is relying on
6 what at this point in time.

7 (By Mr. Blanks)

8 Q. Do - do you have any problem understanding
9 me or the objections from the Owens-Corning Fiberglas
10 lawyer, ones that lead you to - to want a further
11 explanation from me?

12 A. Well, I don't know ---

13 MR. CELBA: (Interrupting) I
14 object to that question, Counsel, to
15 the form. It's argumentative. And
16 that's vague and ambiguous.

17 A. I -- I don't usually in depositions or at
18 trial argue with attorneys. So, this is a somewhat new
19 experience.

20 No. If one is going to look at a paper and
21 rely on part of it, one generally looks at the summary
22 or the abstract of the paper. And furthermore, in that
23 particular paper, the last part of it is conclusions.

24 As I recall, there are several conclusions. And this is
25 the summing up of the people who were closest to the

1 information and who knew most about it. And, therefore,
2 I would regard that as being the reliable part of the
3 paper.

4 (By Mr. Blanks)

5 Q. Sure. Is it your opinion then that it's
6 reasonable to permit men to do asbestos insulation work
7 for say five years without providing them with proper
8 hygienic controls based on the conclusion of the - the
9 Fleischer-Drinker paper?

10 MR. ALMQUIST: I'm going to
11 object to the form of the question
12 because it doesn't specify a time
13 period.

14 MR. CELBA: I join in that
15 objection.

16 A. I -- Your question is - started out is it;
17 and, no, today it isn't. We know much more about
18 asbestos today and its hazards than we did in 1946.

19 (By Mr. Blanks)

20 Q. Do you think that it is reasonable to have
21 done that in the mid-1950's, Dr. Peterson?

22 A. I don't see why not.

23 Q. All right, sir. Is it the fact that the

24 exposures are only for a few years rather than an entire

25 work life that leads you to believe that's reasonable?

1 A. No. Mr. Blanks, the knowledge of the
2 latency of problems with asbestos has come about over a
3 period of time. In the 1950's and the 1940's we knew
4 very little about this. And, therefore, in the '50's
5 that would have been a reasonable conclusion.

6 So long as one stays below the threshold
7 limit value, which at that time was five million
8 particles per cubic foot, one could handle asbestos
9 insulating materials or whatever safely. That's the
10 best we knew.

11 Q. So, you are saying that as long as you
12 handled it and the total dust levels were below five
13 million particles per cubic foot, that it was being
14 handled safely in the '50's?

15 A. No, that the asbestos dust levels were
16 below five million particles per cubic foot.

17 Q. Is that what you were taught when you
18 started at Dow, that the five million particle per cubic
19 foot standard was to - to be five million particles of
20 asbestos per cubic foot rather than five million
21 particles of total dust?

22 A. Well, sure; that's what it says in the
23 T.L.V. list.

24 Q. That's what it said back in the '50's?

25 A. To the best of my knowledge, yes.

1 Q. All right, sir. Is this something that
2 Doctor - that Mr. Hoyle taught you; or do you recollect?

3 MR. CELBA: I'm going to object,
4 Counsel. He answered why he's -- He
5 gave you a reason for his answer. He
6 said that's what it said in the T.L.V.
7 Now you are becoming argumentative.

8 A. I -- I don't recall ever discussing a
9 T.L.V. of asbestos with Mr. Hoyle.

10 (By Mr. Blanks)

11 Q. All right, sir. Did - did Mr. Hoyle give
12 you a list of maximum allowable concentrations, a table
13 to use as guidelines in 1953 or '54 when you started
14 there?

15 A. I -- I certainly had access to such a
16 table. Where - where that access came from, I don't
17 have the slightest idea.

18 Q. Isn't it really the case, Dr. Peterson,
19 that the first time you have heard of the idea that the
20 five million particles was not total dust but was to be
21 five million particles of asbestos was from one of the
22 Owens-Corning Fiberglas lawyers that you were working
23 for?

24 MR. CELBA: I object;
25 argumentative.

1 A. No, sir, not by a long shot. The threshold
2 limit value list said the T.L.V. for asbestos is five
3 million particles per cubic foot in this particular era
4 we are talking about. That's where I learned it.

5 (By Mr. Blanks)

6 Q. When you were testifying on behalf of
7 Owens-Illinois in connection with asbestos cases in the
8 early '80's, did their lawyers tell you that they had -
9 had had a study begun at the Saranac laboratories in the
10 early part of 1943 to consider the toxicity of the new
11 Kaylo product?

12 A. Yes.

13 Q. Did they give you copies of the
14 correspondence that they had with Dr. Gardner at Saranac
15 about that study?

16 A. I don't believe the attorneys had
17 correspondence with Dr. Gardner.

18 Q. Did they give you copies of the preliminary
19 reports on the toxicity studies?

20 A. It's been 10 or 12 years since I did this
21 kind of work, and I don't recall precisely what
22 information I had from them.

23 Q. Did the Owens-Illinois lawyers give you any

- 24 information about cases of asbestosis in people that had
- 25 been using their products or had been working with

1 insulation during the 1940's?

2 A. As I say, I don't recall in any detail at
3 all what information I had. I have read an awful lot of
4 material since then; and what happened then, I don't
5 recall.

6 Q. Have you kept any of those papers that the
7 Owens-Illinois lawyers gave you about the Kaylo studies?

8 A. I know that I have a copy of the - the
9 Gardner paper. And I have a copy of a subsequent paper.
10 I have forgotten who the author was.

11 Q. Have - have you brought those with you
12 today, sir?

13 A. No, sir.

14 Q. Do you have them with you at home?

15 A. I have them at home.

16 Q. All right, sir. I'm just wondering why you
17 didn't think those were responsive to the - the Subpoena
18 that was served on you?

19 A. I brought as much as I could carry. And
20 that's all I can tell you. There is -- I have a library
21 at home. I simply couldn't bring everything that I had.

22 Q. All right, sir.

23 A. Besides, I was fully confident that you

24 would have copies of those papers anyway.

25 Q. Well, I'm -- I'm just curious about what -

1 what, in fact, you do have along these lines. And,
2 though, you were kind enough to bring various articles
3 you authored; we were not limiting the request to that.
4 But perhaps we can resolve this amicably with Dow's
5 attorneys and you during the recess rather than take our
6 time with it now.

7 Well, in the more recent times when you were
8 working for the Owens-Corning Fiberglas lawyers, did
9 they make known to you when - when you were being their
10 expert witness and being paid by them to testify that
11 they had had reports of insulators who had developed
12 asbestosis back as early as 1944?

13 MR. CELBA: I object;
14 argumentative.

15 A. No Owens-Corning Fiberglas specific
16 information was presented to me.

17 (By Mr. Blanks)

18 Q. Wait a minute. Through all this time that
19 you have testified for Owens-Corning Fiberglas, they
20 have not - their lawyers or Owens-Corning Fiberglas has
21 not provided you with information about what they had in
22 their files concerning cases of asbestosis in the '40's
23 or the '50's?

24 A. That's correct.

25 MR. CELBA: Counsel, I object as

1 argumentative. This is just being
2 done for I don't know what purpose.

3 MR. BLANKS: Well, I can
4 understand ...

5 MR. CELBA: (Interrupting) Other
6 than making an argumentative record
7 for the Court. You could -- How about
8 saving this for your closing
9 argument?

10 (By Mr. Blanks)

11 Q. Do you know this lawyer from Owens-Corning
12 Fiberglas who keeps making these objections,
13 Dr. Peterson?

14 MR. CELBA: I object to the form
15 of the question, Counsel.

16 (By Mr. Blanks)

17 Q. Have you -- Sir?

18 A. Yes, I know him.

19 Q. Have you worked with him before in - in
20 asbestos litigation?

21 MR. CELBA: The same objection.

22 A. Yes.

23 (By Mr. Blanks)

24 Q. What - what is his name?

25 A. Steve Celba.

1 Q. Where is he from?

2 A. Milwaukee.

3 Q. How many cases have you worked with him on,
4 approximately?

5 A. Five or six perhaps. I don't recall
6 exactly.

7 Q. Does this go back over a few years time?

8 A. Yes, two or three years, something on that
9 order.

10 Q. What - what - what other kind of
11 information has he provided you about Owens-Corning
12 Fiberglas Company and its knowledge of asbestos hazards
13 from the past?

14 MR. CELBA: I'm going to object,
15 Counsel. I believe the testimony was
16 that I've provided him nothing with
17 respect to Owens-Corning Fiberglas.

18 A. My -- Well, this is correct. I have been
19 providing nothing whatsoever. My -- This is not my area
20 of expertise. My area of expertise is industrial
21 hygiene. And this is what I have testified to.

22 (By Mr. Blanks)

23 Q. Is it pertinent to an industrial hygienist

24 to know that there have been cases of occupational

25 disease in - in a group of workers that he's testifying

1 about?

2 MR. CELBA: I object as to
3 argumentative. And it's vague and
4 ambiguous as to what the word
5 "pertinent" means. Pertinent to
6 what ---

7 A. (Interrupting) Not necessarily.

8 MR. CELBA: --- and when?

9 (By Mr. Blanks)

10 Q. All right, sir. So, it wouldn't be
11 important to you to know about cases of asbestosis among
12 insulators in - when you are giving testimony in - in
13 asbestos disease cases among insulators. Is that what
14 you are saying?

15 MR. CELBA: The same objection;
16 repetitious and argumentative.
17 Counsel, at this point in time you are
18 badgering the witness.

19 MR. BLANKS: Call -- Go ahead and
20 call the Judge.

21 MR. CELBA: I don't have to call
22 the Judge. I'm making a record. What
23 do you want me to call the judge for?

24 A. My -- This gets into an area of philosophy.

25 It gets into an area of interest. It gets into areas of

1 expertise. And for the most part I don't put much
2 reliance in case reports in the literature, which is
3 what you apparently are referring to with regard to any
4 disease or its possible cause. What I tend to rely upon
5 as an industrial hygienist is industrial hygiene
6 surveys, epidemiological studies and the like. And in
7 fact, I tend not to put much credence in an
8 epidemiological study unless it has been replicated
9 somewhere.

10 So that the case reports that one can find
11 here and there are not particularly meaningful to me.

12 (By Mr. Blanks)

13 Q. All right, sir. What - what reliance do
14 you place on toxicological data?

15 MR. CELBA: I'm going to object
16 to vague and ambiguous as to what
17 "toxicological data" you have
18 reference to.

19 A. It depends upon who has done it; how they
20 have done it; how many animals were used and a whole lot
21 of things that you didn't specify.

22 (By Mr. Blanks)

23 Q. Okay. How about the toxicological studies

24 that were done at Dow; were those of - of a sort, of a

25 quality that - that you would rely upon?

1 A. Sure.

2 Q. How about the toxicological work that was
3 done at Saranac laboratories during the '40's and the
4 '50's ---

5 MR. CELBA: (Interrupting) I am
6 going ...

7 (By Mr. Blanks)

8 Q. --- is that the sort of - of work that you
9 would rely upon?

10 MR. CELBA: I'm going to object
11 as to vague and ambiguous as to what
12 toxicological and definite work was
13 done at Saranac laboratories. That
14 seems to be overbroad in nature.

15 A. Saranac had at that time - Saranac labs had
16 a good reputation. Although I -- In the '50's I knew
17 little more about Saranac Lake than that.

18 (By Mr. Blanks)

19 Q. All right, sir.

20 A. So, in that period of time I would have
21 really no basis to say yes or no.

22 Q. Were you provided with any - any evidence
23 when you were testifying on behalf of Owens-Corning

24 Fiberglas to show that - that Owens-Corning Fiberglas

25 made known to their customers and the users of their

1 products that asbestos insulation, particularly Kaylo,
2 should be handled as a hazardous material?

3 MR. CELBA: I object to the form.

4 It's repetition. It's been asked and
5 answered.

6 A. Yeah, I -- I have been provided with no
7 information regarding Owens-Corning Fiberglas;
8 essentially none.

9 (By Mr. Blanks)

10 Q. So, in other words, they have intentionally
11 kept you ignorant about the information they had in
12 their files about asbestos?

13 MR. CELBA: Are you surprised
14 that I'm objecting at this point in
15 time to argumentative? And again,
16 it's repetitious.

17 A. Well, in the first place I don't know what
18 their motives are. I have no way of knowing what their
19 motives are. In the second place, I have plenty to do
20 without reading company files and stuff. And I would
21 just as soon avoid it personally.

22 I don't care because whatever I would find
23 in Owens-Corning Fiberglas files would have nothing

24 whatsoever to do with me as an industrial hygienist

25 unless that material were presented by industrial

1 hygienists or occupational physicians.

2 (By Mr. Blanks)

3 Q. So, even though you are taking their money
4 to testify in lawsuits on their behalf - "their" meaning
5 Owens-Corning Fiberglas - you do not consider it
6 pertinent to your industrial hygiene testimony to know
7 what Owens-Corning Fiberglas knew during these same
8 years that you are testifying about?

9 MR. CELBA: I object; repetitious
10 and argumentative.

11 A. That's correct.

12 MR. CELBA: What is that Judge's
13 number?

14 (By Mr. Blanks)

15 Q. Did you ever meet any of the employees or
16 former employees of Owens-Corning Fiberglas during ---

17 MR. CELBA: (Interrupting) I
18 object ...

19 (By Mr. Blanks)

20 Q. --- any years?

21 MR. CELBA: ... as to repetitious.

22 It has been asked and answered.

23 A. Yes.

24 MR. CELBA: It's argumentative.

25 A. Yes. In fact, I know that I have met two

1 Owens-Corning Fiberglas employees. There may have been
2 others.

3 (By Mr. Blanks)

4 Q. Could you tell me who they were.

5 A. One was a young lady named Kathy Johnson
6 with whom I worked for about a year by correspondence on
7 a project after she had left O.C.F. And before he went
8 to work for O.C.F., I went to school with Dr. Konzen.

9 Q. Dr. Konzen?

10 A. Yes.

11 Q. First name was what?

12 A. John I believe.

13 Q. You never met Ed Ames, did you?

14 A. The name is not familiar.

15 Q. Did you ever meet a gentleman named Hazard?

16 A. Bill Hazard didn't work for O.C.F.; but,
17 yes, I know Bill.

18 Q. Who do you associate him with?

19 A. Owens-Illinois.

20 Q. Owens-Illinois. Did you meet him then in
21 connection with your litigation, or had you known him
22 before?

23 A. Oh, I -- I have never talked to him with

24 respect to litigation. I have known him since the late

25 '50's anyway.

1 Q. Was he still with Owens-Illinois when you
2 last knew of him?

3 A. Yes.

4 Q. Did he, too, testify in any of these cases
5 that you were involved in?

6 A. Not that I'm aware of. I am usually not
7 aware of who testifies in addition to myself. But I
8 don't think he did. I just don't know.

9 Q. Dr. Peterson, based on - on what you knew
10 or what you know about what was known in the 1950's or
11 what was believed about the - the hazards of asbestos
12 insulation and its handling, do you think that in the -
13 in that period that it would - would have been
14 reasonable for a company that knew that asbestos
15 insulation could, in fact, cause disease in - in
16 insulators and other people working with the material to
17 keep that knowledge from their customers and from the
18 users of the products?

19 MR. CELBA: I'm going to object.

20 It assumes facts not in evidence.

21 It's also repetitious and it's

22 argumentative and lack of foundation

23 perhaps.

24 A. I'm afraid I'm a long way from being in a
25 position to tell companies what to do or what not to do.

1 And I have never been in such a position. Decisions --
2 In general as a scientist and an industrial hygienist, I
3 am all for education. I'm all for complete disclosure
4 of information in this area. I also recognize that I am
5 not a - a manager or a President of a company and have
6 no input to such people.

7 (By Mr. Blanks)

8 Q. Yes, sir.

9 A. That's all.

10 Q. So, based on what you believe to be the
11 case in the '50's, is it your professional opinion that
12 it would have been reasonable during that time to
13 withhold from users of asbestos insulation products
14 information to the contrary of what you - you think was
15 the general belief at the time?

16 MR. CELBA: The same objection
17 as previously stated and lack of
18 foundation with respect to this - what
19 this witness just testified to.

20 A. In the '50's information that asbestos
21 could cause asbestosis was well known. I certainly was
22 aware of this, although I had no particular interest in
23 asbestos as a Dow industrial hygienist. How this

24 information could be kept from the scientific community

25 and the industrial hygiene community is beyond me. And

1 I don't know why anybody would try to do such a thing.

2 Therefore, I would consider it nonsense.

3 (By Mr. Blanks)

4 Q. So, if I understood you, you are saying

5 that - that what was known, for example, at

6 Owens-Corning Fiberglas and Owens-Illinois in this era

7 about the capability of asbestos insulation to cause

8 disease was in the literature; and, therefore, knowable

9 to companies like Dow and - and others?

10 MR. ALMQUIST: I'm going to

11 object to that - the form of that

12 question because I think it totally

13 misstates the witness' testimony. He

14 has rendered no such testimony.

15 MR. CELBA: I join in the

16 objection.

17 A. I have no way of knowing what was known at

18 Owens-Corning or Owens-Illinois truly, so that I really

19 can't answer your question.

20 (By Mr. Blanks)

21 Q. Okay. So, you don't know whether they

22 actually published what they knew or did not?

23 MR. CELBA: Counsel, I am going

24 to object; argumentative again and
25 lack of foundation.

1 A. I know that Owens-Illinois sponsored animal
2 research on Kaylo. I know that the results of that
3 research were published. I -- I don't see what you are
4 getting at honestly. So, I have no evidence or even
5 intimation that Owens-Illinois attempted or would want
6 to attempt to withhold information about their product.
7 I know nothing as I have said about O.C.F.

8 (By Mr. Blanks)

9 Q. You know that this information then was
10 available to Dow in the published literature?

11 MR. ALMQUIST: What information
12 are you speaking about?

13 (By Mr. Blanks)

14 Q. The one we have just described; the 1952 or
15 '51 report that you have referred to.

16 A. Well, sure, we subscribed at Dow to the
17 Archives of Environmental Health or whatever it was
18 called at that point. So, sure, it was available to us;
19 certainly.

20 MR. ALMQUIST: Lunch break.

21 MR. BLANKS: Okay.

22

23 (A LUNCH BREAK WAS TAKEN.)

24

25

1 (By Mr. Blanks)

2 Q. During your years at Dow was it the case,
3 Dr. Peterson, that - that you had available to you a
4 wide range of - of professional journals in the field of
5 occupational health and industrial hygiene?

6 A. Yes.

7 Q. The company maintained a pretty complete
8 technical library, did it?

9 A. Yes.

10 Q. Did they have a librarian to help you to
11 get things that either weren't there or to help you find
12 things that were there in the library?

13 A. As I recall several librarians.

14 Q. And wasn't there also some sort of a - a
15 reference system that Dow had, a technical reference
16 index or something like that?

17 A. There was something called the central
18 research index, which was really a repository of reports
19 from everywhere at Dow to the best of my knowledge. I
20 don't think it had anything else in it, just Dow
21 reports.

22 Q. Oh, it was internal documents?

23 A. Yes.

24 Q. I see. So, a way of organizing the

25 research work and reports on such work that had been

1 done at Dow for the use of Dow professionals or
2 employees?

3 A. Yes, to the best of my knowledge. Although
4 I -- All I had was input to it. I never had anything
5 from it.

6 Q. Was it your practice during those years you
7 were an industrial hygienist at Dow to try to stay
8 abreast of the - of the literature in your field?

9 A. As best as I could, yes.

10 Q. And were you as best you could fairly
11 successful at doing that?

12 A. I think so.

13 Q. Do you recall any of the professional
14 journals that you followed during those years in the
15 '50's and the '60's?

16 A. I became a member of the American
17 Industrial Hygiene Association as soon as I could in
18 1956, and from then on had what was first called the
19 A.I.H.A. Quarterly, later the A.I.H.A. Journal, which
20 was my magazine. At the biochem research lab we had
21 subscriptions to several other journals, particularly
22 the A.M.A. Archives of Environmental Health.

23 We had the Industrial Hygiene Digest or

24 Industrial Health Digest, whatever it was called. We

25 subscribed to the Journal of the American Medical

1 Association. We had at the biochemical lab index
2 Medicus and possibly chemical abstracts -- No, we
3 probably had biological abstracts, not chem abstracts
4 and this kind of thing.

5 Q. Were you thinking of the Industrial Hygiene
6 Foundation's publication called the Industrial Hygiene
7 Digest?

8 A. Yes.

9 Q. Did you yourself attend any meetings or
10 functions of the Industrial Hygiene Foundation?

11 A. No, sir.

12 Q. You were active in your association, the
13 American Industrial Hygiene Association, were you not?

14 A. Yes, I was.

15 Q. What did that involvement consist of during
16 that - that first decade of your practice?

17 A. I became a member of the Hygienic Guides
18 Committee in the late '50's or mid-'50's and remained a
19 member until just about the time I left Dow. The last
20 three years or so I was chairman of that group. We
21 started a local section of the American Industrial
22 Hygiene Association in Midland. And as I recall, I went
23 through all the offices in the local section. And there

24 were probably other activities, but those are the ones

25 that stick in my mind.

1 Q. You would have been a fairly regular
2 attender of the annual meetings as well?

3 A. No, we took turns going to the annual
4 meetings so that I went to about one out of three.

5 Q. And then whoever went that year would bring
6 back the printed material that was handed out then if
7 there was any and notes and discuss with the colleagues
8 who were left behind topics of interest that were
9 covered I suppose?

10 A. Theoretically that is the way it worked,
11 and sometimes it actually did work that way when we had
12 time to do such things. At the conferences, there
13 wasn't a great deal of printed material handed out as I
14 recall.

15 Q. That would be followed -- That would follow
16 later in the journal or the quarterly?

17 A. Yes, if one presented a paper at the annual
18 conference, the journal had first crack at publishing
19 that paper. And -- Oh, quite a few of those papers were
20 published; but some of them weren't. And the only way
21 to know what was there was to attend the presentation of
22 the paper.

23 Q. I see. Is it the case, Dr. Peterson, that

24 you personally have never taken a midget impinger sample

25 of dust-containing asbestos?

1 A. Well, yes and no. I have never taken a
2 midget impinger sample for asbestos-containing dust.
3 However, I'm well aware that all air contains some
4 asbestos; and, therefore, every midget impinger sample I
5 took does contain some asbestos I'm sure or did.

6 Q. When did you become aware that all air as
7 you say contained some asbestos?

8 A. Oh, probably four or five years ago,
9 something on that order.

10 Q. So that we are clear then, you never used a
11 midget impinger to sample for asbestos in air?

12 A. That's correct.

13 Q. Did you have an opportunity over the lunch
14 hour to visit with the attorney for Owens-Corning
15 Fiberglas who is here today?

16 A. No sir.

17 Q. Had you talked with him before this
18 deposition began about your testimony today?

19 A. Oh, no.

20 Q. When was the last time you have seen that -
21 that lawyer?

22 A. Earlier this Spring when I testified for
23 him in Wisconsin.

24 Q. Was that in a trial or in a deposition?

25 A. In a trial.

1 Q. Is that just a case just involving asbestos
2 insulation companies as opposed to let's say chemical
3 companies, refineries, that sort of thing; or do you
4 have any idea?

5 A. I -- Gee, I don't know who all the
6 defendants were. I have no particular interest in that;
7 so, I don't know.

8 Q. When you testify such as you did recently,
9 do you give any opinions; or do you just state facts as
10 you recall them?

11 MR. CELBA: I'm going to object.

12 This is repetitious.

13 A. I answer questions.

14 (By Mr. Blanks)

15 Q. Yes, sir.

16 A. If the questions call for an opinion, I
17 give an opinion. But I -- I don't focus on this - this
18 kind of thing at all.

19 Q. On whether it's an opinion or it's a fact
20 statement?

21 A. That's right.

22 Q. Well, usually experts are hired to - to
23 give opinions. And that's why I was asking.

24 A. I understand that, and ---

25 MR. CELBA: (Interrupting) I

1 object to the statement of Counsel.

2 (By Mr. Blanks)

3 Q. You understand that?

4 A. I understand it.

5 MR. CELBA: I object to the form

6 of the question.

7 (By Mr. Blanks)

8 Q. So, are there any - any areas where you -

9 you do give opinions about Owens-Corning products,

10 asbestos products?

11 A. Not per se, no.

12 Q. In your testimony for Owens-Corning

13 Fiberglas, do you give opinion testimony about

14 Owens-Corning's conduct?

15 MR. CELBA: I object;

16 repetitious.

17 A. No.

18 (By Mr. Blanks)

19 Q. Have you ever offered opinions then about

20 the conduct of the - the asbestos victims who are suing

21 Owens-Corning Fiberglas?

22 MR. CELBA: I object;

23 argumentative.

24 A. I -- I don't recall doing so.

25

1 (By Mr. Blanks)

2 Q. Well, what -- What do you, in fact, then
3 give opinions about? That's - that's what I would like
4 to understand.

5 MR. CELBA: I'm going to
6 object; vague, ambiguous, indefinite
7 and overly broad.

8 A. One area that I have given opinions about
9 is whether the T.L.V. for asbestos dust in air is a
10 T.L.V. for asbestos or a T.L.V. for total dust, for
11 instance.

12 (By Mr. Blanks)

13 Q. All right, sir. Before we come back to
14 that, could you share with me any other sorts of
15 opinions you recall giving in your testimony for
16 Owens-Corning Fiberglas.

17 MR. CELBA: The same objection.

18 A. I have given the same kinds of opinions
19 that we have already gone through here. For instance,
20 that the person who is closest to the source of a
21 material in air is the one who is undoubtedly exposed to
22 the greatest concentrations of such materials. I have
23 talked - given opinions concerning the aerodynamic

24 properties of particles in the air. This - this is kind

25 of industrial hygiene related material.

1 (By Mr. Blanks)

2 Q. All right, sir. Can you -- I mean that's -
3 that's helpful. Can you recall anything - any other
4 general sorts of opinions that you express in this
5 category?

6 MR. CELBA: The same objection.

7 A. Not right offhand, no. Those are the
8 things that come to mind. But again, gee, file
9 testimony is really available to anybody; and - and you
10 can get that.

11 (By Mr. Blanks)

12 Q. Do you have copies of any of your trial
13 testimony?

14 A. I don't believe I have, no. I might have
15 one or two such things, but I ordinarily don't keep this
16 kind of information around. I have run out of storage
17 space.

18 Q. Do you find that - that the Owens-Corning
19 Fiberglas lawyers have available for your review your
20 prior trial and deposition testimony when you ask for
21 it?

22 MR. CELBA: Well, that assumes
23 facts not in evidence, that he asked

24 for it, Counsel.

25 A. I don't recall ever asking for it. So,

1 I -- I really don't know whether they have it or not.

2 (By Mr. Blanks)

3 Q. Has it -- Have they ever provided
4 transcripts of your prior testimony to you to look at,
5 to review?

6 A. Probably. I don't recall the
7 circumstances, but I would be surprised if that weren't
8 the case.

9 Q. All right, sir. So, you think that these
10 transcripts would be readily available from
11 Owens-Corning Fiberglas through its attorneys I suppose?

12 A. You will have to talk to them. I can't
13 speak for them.

14 Q. Now, you mentioned briefly before lunch
15 that it was your understanding that the so-called
16 threshold limit value for asbestos, which you said was
17 five million particles per cubic foot during past years,
18 was for asbestos particles and not for the total dust
19 count. Is that accurately recounting what you said?

20 A. I don't recall using the word particles.

21 Q. All right, sir.

22 A. But you used it properly; and, therefore, I
23 would go along with your statement.

24 Q. Well, in a - in a - in a nutshell then what

25 is the opinion you have expressed in the past about the

1 T.L.V. for asbestos, being one for total dust or for
2 asbestos?

3 A. Well, the T.L.V. for total dust was 50
4 million particles per cubic foot in this era until about
5 1971. And the T.L.V. for asbestos dust was five million
6 particles per cubic foot. That's hardly an opinion.
7 It's in the T.L.V. booklets. But apparently this is
8 challenged by some people.

9 Q. Now, you -- You said the T.L.V. for total
10 dust was 50 million particles?

11 A. Yes, sir, per cubic foot.

12 Q. For total dust of - of all kinds in the
13 work - work environment? I don't understand what you
14 are referring to.

15 A. The T.L.V. for total dust that - that does
16 not contain pneumoconiosis-producing materials such as
17 silica or asbestos and does not contain materials that
18 are otherwise toxic; in other words, the inert dusts.

19 Q. So, you are saying in the guidelines for
20 workplace exposures there is a 50 million particle per
21 cubic foot standard, or there was, for dust that didn't
22 contain any toxic contaminants?

23 MR. CELBA: Well, I'm going to

24 object ---

25

1 (By Mr. Blanks)

2 Q. (Interrupting) Is that - is that ...

3 MR. CELBA: --- he just gave the
4 answer, and you are restating it
5 incorrectly. Now, go ahead.

6 MR. BLANKS: Well, perhaps you
7 could state it correctly for us.

8 A. Well, again, I didn't mention ---

9 MR. CELBA: (Interrupting) He did
10 state it correctly. But go ahead.

11 A. I did mention the word toxic, and I know
12 this is a bone of contention as well in these kinds of
13 proceedings. The standards in the T.L.V. list for
14 mineral dusts had a T.L.V. for total dust for materials
15 that were not pneumoconiosis producing and which did not
16 contain otherwise toxic materials a standard of 50
17 million particles per cubic foot. The standard for
18 silica varied with the concentration of silica in the
19 dust, and the standard for asbestos dust was five
20 million particles per cubic foot.

21 (By Mr. Blanks)

22 Q. Am I understanding from this then that -
23 that you don't regard either asbestos or silica to be

24 toxic materials?

25 A. In my lexicon toxicity is a property of

1 matter. It is something possessed by everything to a
2 greater or lesser extent. And under those
3 circumstances, silica and asbestos and other mineral
4 dusts are toxic. However, the effect of these materials
5 is exerted in general by something other than their
6 ability to be toxic or the effect that we worry about.
7 And in that respect, they aren't toxic. So, however you
8 want to take it, that's the way I have talked about it
9 and feel about it.

10 Q. Well, I just want to be able to communicate
11 with you.

12 A. Uh-huh.

13 Q. And it doesn't do any good for us to be
14 talking passed each other. So, your view is that
15 virtually every - every material, every compound is
16 toxic?

17 A. Not virtually. Everything is toxic, yes.

18 Q. Okay.

19 A. Yes, absolutely. Water is toxic.

20 Q. Okay.

21 A. Oxygen is toxic. If you start eating table
22 clothes, they are toxic as well.

23 Q. Okay. So, basically then you are defining

- 24 toxic to be - to be meaningless for purposes of - of
- 25 assessing or talking about the hazards of materials.

1 So, we have to speak in some other term; right?

2 MR. CELBA: I object to the form.

3 It's argumentative, whether you view

4 it as meaningless or not.

5 A. No, I think it is meaningless because we

6 have to talk about the toxicity of materials and

7 toxicity varies. Toxicity is an extrinsic property of

8 matter in the same way that mass is an extrinsic

9 property of matter. And you can't say you could ignore

10 mass and say it isn't there. It certainly is. Toxicity

11 is there as well.

12 Some materials have more of this property

13 than others just as some materials have greater mass

14 than others. The amount of mass or the amount of

15 toxicity, if you will, depends upon the amount of

16 material present; which makes it an extrinsic property.

17 (By Mr. Blanks)

18 Q. Well, I -- I really don't mean to be

19 arguing with you, but you - you spoke of the total dust

20 standard of 50 million particles to mean dust that

21 didn't contain either a pneumoconiosis-causing dust such

22 as asbestos or silica and dust that didn't contain other

23 toxic materials. I think that was your wording.

24 A. Materials that were otherwise toxic ---

25 Q. (Interrupting) Materials ...

1 A. --- than being a pneumoconiosis producing.

2 Q. All right. So, that pretty well rules out
3 all other materials in the universe. What - what does
4 it mean when you say "materials that are otherwise
5 toxic"?

6 A. Oh, there are all sorts of materials that
7 exist in particulate form that are otherwise toxic that
8 exert their toxicity by being inhaled and winding up in
9 the lungs or the stomach and getting to the body that
10 way.

11 Q. Well, I follow you. I'm just wondering
12 using your definition what then other particulates can
13 you name that - that's not toxic.

14 A. Oh, I'm sorry. Of course, everything is
15 toxic. The mineral dusts, total dust standard was 50
16 million particles per cubic foot for materials that did
17 not produce pneumoconiosis and were not otherwise toxic;
18 that is, did not exert any particular effect by virtue
19 of their toxicity on the body; that their effects were
20 exerted simply because there was too much dust, if you
21 will - materials such as chalk, for instance, or
22 charcoal; things that are essentially physiologically
23 inert and would exert their effects on the body by

24 simply being too much in the respiratory tract.

25 Q. Okay. Now, you said the silica standard

1 varied with the concentration of free silica in the
2 silica dust.

3 MR. ALMQUIST: I don't think he's
4 testified to that, Mr. Blanks. I
5 think that's ...

6 THE WITNESS: You are right, I
7 didn't.

8 (By Mr. Blanks)

9 Q. All right.

10 A. I just said silica. And if we are going to
11 be particular about it, we can talk about
12 crystalline-free silica; and the standard did - it
13 didn't start out that way but eventually it became a
14 standard that depended upon the percentage of
15 crystalline-free silica in the dust that one inhaled.

16 Q. And for asbestos of - was there any - any
17 variation for the asbestos standard with respect to the
18 percentage of asbestos in the dust that one inhaled?

19 A. Not directly in the T.L.V. list, no.

20 Q. You are saying the T.L.V. list simply
21 specified that the - the guideline, maximum amount -
22 maximum allowable concentration then, then threshold
23 limit value later was five million particles per cubic

24 foot of asbestos?

25 A. Sure. And the same standard applied to

1 silica, for pure silica, five million particles per
2 cubic foot.

3 Q. Did this five-million-particle standard for
4 asbestos refer to particles of any particular size or
5 dimension?

6 A. No, except that people who were using the
7 standard were really expected to use the method for air
8 sampling upon which the standard was based, which was
9 the midget impinger.

10 Q. Now, where - where is that information
11 found? What - what reference can you give me for that
12 proposition?

13 A. I can't. It's simply that - one of those
14 things that industrial hygienists were expected to know.
15 We have as I mentioned earlier this morning literally
16 dozens of ways of sampling air for dust, for particulate
17 material. Each one of these methods will give a
18 different result. Therefore, if you are going to get a
19 result that is comparable to the results upon which the
20 standard is based, you must use a method that is
21 comparable to the method so used.

22 Q. In the 1950's when you started doing
23 industrial hygiene work or had your training, there

24 weren't dozens of - of ways to measure for dust in the

25 air, were there?

1 A. Yeah, probably.

2 Q. Which ones did you learn of?

3 A. We have already talked about them, the
4 methods that we had at Dow; and those were the ones that
5 I knew.

6 Q. Which ones would you use or were you taught
7 to use to measure for asbestos dust in air?

8 A. We -- I happened to use a filter method for
9 asbestos dust in the air.

10 Q. This was in the '50's?

11 A. This was in '58.

12 Q. What -- Could you tell me more about the
13 filter method. I mean what - what did this entail?

14 A. This was a method that used a mixed
15 cellulose ester membrane filter as the material through
16 which air was drawn to capture the dust. Then that
17 filter was examined microscopically to determine the
18 amount of asbestos or, in fact, the amount of - the
19 number of dust particles on it if you want to look at it
20 that way.

21 Q. Just using a light field microscope?

22 A. Yes.

23 Q. And this is the method that you were taught

24 to use at Dow, or is this just one that you stumbled on

25 to or what?

1 A. No, it's just one that I happened to use

2 when I did the sampling that I did do.

3 Q. Well, now, earlier you told me I think that

4 you hadn't done any sampling for asbestos dust at Dow.

5 And I apologize if I'm misrecollecting. What - what are

6 you referring to now, sir?

7 A. You asked me if I had done any asbestos

8 dust sampling at Dow with a midget impinger, and I said

9 no; and I have not.

10 Q. So, you have done some sampling for

11 asbestos dust at Dow?

12 A. Yes, I took -- I did this once as I recall.

13 Q. And what was the occasion of that?

14 A. This was a -- There was a gentleman who

15 worked in one of the technical service departments who

16 became ill, and the medical department asked the

17 industrial hygiene group to determine his exposures to

18 everything that he was working with. This was done in -

19 earlier in 1954 I believe. And I did it. I was chosen

20 to do the job in 1958.

21 Q. You say something was done earlier in 1954.

22 What - what did you mean? You lost me there.

23 A. There was a survey of his exposures done by

24 one of the other Dow industrial hygienists.

25 Q. Oh, four years earlier?

1 A. Yes.

2 Q. I see. Okay. And what - what kind of work
3 was he doing that would have involved a potential
4 asbestos exposure?

5 A. He was working with floor tile
6 formulations, the object being that Dow apparently
7 wanted to get into this kind of business by furnishing
8 resins to floor tile manufacturers. In order to do
9 this, they had to show manufacturers of vinyl asbestos
10 tile, for instance, that Dow resins were at least as
11 good or better than and cheaper than or whatever the
12 materials that they were using. So, he was playing
13 around with asbestos floor tile or vinyl asbestos floor
14 tile type formulations.

15 Q. Did Dow actually set up a little production
16 line to - to make some sample asbestos, vinyl asbestos
17 floor tile?

18 A. I wouldn't call it a production line, no.
19 It was done on a laboratory scale by this gentleman and
20 a helper as I recall at the most a few times a month.
21 So, it wasn't a production line ---

22 Q. (Interrupting) Okay.

23 A. --- by a long shot.

24 Q. Sort of a little - not even a pilot plant,

25 but at - you said it was in a laboratory?

1 A. It was in a laboratory, yeah.

2 Q. But simulating what you would be doing in
3 actually producing the vinyl asbestos tile I suppose?

4 A. No, that wasn't the intent. The intent was
5 to produce a material that would be similar to that
6 produced when vinyl asbestos tile was produced, using
7 somewhat similar techniques; but certainly not identical
8 techniques by a long shot. There wasn't any attempt
9 made to copy production techniques that - to the best of
10 my knowledge.

11 Q. Just trying to end up with a finished
12 product that would be akin to what would be produced ---

13 A. (Interrupting) Yes.

14 Q. --- in the factory?

15 A. That's correct.

16 Q. Did Dow ultimately go into this business of
17 making vinyl asbestos floor tile?

18 A. I'm not privy to that information; but to
19 the best of my knowledge, no.

20 Q. Dow was ---

21 A. (Interrupting) Oh, Dow never tried to make
22 vinyl asbestos floor tile.

23 Q. Oh, they were going to make a vinyl

24 component to sell to the floor tile makers?

25 A. Correct.

1 Q. I see. So, you yourself actually took some
2 samples around this gentleman's work area while he was
3 doing the formulation of the vinyl asbestos tile?

4 A. Yes, I did.

5 Q. Why - why did you use this filter method
6 instead of using the midget impinger?

7 A. I used the filter method as a short cut so
8 that I could look at the results of the sampling. And
9 if the total dust concentration found on the filter was
10 less than the standard - the T.L.V. for asbestos, I
11 wouldn't have to go further and actually sample and have
12 the sample analyzed for asbestos.

13 Q. Now, why would that be so?

14 A. The standard for asbestos is or was five
15 million particles per cubic foot. If I sampled for
16 total dust and the total dust concentrations were less
17 than five million particles per cubic foot, obviously
18 then the asbestos dust concentration was less than five
19 million particles per cubic foot and I did not have to
20 sample specifically for asbestos.

21 Q. Okay. That - that makes sense. But why
22 not just go ahead and use the midget impinger and do it
23 the way that the standards called for?

24 A. There are many reasons for that. The first

25 one being that it is difficult to get good midget

1 impinger samples, particularly breathing zone samples,
2 because the person whom one is sampling - whose
3 breathing zone one is sampling has to in essence wear a
4 midget impinger that has liquid in it. And the liquid
5 can be either -- Well, that's beside the point. If he
6 bends over at the wrong time, the liquid gets sucked up
7 into the pump. And it's just easier, a lot easier to
8 use a filter method.

9 If, in fact, I had had to sample
10 specifically for asbestos dust, I would have used a
11 midget impinger. But it turned out that the
12 concentrations were well below five million particles
13 per cubic foot; therefore, there was no need to sample
14 specifically for asbestos.

15 Q. Was it also difficult to get midget
16 impinger samples for area monitoring purposes?

17 A. No. No. One could set those up. I -- I
18 just didn't. That's all.

19 Q. Okay. If you were going to take a sample
20 in the breathing zone of the worker, what - what would
21 you do, just come up near him with the midget impinger,
22 come within a - a foot of his nose or mouth and - and
23 just collect a sample?

24 A. That's the way we did it before we had

25 battery powered pumps, yes.

1 Q. How long does it actually take to collect a
2 sample like that, one sample?

3 A. Well, one tries to sample long enough so
4 that the impinger collects enough dust to count. In --
5 As a matter of fact, generally such samples run in the
6 order of 15 or 20 minutes in duration.

7 Q. I see. Now, how about when you are using
8 this filter method, what do you use to collect that
9 sample? I mean what draws the air across the filter?

10 A. An electric pump of some kind. Once we had
11 small battery powered pumps that could be carried on the
12 belt, these were used. Before we had battery powered
13 pumps, we had pumps we could plug into the wall and draw
14 air through the filter.

15 Q. How long does it take to collect one of
16 those samples?

17 A. Again, it depends upon what one is looking
18 for. You try to sample at a high enough flow rate for a
19 long enough period of time to get something on the
20 filter that you can analyze.

21 Q. Okay. Was it the case that this filter
22 method you used in 1958 to monitor the man who is using
23 asbestos to formulate - to work with the vinyl tile

24 formulation was capable of capturing asbestos particles,

25 asbestos dust?

1 A. Yes. In fact, the membrane filter method
2 is very, very close to being 100 percent efficient for
3 all kinds of dusts. It is far more efficient at
4 capturing dust than is the midget impinger.

5 Q. And, so, looking at that filter, the
6 membrane filter -- So, looking through the microscope at
7 the membrane filter you can then see asbestos dust
8 particles if they are present?

9 A. Well, you see dust particles. You don't --
10 You can't tell by looking whether they are asbestos or
11 not. In fact, I didn't do the analytical work. This
12 was done by another Dow lab that specialized in
13 microscopic analysis.

14 Q. Did you yourself ever do any counts while
15 you were at Dow for asbestos particles or fibers?

16 A. No, sir.

17 Q. That was always done by somebody else in -
18 in the lab?

19 A. Well, as I said, I only took the sampling
20 under the one circumstance. And always is a pretty big
21 word to use for a single occasion.

22 Q. Okay. This is your - your only experience
23 at Dow with sampling air for asbestos?

24 A. To the best of my knowledge, yes.

25 Q. All right.

1 A. That's the only report that anyone has
2 found in the Dow files.

3 Q. And no - no others come to your mind?

4 A. No. In fact, many years ago I started in
5 depositions saying that I recalled doing sampling for
6 asbestos once; and I couldn't remember where or when.
7 And since I have read the report, my memory has been
8 refreshed.

9 Q. When did you get to read the report?

10 A. Oh, probably two or three years ago,
11 something on that order.

12 Q. So, in your training by Mr. Hoyle then,
13 you were taught to collect samples. I mean that - that
14 much you made clear. I'm wondering if he also taught
15 you then how to count the samples, to count for
16 particles in dust samples?

17 A. No, he did not.

18 Q. Did anyone teach you that?

19 A. When I was working on my Masters degree, I
20 did some counting of microscopic particles. These
21 happened to be droplets of water rather than fibers or
22 particles of solid material. And I did learn how to do
23 it then. But I never even looked through a microscope

24 when I was at Dow. There were other people we could

25 have do that.

1 Q. Well, okay. I -- I don't mean that to be
2 critical. I was just curious.

3 So, I guess it's safe to say then that
4 before - as of the time you left Dow in 1965 to go back
5 to school, you had never seen an asbestos particle or
6 fiber from - from an air sample?

7 A. I may have seen photographs,
8 microphotographs or photomicrographs in journal
9 articles. But in - in real time, no, I never did. I
10 didn't look through microscopes. That's a tough job.

11 Q. Now, you told us a few minutes ago that you
12 really couldn't tell when looking at the membrane filter
13 sample if the particles were asbestos or not. What
14 do -- What do you base that on?

15 A. Gee, quite a lot of reading; and also a
16 knowledge that the particle's size and shape gives very
17 little clue as to its origin. So that even a particle
18 that looks fibrous in nature, for instance, could be a
19 textile fiber. It doesn't have to be an asbestos fiber.
20 And you can't tell the difference under the microscope
21 to the best of my knowledge.

22 Q. Can you refer us, Dr. Peterson, to any
23 published literature from the '50's or even the '60's

24 that - that supports what you say that the threshold

25 limit value for asbestos of five million particles

1 referred to five million asbestos particles as opposed
2 to a total dust of five million particles containing
3 asbestos?

4 A. I doubt if the question ever arose.

5 Q. Is that a "no"?

6 A. That's a no.

7 Q. Is it - is - is this matter specifically
8 addressed in any of the - the guideline publications
9 that contain the T.L.V.'s; do you know?

10 MR. CELBA: I'm going to object.

11 It's an argumentative type of question
12 in that you are assuming there was a
13 question created by it. This
14 individual has testified there was
15 not. I object to the form of the
16 question.

17 A. The - the only thing I can think of that
18 addressed this particular kind of question was the 1938
19 Dreessen report upon which the standard was based where
20 the concentration of asbestos in the dust that people in
21 these textile plants were breathing was on the order of
22 90 percent of the dust, something on that order; and,
23 therefore, this standard is based on essentially pure

24 asbestos in the air.

25

1 (By Mr. Blanks)

2 Q. And that information about the - the
3 percentage of the dust that was asbestos and so forth
4 came from the samples that Dreessen was taking in those
5 plants?

6 A. Yes. I don't think Dreessen did any
7 sampling, but ...

8 Q. The Dreessen group, whoever he was
9 reporting on?

10 A. Yes.

11 Q. So, at least at Dow and in your mind the
12 five million particle standard was one for total
13 asbestos and not total dust?

14 A. Oh, of course.

15 Q. Okay. And that was the case through all
16 the years that you worked there and as far as you know
17 thereafter?

18 A. Sure. I'll go back and say that there were
19 many times when we would or could have taken total dust
20 samples with the idea being that if the concentration
21 were less than five million particles per cubic foot,
22 that there was no need to take a sample specific to
23 asbestos.

24 Q. Okay. But where you were sampling for
25 asbestos, that's what you were counting and reporting or

1 that's what would have been counted and reported at Dow;
2 that is, the asbestos content of the sample?

3 A. Oh, sure, if - if, in fact, that could be
4 done. And quite often it could not be done because the
5 amount of material that we collect in an impinger or on
6 a filter is minute. And ordinarily the information that
7 relates to how much of that material is asbestos comes
8 from a different source, at least in those days it did
9 because we didn't have electron microscope probes and so
10 forth where one could analyze individual particles that
11 we have today.

12 Q. Now, wait. What are you telling me? You
13 are telling me you could see the asbestos particles to
14 count them or you couldn't?

15 A. No, you could see them, sure.

16 Q. And you could count them?

17 A. And you could count them.

18 Q. Uh-huh.

19 A. But you don't know whether they are
20 asbestos or not when you look at them under the
21 microscope and count them. All you -- All you see is
22 particles. And I have to go back and correct myself. I
23 did look through microscopes occasionally, and that's

24 when I used the B & L dust counter; and then I had to do

25 the counting.

1 But what you see is particles. And you
2 don't have any real clue as to what they are from the
3 sample, the air sample that you have taken. The
4 technique at that time was to use what are called rafter
5 samples. And one can find references to rafter samples
6 in the literature. This is where the dust has
7 accumulated somewhere, and you take a handful of it and
8 have it - it analyzed to determine how much asbestos is
9 in the dust, for instance. And then you apply that
10 percentage to the air samples one takes.

11 This is the technique that was used by the
12 Dreessen crew in 1938. And it's a perfectly acceptable
13 way of doing things.

14 Q. Was this the approach you used at Dow when
15 sampling for asbestos to - to take rafter samples or ...

16 A. It's an approach that we could have used.
17 As I told you, I only did it once; and I don't know
18 what the other fellows did. I don't have direct
19 knowledge.

20 Q. Well, have you heard about any asbestos
21 sampling done at Dow let's say in connection with
22 insulation activities?

23 A. I understand that Mr. Hoyle took some

24 samples. I was not aware of it at the time. And it

25 may have been after my time there. I -- I don't

1 remember.

2 Q. When do you think it became possible to
3 actually see the asbestos dust in the samples that you
4 collected ---

5 MR. CELBA: (Interrupting) I'm
6 going to ...

7 (By Mr. Blanks)

8 Q. --- to distinguish them from ...

9 MR. CELBA: ... object to the
10 form of that as misconstruing the
11 testimony of this witness.

12 (By Mr. Blanks)

13 Q. When do you think, Dr. Peterson, it became
14 possible to distinguish the asbestos particles from
15 other dust particles in a sample collected from the air?

16 MR. CELBA: The same objection.

17 A. I really can't point at a date or even an
18 era. All I can say is that with the advent of the
19 electron microprobe it became possible to determine the
20 elemental composition of individual particles. This
21 method is far too time-consuming and expensive to use
22 for most air sampling, however. So, I -- I don't know
23 that this can be done today with an air sample with any

24 great amount of success, the ordinary air sample we

25 take.

1 (By Mr. Blanks)

2 Q. Was - was it the approach at Dow in the
3 '50's when you were there to - to measure for asbestos
4 dust in connection with insulating activities?

5 A. Well, I never did. And I -- I don't know
6 that anybody else did either.

7 Q. Do you know when this was first done at
8 Dow?

9 A. No, not right offhand.

10 Q. Was it the - the policy at Dow to expose
11 workers to concentrations of pneumoconiosis-producing
12 dust in excess of the T.L.V. in the 1950's?

13 A. No.

14 Q. Did that happen at Dow?

15 A. I imagine so.

16 Q. What did the industrial hygiene department
17 do to be - to be certain that exposures to dust like
18 asbestos or free silica were not above the standard or
19 the guideline of the 1950's?

20 A. Well, in the first place industrial hygiene
21 is far from a certain activity. There is no way one can
22 be certain about anything which is why I answered your
23 question "I imagine so" when you asked it. I have no

24 way of telling whether people were ever exposed above

25 the numerical value of the T.L.V.

1 If the question had arisen, and I'm not at
2 all sure that it did - in fact, it certainly did not to
3 me - we would have checked the literature. We would
4 have found the Fleischer-Drinker report and found that
5 in general insulators were not at risk and we would have
6 said, "Fine, that probably applies to our people, too."
7 But I don't think the question ever arose when I was
8 there.

9 Q. You - you think that it would have been
10 reasonable in the 1950's to rely on the
11 Fleischer-Drinker article about shipyard insulators to
12 conclude that insulators in Dow plants would not be at
13 risk from asbestos exposure?

14 A. Rely upon is a difficult phrase to handle.
15 The technique used in that particular survey was using
16 the B & L microscope which gives you extremely
17 conservative results. People on board ship in general
18 are in much more confined places than people in a
19 chemical plant. And under those circumstances it
20 appears to me now and it probably would have appeared to
21 me then that conservatively one could say the chances of
22 being overexposed at Dow were nil.

23 Q. And that would have been your view in the

24 1960's as well?

25 A. Sure, probably.

1 Q. Apparently you never felt the need to
2 confirm that - that notion by taking samples of people
3 doing insulating work. And you don't recall your
4 colleagues doing any during the '50's, do you?

5 A. I do not recall my colleagues doing
6 anything. And the business about not feeling a need to
7 do it, I'm - I'm not sure the question ever crossed my
8 mind as to the possibility of doing it or a reason for
9 doing it.

10 Q. Is that because you were working on other
11 things or ...

12 A. We were all awfully busy.

13 Q. All right, sir.

14 A. Always.

15 Q. Well, I can appreciate that three men and
16 even five men would be awfully busy in those years.

17 A. We were.

18 Q. Can you tell us whether or not
19 asbestos-containing insulation was being used in Dow
20 plants in the 1950's when you began doing industrial
21 hygiene work?

22 A. Not from my own knowledge, no. I don't
23 have any idea whether it was or not.

24 Q. Have you ever heard that that was the case?

25 A. Yes, certainly. I read Mr. Hoyle's

1 deposition, and I know that at one point he became aware
2 of this. I certainly wasn't aware of it.

3 Q. You weren't aware of it until you read
4 Mr. Hoyle's deposition?

5 A. That's about right.

6 Q. It's your impression that thinking back now
7 that none of the other industrial hygienists were aware
8 of the presence of asbestos insulation in Dow plants
9 during the '50's?

10 MR. ALMQUIST: I'm going to
11 object to the question. It calls for
12 speculation on the part of the witness
13 in the sense that it asks him to
14 speculate as to what somebody else's
15 knowledge or opinion was.

16 A. The best -- To the best of my recollection
17 we never discussed the subject. And I have no way of
18 knowing what the other industrial hygienists knew or
19 felt.

20 (By Mr. Blanks)

21 Q. What things did you do to acquaint yourself
22 with the scope of the potential occupational health
23 hazards in Dow plants when you started your - your

24 training there in 1953?

25 A. Well, you will recall that I told you that

1 one of the things I did in my training was to visit all
2 of the production plants. And I also visited pilot
3 plants and semi-plants for walk-throughs, if you will.
4 And that was probably the best introduction I had to the
5 potential for hazards in those areas.

6 Q. Do you recall seeing thermal insulation in
7 the - in the Dow units, the production units?

8 A. Sure.

9 Q. But you didn't learn then and have really
10 never learned to your personal knowledge what - what
11 that insulation was made of?

12 A. That is correct.

13 Q. Did you observe during these walk-throughs
14 in the plants people applying insulation or removing
15 insulation?

16 A. No, not that I can recall.

17 Q. Did you have fabricating shops anywhere in
18 the Dow plants that - that would be a place where people
19 would work on the - the asbestos insulation or
20 insulation, cut it, fit it, shape it?

21 A. I don't recall any such fabrication
22 facilities, no.

23 Q. As you look back today, do you think that

24 the industrial hygiene group should have - should have

25 known or found out in the 1950's that the insulation in

1 the plants did contain asbestos?

2 A. I don't -- I don't see how I can go back
3 and - and change things in the '50's even if I would
4 want to. All I can tell you is that we didn't. And I
5 at that time saw no reason to do so. And I don't see
6 how I could change my mind from the present going back.

7 Q. I see. But by that time you also knew that
8 asbestos was a cause of asbestosis, a lung disease that
9 could be fatal, did you not?

10 A. Yes, I did know that.

11 Q. And by that time you knew that asbestos was
12 regarded as being a probable carcinogen, did you not?

13 MR. ALMQUIST: What time are you
14 talking about, Mr. Blanks?

15 MR. BLANKS: I'm talking about in
16 the 1950's when this gentleman began
17 his career under the tutelage of
18 Mr. Hoyle.

19 A. No, I had no idea that asbestos was a
20 probable carcinogen at that time.

21 (By Mr. Blanks)

22 Q. Did you regard it at that time as being a
23 possible carcinogen?

24 A. No.

25 Q. Did you think it even to be suspected of

1 being a carcinogen?

2 A. No.

3 Q. At what point in your career did you come
4 to a state of awareness that asbestos was - was regarded
5 as a probable carcinogen?

6 A. 1965.

7 Q. What was the occasion of that,
8 Dr. Peterson?

9 A. I left Dow and went back to school. And
10 when I got to Ann Arbor, the ability of asbestos to
11 cause mesothelioma was the topic of conversation. We
12 all discussed it. We were all surprised at it. To the
13 best of my knowledge I certainly was. But I became
14 aware at that time of Dr. Selikoff's work.

15 Q. Now, having since then learned more and
16 perhaps learned more of the literature, do you - do you
17 have an opinion that you have ever expressed before
18 about when it became established that asbestos was a
19 probable carcinogen?

20 MR. CELBA: It assumes facts not
21 in evidence.

22 A. No.

23 (By Mr. Blanks)

24 Q. You have never done any review of the
25 literature to - to acquaint yourself with that?

1 A. I have done a review of the literature.

2 However, I have never been asked that opinion in
3 deposition or in Court.

4 Q. Have you formed an opinion based on your
5 review of the literature?

6 A. I -- Not really because it depends upon an
7 awful lot of things. It depends upon a knowledge of
8 hindsight in the first place. All - all I can talk
9 about really in trying to put myself back in the '50's
10 and '60's is what I did know. And I did not have any
11 idea whatsoever that asbestos could cause cancer. So
12 far as I'm concerned that knowledge came to me in 1965.

13 Q. Okay. I accept that.

14 A. Okay.

15 Q. I'm not - not arguing with that point. I'm
16 just wondering if you have since done any studying that
17 would cause you to have an opinion about when you could
18 have known that had you been following the literature.

19 MR. ALMQUIST: And I think you
20 have asked that question, and he's
21 answered it already at least twice.

22 MR. CELBA: I join in the
23 objection.

24 A. No, not really. I just don't think of
25 things that way. That's a legal way of looking at

1 things, and I don't think of them that way. I'm an

2 industrial hygienist.

3 (By Mr. Blanks)

4 Q. Knowing what you know today as an

5 industrial hygienist, what do you think Dow should have

6 been doing in the mid-1950's to control for potential

7 asbestos exposures in its plants?

8 A. Probably what Dow was doing at the time.

9 I -- Dow had no way of doing things differently to the

10 best of my knowledge.

11 Q. In the mid-1950's when you started at Dow

12 did Dow have the capability of using wet methods to

13 handle asbestos insulation in its plants?

14 A. Sure, of course.

15 Q. Wetting agents were known to exist then,

16 were they not?

17 A. Well, back then about the only wetting

18 agent we had around that was commonly available was

19 soap.

20 Q. Detergent?

21 A. We didn't have much in the way of

22 detergents in the early '50's.

23 Q. Okay.

24 A. There were some available. But, sure, wet

25 methods could be used; and wet methods were being used

1 with silica, for instance. If the question had
2 arisen -- Well, there is a lot of ifs; and I -- I don't
3 deal in ifs generally.

4 Q. Okay.

5 A. I try not to.

6 Q. And in 1953 or thereabouts Dow would have
7 had the capability to provide its insulators with
8 protective clothing while doing asbestos work; wouldn't
9 that be true?

10 A. Well, of course. But as I have indicated
11 the protective clothing isn't to protect the insulator
12 or the worker. It's to prevent the spread of the
13 material more than anything else.

14 Q. Yes, sir.

15 A. So ---

16 Q. (Interrupting) Such as, for example,
17 carrying asbestos dust home to the laundry room where
18 people in the house could be exposed to it?

19 A. Well, I suppose that's one of the scenarios
20 that one could think about.

21 Q. And I suppose Dow had the capability to
22 provide airline respirators for people working with
23 asbestos in - in the mid-1950's; isn't that so?

24 A. Well, it would depend to a great extent

25 upon where they were doing the work. I -- If the work

1 was being done inside of a building, sure, airline
2 respirators could have been provided. If the work is
3 being done on the high temperature steam lines that ran
4 throughout the plant, probably not. It probably would
5 have been impractical to provide airline respirators.

6 Q. So, certainly Dow had the capability to
7 provide mechanical filter respirators in the early
8 1950's to protect against mineral dusts such as
9 asbestos; isn't that so?

10 A. Yes, such respirators were available.

11 Q. And in any event, as an industrial
12 hygienist you would view respirators generally as being
13 your - the last line of defense against dust exposures,
14 wouldn't you?

15 MR. CELBA: I'm going to object
16 as vague and ambiguous and
17 argumentative.

18 (By Mr. Blanks)

19 Q. I can see why Counsel for Owens-Corning
20 Fiberglas would object to that, Dr. Peterson. But would
21 you agree with me or not, sir?

22 MR. CELBA: I'm going to move to
23 strike your observation, Counsel,

24 although it's appreciated.

25 A. The -- It depends on the circumstances.

1 There - there are times and circumstances where an air -
2 an air-purifying respirator is really the only
3 protection that one can have. And under those
4 circumstances it's the first line of defense.

5 (By Mr. Blanks)

6 Q. Those would be situations where you
7 couldn't through some other means of control eliminate
8 the - the exposure; isn't that right?

9 A. If you will change your question to reduce
10 rather than eliminate, I will go along with it. We - we
11 can't really eliminate exposures to anything. Somebody
12 once sat down and calculated that each breath we take
13 contains 200 molecules of air that passed through the
14 lungs of Cleopatra. When things get into the air, they
15 get dispersed and we breathe them. You can't eliminate
16 exposures to me as a scientist. You can reduce them.

17 Q. Certainly if the asbestos fiber had been
18 eliminated as an ingredient in insulation products such
19 as Kaylo, that at least would have eliminated the
20 potential for exposure to asbestos from the use of the
21 Owens-Corning insulation product, would it not?

22 MR. CELBA: I object. It's
23 argumentative; lack of

24 foundation; calls for speculation;

25 it's vague and ambiguous.

1 A. I don't even know that Kaylo could be made
2 without asbestos in it. So, your - your question is
3 difficult to answer if not impossible. I can't answer
4 it.

5 MR. ALMQUIST: We have been going
6 another hour here. Let's take a
7 break, if we could. I need to get up.

8 MR. BLANKS: Okay.

9
10 (A BRIEF RECESS WAS TAKEN.)

11
12 (By Mr. Blanks)

13 Q. We were -- We were discussing respirators
14 and circumstances where they might be your only line of
15 defense or your first line of defense. I was asking you
16 as a general rule, you would prefer to use other control
17 measures where they would work before having to trust a
18 respirator to protect a worker from a hazardous dust
19 exposure, wouldn't you?

20 MR. CELBA: Well, I'm going to
21 object. It's been asked and answered.
22 It's repetitious, and it's
23 argumentative.

24 A. Where they would work and where they could

25 be available one would have to add before I could agree

1 with your statement or your question.

2 (By Mr. Blanks)

3 Q. All right, sir.

4 A. But other than that, sure. We try to use

5 other techniques of control before we use personal

6 protective devices of any kind except for safety

7 glasses.

8 Q. Okay. At Dow you had the capability in the

9 early '50's when you went there to - to isolate work

10 areas that had asbestos insulation being handled, didn't

11 you?

12 A. If the areas were indoors, one could

13 isolate them. We didn't have available to us the

14 techniques we have today to isolate sections of

15 pipeline, for instance, all by themselves. So that if

16 one were out of doors, isolation would have been a very

17 difficult thing to do.

18 Q. Would it be difficult to isolate the work

19 area from other workmen by simply not allowing them in

20 the area when the asbestos dust was being generated?

21 That would be a form of isolation, wouldn't it?

22 A. Yes and no. The problem there is that you

23 might have to consider maintaining such isolation over

- 24 extended periods of time which would mean really a - a
- 25 plant shutdown perhaps to do something. And that might

1 be difficult. Each - each circumstance really has to be
2 looked at in its entirety. One can't take a little
3 piece of it and say "This is always the way to do
4 something" or "This is never the way to do something."

5 Q. Yes, sir. And we are just now discussing
6 the things that Dow would have been capable of doing by
7 way of hygienic controls in the early 1950's when you
8 got there. And I'm not trying to prescribe them as
9 something you should have done in every instance. I
10 mean do you understand?

11 A. Sure. Well, in general Dow had good
12 capabilities.

13 Q. You had the capability to use exhaust
14 ventilation to control asbestos dust in connection with
15 insulating activities?

16 A. Yes.

17 Q. Again, back in the early '50's?

18 A. Yes.

19 Q. I assume from what you have told me about
20 the equipment, the equipment that was in the industrial
21 hygiene group when you arrived that you had at Dow had
22 the capability to monitor or sample for asbestos dust in
23 air?

24 A. We did.

25 Q. And would it have been the case,

1 Dr. Peterson, that in the early 1950's that Dow had the
2 capability to do medical monitoring of its workers who
3 were potentially exposed to asbestos?

4 A. Certainly.

5 Q. Now, could you share with us then,
6 Dr. Peterson, any of these different techniques for
7 controlling exposures to asbestos dust in air that were,
8 in fact, used at Dow in the 1950's that - that you know
9 of.

10 A. As I have said, I'm not aware of any work
11 that we did with asbestos-containing materials.

12 Q. By that you mean you are not aware of any
13 work that the industrial hygiene group did with respect
14 to controlling exposures to asbestos-containing
15 materials?

16 A. And more than that, I'm not aware of any
17 work that Dow people did with asbestos-containing
18 materials.

19 Q. Would you know, sir, whether any
20 contractors on Dow premises did work with
21 asbestos-containing materials at Dow?

22 A. I have no direct knowledge of that one way
23 or the other.

24 Q. Is that something that would have not been
25 of any concern to the industrial hygiene group during

1 the '50's; that is to say potential exposures to
2 contractor employees on Dow premises?

3 A. You are getting into an area where I really
4 can't respond because I was not the person directing the
5 industrial hygiene group. I was just one of those who
6 did what he was told to do: "Go out and do some
7 sampling, evaluate exposures here" and so forth.

8 Q. Do you recall doing any sampling or
9 evaluations for exposures to contractor employees on Dow
10 premises?

11 A. No, I don't.

12 Q. Is it your recollection that in say the
13 1955 period that Dow regarded asbestos insulation as
14 being a potentially hazardous material?

15 A. I don't know that Dow had any asbestos
16 insulation around to regard as a hazardous material.

17 Q. All right, sir. Do you have an answer to
18 my question, though?

19 A. No, I don't. I - I -- As I said, I don't
20 know that Dow had any asbestos insulation around to
21 regard one way or the other. Is it hazardous? It
22 depends upon circumstances. Is there a likelihood of
23 injury is what we meant by hazard and what I mean by

24 hazard today.

25 And Dow may have had asbestos-containing

1 materials around. And where -- The only place - place I
2 know where asbestos, per se, was used was in the
3 chlor-alkali plant. And I know that only from reading
4 Mr. Hoyle's deposition.

5 Q. Was that a Midland plant?

6 A. Yes.

7 Q. Well, sir, were you aware in 1953 or '54 or
8 '55 that asbestos insulation was a potentially hazardous
9 material?

10 MR. CELBA: I'm going to object
11 to the form of the question as vague
12 and ambiguous, indefinite, overly
13 broad.

14 A. I didn't know ---

15 MR. CELBA: (Interrupting) And
16 argumentative.

17 A. Yes. I don't know there was such a thing
18 as asbestos-containing insulation at that time.

19 (By Mr. Blanks)

20 Q. When do you think you first learned that
21 there was such a thing as asbestos-containing
22 insulation, approximately?

23 A. I have no idea. I just don't know.

24 Eventually the knowledge came to me, but I don't know

25 where it came from or what the circumstances were.

1 Q. Do you think that would have been after you
2 left Dow and went back to school and heard about the
3 mesothelioma cases?

4 A. No. In fact, it may well have been later
5 than that. It may well have been when I was retained by
6 attorneys for O.I. I just don't know.

7 Q. All right, sir. Do - do you have any
8 recollection that would suggest that - that Mr. Hoyle in
9 the 1950's regarded asbestos insulation material as
10 being a potentially hazardous material?

11 MR ALMQUIST: I object to the
12 form of the question as calling
13 for speculation on the part of the
14 witness as to what some other person
15 regarded or knew.

16 MR. CELBA: I join in the
17 objection. It's argumentative.

18 A. I don't know what Mr. Hoyle knew.

19 (By Mr. Blanks)

20 Q. I understand that you might not know with
21 the kind of scientific certainty that you are used to
22 dealing with about what Mr. Hoyle knew or didn't know.
23 But I was asking you, sir, what your impression was

24 about Mr. Hoyle's awareness as to asbestos insulation

25 being a potentially hazardous material in the

1 mid-1950's.

2 MR. ALMQUIST: The same

3 objection.

4 (By Mr. Blanks)

5 Q. If you had one.

6 MR. CELBA: The same objection.

7 A. I don't. I have no idea.

8 (By Mr. Blanks)

9 Q. Mr. Hoyle never expressed to you any -
10 anything about asbestos insulation being a potentially
11 hazardous material?

12 A. I don't ---

13 Q. (Interrupting) To your recollection.

14 A. I don't recall ever discussing insulation
15 materials with Mr. Hoyle under any circumstances.

16 Q. If you had been informed by Owens-Illinois
17 in say 1953 that - or by Owens-Corning Fiberglas in 1953
18 that asbestos should be regarded as a potentially
19 hazardous material, do you think it likely that you then
20 would have at least made inquiry about whether there was
21 any of that material in Dow plants?

22 MR. CELBA: I object. It's

23 repetitious, vague, ambiguous, overly

- 24 broad, indefinite. Calls for
- 25 speculation; lack of foundation and

1 improper hypothetical.

2 A. As I have indicated, soon after I joined
3 the industrial hygiene crew, I became aware that
4 asbestos could cause asbestosis. If Owens-Illinois or
5 O.C.F. or anybody else had told me this, I would have
6 been - I would have regarded it as superfluous
7 information.

8 (By Mr. Blanks)

9 Q. Did the fact that asbestos could cause
10 asbestosis mean to you that the insulation containing
11 asbestos should be handled as a potentially hazardous
12 material?

13 MR. CELBA: The same objection as
14 previously stated.

15 A. Yes, in that just about everything that one
16 looks at or monkeys around with can be so handled.

17 (By Mr. Blanks)

18 Q. I'm sorry. I don't follow that. You are
19 saying that - that everything you handle should be
20 treated as a potentially hazardous material; the table
21 cloth, the glass of water? I mean what - what are you
22 saying, Dr. Peterson?

23 A. I am saying that just about anything we

24 deal with has the capability of causing harm. How we

25 deal with it depends upon the perceived probability of

1 that harm occurring. And without analyzing
2 circumstances, I can't say whether a material is
3 potentially hazardous or not. Potential exists for
4 everything. So, saying potentially hazardous is
5 meaningless really.

6 Q. You think the potentials for hazard are
7 essentially identical between all things or what?

8 A. Oh, no, not by a long shot.

9 Q. Do you think that insulation containing
10 asbestos is less potentially hazardous than the
11 insulation that doesn't have asbestos in it or maybe has
12 fiberglass in it?

13 MR. CELBA: I object. It's
14 argumentative and lack of foundation.

15 A. If asbestos-containing insulation is
16 sitting here in a block on this table and is
17 undisturbed, the hazard associated with it is zero; and,
18 therefore, it need not be handled as a potentially
19 hazardous material. So, it all depends on what is being
20 done with the material and how it's being handled, what
21 the circumstances are.

22 (By Mr. Blanks)

23 Q. And in your experience the asbestos

24 insulation in order to be put to use in a chemical plant

25 has to be handled, doesn't it, sir?

1 MR. CELBA: I'm going to object
2 to lack of foundation.

3 A. I have never seen asbestos-containing
4 material being handled in a chemical plant; therefore, I
5 don't have any experience in that area.

6 (By Mr. Blanks)

7 Q. You have seen it being handled on
8 battleships, haven't you?

9 MR. CELBA: The same objection.
10 It's argumentative, too.

11 A. Yes, I have seen it being handled on a
12 battleship.

13 (By Mr. Blanks)

14 Q. You can perceive that it obviously had to
15 have been taken out of a container and been put on the
16 pipe in order to get there in the first place I suppose?

17 MR. CELBA: I'm going to object,
18 Counsel. His testimony was he
19 only - he did not see application or
20 installation of new insulation on that
21 battleship.

22 MR. BLANKS: Is this an objection
23 to form or what?

24 MR. CELBA: Well, I'm just --

25 Misconstruing his testimony. You said

1 he saw them take it out of the box.
2 I'm just saying his testimony was that
3 he never saw it being applied. So,
4 how could he see it taken out of the
5 box?

6 Now, you are being
7 argumentative at this point in time
8 over a question we have had repetition
9 many times before. So, keep trying I
10 guess.

11 (By Mr. Blanks)

12 Q. Does that help you to answer, Dr. Peterson,
13 hearing the - the speaking objection from the
14 Owens-Corning Fiberglas lawyer that you worked for just
15 a few months ago?

16 MR. CELBA: I object to the
17 comments and move to strike.

18 A. No.

19 (By Mr. Blanks)

20 Q. How much money have you made from
21 Owens-Corning Fiberglas or their hired attorneys over
22 the years, Dr. Peterson? Do you have any idea?

23 MR. CELBA: I object to the form.

24 It's argumentative.

25 A. No.

1 (By Mr. Blanks)

2 Q. Do you keep records of these things?

3 A. I have records ---

4 Q. (Interrupting) Do they pay ...

5 A. --- that go back a couple of years.

6 Q. And you have been working for them for more
7 than a couple of years, haven't you?

8 A. I don't really know. Two or three years,
9 something on that order.

10 Q. Well, are you telling this Jury that - that
11 had Owens-Corning or Owens-Illinois told you back in
12 1953 that asbestos-containing Kaylo insulation, for
13 example, could cause asbestosis in animals and therefore
14 should be regarded as a potentially hazardous material
15 that - that that would have been of no value to you,
16 would not have added to your useful store of knowledge
17 as a - as a young industrial hygienist?

18 MR. CELBA: Counsel, this is
19 repetitious. You know you have asked
20 this question at least four times in
21 this deposition. I restate all my
22 objections to the previously
23 stated questions that were exactly

24 like this.

25 And I am sure that Dr. Peterson

1 would like to incorporate his answer
2 then. And at this point in time you
3 are just badgering the witness through
4 this repetition.

5 MR. BLANKS: Carry on
6 Owens-Corning Fiberglas, carry on.
7 Make your speaking objections.

8 A. As I indicated previously when you asked
9 the question, I would have regarded it as being
10 superfluous information.

11 (By Mr. Blanks)

12 Q. And I suppose based on what you learned
13 from Mr. Hoyle and others that Dow didn't need to be
14 told in 1953 or 1948 when - when Owens-Illinois first
15 learned it that - that Kaylo should be regarded as a
16 potentially hazardous material either, would that be -
17 would that be your view, sir?

18 MR. CELBA: The same objection.

19 MR. ALMQUIST: I object to the
20 form of the question in that it is
21 different from asbestos.

22 MR. BLANKS: It's what?

23 MR. ALMQUIST: The form of the

24 question is improper. I think it

25 misstates his prior testimony and

1 misstates the facts on the record.

2 It's vague, ambiguous and

3 confusing.

4 A. I'm sure that if I had known that, No. 1,

5 Dow was using Kaylo; No. 2, that Kaylo contained

6 asbestos; No. 3, that in use, asbestos was released, I

7 would have regarded Kaylo as a potential source of

8 exposure to asbestos; that if the exposure were

9 prolonged and repeated often enough, might give rise to

10 asbestosis. I did not know most of those things.

11 (By Mr. Blanks)

12 Q. Is it your view, Dr. Peterson, that it's

13 better to discover from animal testing that some

14 material can cause serious disease than to wait and

15 discover it later in industrial workers?

16 MR. CELBA: I object.

17 Repetitious again. Lack of

18 foundation. Calls for

19 speculation. Vague and ambiguous.

20 A. I am a proponent of toxicology, which is

21 using in this particular kind of case animals as

22 surrogates for humans. I'm also aware that not

23 everything can be done with animals; and, therefore, we

24 have to have the science of epidemiology.

25

1 (By Mr. Blanks)

2 Q. It was possible, wasn't it, though, to
3 develop asbestosis in laboratory animals exposed to
4 insulation materials containing asbestos - wasn't it?

5 A. Yes.

6 Q. And speaking as an industrial hygienist
7 presumably responsible for the health of numerous
8 industrial workers working for Dow, for example, you
9 would much prefer to be forewarned about a potential
10 hazard than to have to discover it later in your own
11 work force, would you not, sir?

12 MR. CELBA: Again, it's
13 repetitious. We raise our previously
14 noted objections to this line of
15 questions about what this witness
16 would have preferred to hear about or
17 know about. We have raised those
18 objections, then we raise them
19 again ---

20 MR. BLANKS: (Interrupting) You
21 have made your objection. You can
22 stop your monologue,
23 Mr. Owens-Corning.

24 MR. CELBA: I think I have made
25 my record.

1 A. I prefer to have as much information as I
2 can get always - as I can get and understand and use
3 regardless.

4 (By Mr. Blanks)

5 Q. Do you prefer to pass that information
6 along to the workers that you are charged with
7 protecting as well?

8 MR. CELBA: I object. Vague and
9 ambiguous.

10 A. I certainly did when I had such a charge.
11 (By Mr. Blanks)

12 Q. Let me show you a letter from 1948
13 addressed to a Mr. U. E. Bowes at the Owens-Illinois
14 Glass Company that is marked as Plaintiffs' Exhibit
15 481116 OIIOCF. Have you ever seen a letter like this.
16 (Tendering)

17 A. (Reviewing)

18 MR. CELBA: I'm going to object.
19 Lack of foundation.

20 A. All I can say is I have probably seen it
21 before.

22 (By Mr. Blanks)

23 Q. Where do you think you saw it? Would that

24 have been at Dow?

25 A. Oh, no. No.

1 MR. CELBA: The same objection.

2 Lack of foundation.

3 A. I - I would have seen it as one of the
4 pieces of information given to me by the attorneys for
5 Owens-Illinois in the '80's sometime.

6 (By Mr. Blanks)

7 Q. So, you think that the lawyers from
8 Owens-Illinois would have showed you this letter to
9 Mr. Bowes apparently coming from Dr. Vorwald?

10 MR. CELBA: The same objection.

11 (By Mr. Blanks)

12 Q. Is that right?

13 A. I suspect that. I - I can't guarantee it.
14 It has been a long time since I have looked at that
15 material.

16 Q. Has - has your - your lawyer -- The lawyer
17 here that is objecting from Owens-Corning, the one
18 that's hired you before to testify for Owens-Corning,
19 has he ever shown you a copy of - of this November
20 letter, Dr. Peterson?

21 MR. CELBA: I'm going to object

22 to the form of the question. Counsel,

23 again, you are prolonging this

24 deposition. You are badgering the
25 witness. He's already said he's never

1 received any information from me; and,

2 yet, you ask the same question again.

3 What is the purpose?

4 A. No.

5 (By Mr. Blanks)

6 Q. Do you have at your home any papers that
7 the Owens-Corning Fiberglas lawyers or any of them have
8 given you, sir?

9 MR. CELBA: The same objection.

10 Repetitious. It's been asked and
11 answered.

12 A. No.

13 (By Mr. Blanks)

14 Q. Do you have at your home any documents that
15 you - that you understand or - or suspect to be
16 documents from or to Owens-Corning or Owens-Illinois
17 regarding asbestos or asbestos hazards.

18 MR. CELBA: The same objection.

19 Repetitious; asked and answered.

20 A. I may have some Owens-Illinois documents.

21 Let's -- I haven't looked at that stuff for a long, long
22 time; and I really don't know what I have. But I may
23 have some Owens-Illinois documents. I certainly don't

24 have any O.C.F. documents.

25

1 (By Mr. Blanks)

2 Q. You understand that O.C.F. actually
3 acquired the Kaylo line from Owens-Illinois, don't you,
4 sir?

5 A. I do.

6 Q. You understand that O.C.F. also acquired
7 various documents, correspondence and files about Kaylo
8 from, O.I., don't you?

9 MR. CELBA: I object. Counsel,
10 you know that's argumentative, vague
11 and ambiguous as to what documents;
12 and lack of foundation with respect to
13 this witness.

14 A. I don't know what O.C.F. received from O.I.
15 I have no way of knowing.

16 (By Mr. Blanks)

17 Q. Do you know if they received anything?

18 MR. CELBA: The same objection.

19 A. They received a process.

20 (By Mr. Blanks)

21 Q. Have you been told by their lawyers that
22 O.C.F. never got any documents from O.I. about Kaylo or
23 its health hazards?

24 MR. CELBA: Objection. It's
25 argumentative.

1 A. No.

2 (By Mr. Blanks)

3 Q. Could you tell me, Dr. Peterson, just what
4 industrial hygienic controls Dow was using in the
5 mid-1950's in connection with the handling of thermal
6 insulation materials in its plants.

7 A. No.

8 Q. Do you know if they were using any hygienic
9 controls for people handling thermal insulation in Dow
10 plants in the 1950's?

11 A. No.

12 Q. Did you learn in the 1960's of any hygienic
13 controls used in connection with handling, putting in,
14 taking out, cleaning up thermal insulation in Dow
15 plants?

16 A. No.

17 Q. Did you learn from reading Mr. Hoyle's
18 deposition that there was some monitoring done for
19 asbestos dust in the air in connection with insulation
20 work done at Dow?

21 A. Yes.

22 Q. Had you ever - ever heard of that before -
23 before you read the deposition?

24 A. No.

25 Q. Did you see any written report of this

1 asbestos monitoring project that Mr. Hoyle had done at
2 Dow after - well, not after you left, but whenever it
3 was?

4 A. I - I may have seen such a report; but if
5 so, it was quite recently.

6 Q. Do you recall who Roy Degesaro is or was?

7 A. The way it's pronounced is Degesaro. Yes,
8 I know -- I know Roy, let's put it that way.

9 Q. He was there at Dow while you were still
10 there?

11 A. No, I believe Roy was hired after I left.

12 Q. I see. Mr. Hoyle taught you, didn't he, in
13 the 1950's when you were his apprentice that the values
14 for threshold limits or maximum allowable concentrations
15 were - were really just a guideline, didn't he?

16 A. We undoubtedly discussed that topic, and
17 this kind of a philosophy arose. I prefer the use of
18 the word target rather than guideline, but guideline is
19 all right.

20 Q. You understood that it wasn't a fine line
21 between safe and dangerous, didn't you?

22 A. Yes.

23 Q. That it had to be used with discretion and

24 judgment?

25 A. Yes.

1 Q. And that even at exposures below the
2 threshold limit value that you could anticipate that
3 some workers could potentially develop an occupational
4 disease? You had that understanding, too, didn't you,
5 sir?

6 MR. CELBA: I'm going to object.
7 Lack of foundation. It's vague and
8 ambiguous and indefinite about the
9 circumstances which you relate to this
10 witness.

11 MR. BLANKS: That's right. It
12 might have been on a Wednesday instead
13 of a Thursday.

14 A. The ---

15 MR. CELBA: (Interrupting) And
16 other things.

17 A. There are many materials that have
18 threshold limit values that do not cause occupational
19 disease in any reasonable concentration. And,
20 therefore, that kind of an admonition applies to some
21 materials but certainly not all on the list.

22 (By Mr. Blanks)

23 Q. With respect to the pneumoconiosis-causing

24 materials, asbestos, silica, you would agree, wouldn't

25 you, that exposures below the threshold limit value can

1 cause - cause disease such as asbestosis for asbestos
2 exposure?

3 MR. CELBA: I'm going to object
4 to the form. It's vague, ambiguous
5 and calls for speculation. Lack of
6 foundation.

7 MR. ALMQUIST: And also it's not
8 limited as to time.

9 A. The way you phrased the question, I have to
10 say no.

11 (By Mr. Blanks)

12 Q. How would you -- What would I have to ask
13 in order to get you to say yes?

14 MR. CELBA: I am going to object
15 to the form of the question. I have
16 never heard a question like that.

17 MR. BLANKS: Well, you have
18 now.

19 MR. CELBA: I know.

20 MR. BLANKS: Welcome to Beaumont.

21 MR. CELBA: It's a learning
22 experience.

23 MR. BLANKS: Welcome to Beaumont,

24

Mr. Celba.

25

1 (By Mr. Blanks)

2 Q. Dr. Peterson, did you understand, sir, that
3 the T.L.V. for asbestos did not - was not -- That didn't
4 guarantee that exposures below the T.L.V. would - would
5 not result in disease, did it?

6 A. No.

7 Q. You understood that some people could be
8 exposed below the T.L.V. and still develop asbestosis,
9 did you not?

10 MR. CELBA: I'm going to object
11 to the form of the question. It's
12 speculation. Lack of foundation.
13 Vague and ambiguous, indefinite.

14 A. The T.L.V. is not a guarantee. I
15 understand that. On the other hand, the -- I also am
16 aware today that the five million particle per cubic
17 foot T.L.V. was based on the wrong kind of sampling
18 method. And, therefore, concentrations below that level
19 might well have caused some degree of asbestosis in some
20 people under some circumstance. That's the best I can
21 say.

22 (By Mr. Blanks)

23 Q. But you understood in the 1950's when you

- 24 first learned about maximum allowable concentrations
- 25 that in some individuals - some individuals who might be

1 more susceptible than others, disease could occur at
2 exposures below the threshold limit value? Didn't you
3 appreciate that fact in the 1950's, sir?

4 MR. CELBA: The same objection,
5 also argumentative.

6 A. I disagree with your use of the phrase
7 "maximum allowable concentration" because in the early
8 '50's I believe that that phrase was changed to
9 threshold limit value, which is a much better
10 description of what is going on. With that alteration,
11 sure, I would agree.

12 (By Mr. Blanks)

13 Q. Do you understand or have any awareness of
14 what the guideline was called in Texas during the 1950's
15 for mineral dust exposure?

16 A. No, I have no idea.

17 Q. It would be reasonable to conclude I
18 suppose that Dow since it operated down in Texas would
19 at least have been - been aware of the health
20 regulations that would have governed its plant back at
21 that time, would it not?

22 A. It might be reasonable, but I don't know
23 that's the case.

24 Q. Did you encounter any situations where Dow
25 was knowingly violating the - the local health

1 department regulations that - you know, that were in the
2 industrial hygiene area?

3 A. In Texas or ---

4 Q. (Interrupting) Anywhere.

5 A. --- Midland or anywhere? No.

6 Q. Did you understand in the 1950's,
7 Dr. Peterson, that there were cases reported in the
8 literature of asbestosis resulting from long term
9 exposures below the five million particle per cubic foot
10 guideline?

11 MR. CELBA: I object to the form
12 as being argumentative. It assumes
13 facts not in evidence.

14 A. I -- I'm not sure really. I -- I know --
15 Well, I'm just not sure even today. At one time I had a
16 reasonable familiarity with this literature, but I -- I
17 don't anymore. So, I -- I just don't have an opinion in
18 that area.

19 (By Mr. Blanks)

20 Q. Based on your expertise as an industrial
21 hygienist, would - would you agree that - that since you
22 couldn't rely even in the 1950's on the threshold limit
23 values to protect all of the workers from developing a

24 disease, that it was necessary to use a medical

25 monitoring program to support your industrial hygiene

1 program and watch for signs of disease?

2 MR. CELBA: I'm going to object

3 to the form as being argumentative and

4 misconstruing the testimony of this

5 witness.

6 A. You are getting into an area of philosophy

7 again. And I can't agree that a medical monitoring

8 program is always necessary or desirable if that's what

9 you are implying.

10 (By Mr. Blanks)

11 Q. Under what circumstances is a medical

12 monitoring program desirable in - in conjunction with an

13 industrial hygiene program?

14 A. A medical monitoring program is desirable

15 where it is at least practical or possible that the

16 physicians will pick up signs of disease of one kind or

17 another before industrial hygienists are aware of

18 overexposures or where an epidemiological study is being

19 undertaken.

20 Q. How would you need a medical monitoring

21 program in conjunction with an epidemiology study? I

22 don't understand that.

23 A. Well, an epidemiological ---

24 MR. CELBA: (Interrupting) I'm
25 going to object to the question about

1 whether or not Counsel understands
2 commenting about his testimony.

3 Therefore, I move to strike that.

4 A. Epidemiology really is based upon medical
5 monitoring if you will. So, I don't understand why you
6 don't understand.

7 (By Mr. Blanks)

8 Q. Okay. Well, I think you were explaining to
9 me when a medical monitoring program would be
10 appropriate as part of an industrial hygiene program.
11 You told me that you didn't think it was always a good
12 idea or always necessary, and you were explaining to us
13 when - when it would be.

14 A. That ---

15 Q. (Interrupting) Does that ---

16 MR. CELBA: (Interrupting) I'm
17 going to object there. There was a
18 response to no question asked other
19 than the comment. I move to strike
20 the comment.

21 (By Mr. Blanks)

22 Q. All right. Dr. Peterson, are you telling
23 me that an epidemiology program is a necessary part or a

24 desirable part of - of a good industrial hygiene

25 program?

1 A. No. But where epidemiology is being
2 attempted, if you will, it is best done in conjunction
3 with an industrial hygiene program monitoring exposures
4 to whatever is being looked at.

5 Q. And that would entail the - the doctors
6 being involved? Okay.

7 A. Yes, sir.

8 Q. All right. But you said then that you
9 thought a medical monitoring program would be desirable
10 in the case where the doctors would pick up the disease
11 before the industrial hygienist became aware of the
12 exposures that were causing the disease I think?

13 MR. CELBA: I'm going to object
14 to that ---

15 MR. BLANKS: (Interrupting) Go
16 back and re-read his answer so we can
17 quell these Owens-Corning objections
18 and get on with the testimony, please,
19 Mr. Reporter.

20 MR. REPORTER: "Under what
21 circumstances is a medical monitoring
22 program desirable in - in conjunction
23 with an industrial hygiene program?"

24 "ANSWER: A medical monitoring

25 program is desirable where it is at

1 least practical or possible that the
2 physicians will pick up signs of
3 disease of one kind or another before
4 industrial hygienists are aware of
5 overexposures."

6 (By Mr. Blanks)

7 Q. Okay. Having heard what you answered
8 earlier, I'm wondering then, Dr. Peterson, how it would
9 be that an industrial hygienist would make himself aware
10 of overexposures in a plant like a Dow plant to say a
11 material such as insulation, thermal insulation.

12 A. By monitoring exposures.

13 Q. Can you think of any other ways that an
14 industrial hygienist could confidently satisfy himself
15 that he had or didn't have overexposures in the handling
16 of thermal insulation in an industrial setting?

17 MR. CELBA: I'm going to object.

18 Lack of foundation and vague and
19 ambiguous as to plants and
20 circumstances.

21 A. Because of a lamentable shortage of
22 industrial hygienists we sometimes must rely upon what
23 is published in the literature. And we have already

- 24 talked about what was available in the literature with
- 25 regard to the handling of asbestos-containing insulation

1 materials. And that kind of information is one way that
2 industrial hygienists could become aware of either a
3 hazard or a lack of hazard associated with a particular
4 kind of job without doing any monitoring.

5 (By Mr. Blanks)

6 Q. So, you are suggesting that - that where a
7 company didn't have enough industrial hygienists to
8 monitor for overexposures or even to quantify the
9 exposures at all, that they would have to just fall back
10 on what had been published about similar work and then
11 form a conclusion about what was happening in their
12 plant based on what somebody else had published about
13 another - another workplace?

14 MR. CELBA: I'm going to object.

15 Lack of foundation, and it's
16 misconstruing his testimony;
17 argumentative and repetitious.

18 A. I prefaced my answer by saying that there
19 is a lamentable lack of industrial hygienists. Because
20 of that we have to prioritize what we are doing. And in
21 general all industrial hygienists who are out there at
22 work try to handle the things that they regard as being
23 the most serious problems first. And where the

24 literature indicates that, for instance, handling

25 asbestos-containing insulation is not a hazard, that

1 doesn't appear high on a priority list. It might be on
2 a list somewhere. It might be one of the things that
3 one would like to do, but the telephone rings and
4 something else interferes.

5 That's - that's the way this kind of thing
6 works. It may be imperfect; and, in fact, it is
7 imperfect, but that's the way it goes.

8 (By Mr. Blanks)

9 Q. But relying on an article such as your
10 favorite, the Fleischer-Drinker, et cetera, article ---

11 A. (Interrupting) It's far from my favorite.
12 I handed you a bunch of articles that are much more my
13 favorite.

14 Q. The ones you wrote?

15 A. Of course.

16 Q. All right, sir.

17 MR. CELBA: I move to strike

18 Counsel's comment.

19 (By Mr. Blanks)

20 Q. But the - an article such as - as the ones
21 you referred to earlier really don't give you knowledge
22 about the actual exposures or overexposures that people
23 working in your plant are facing from the handling of

24 thermal insulation, do they?

25 A. No.

1 MR. CELBA: Object; vague,
2 ambiguous, indefinite, argumentative.

3 A. My answer stands, no.

4 (By Mr. Blanks)

5 Q. And, therefore, if the industrial hygienist
6 because of other priorities, because of lack of
7 resources, because he's just spread too thin, for
8 whatever reason can't monitor exposures, then obviously
9 it would follow that he is going to be unaware of
10 overexposures if they are occurring, would you agree?

11 MR. CELBA: I object; lack of
12 foundation, argumentative, vague and
13 ambiguous. It also calls for
14 speculation.

15 A. If overexposures are occurring and they
16 aren't monitored, obviously one cannot become aware of
17 those, yes.

18 (By Mr. Blanks)

19 Q. And then the only remaining means to learn
20 of the fact of overexposures if they be there would be
21 through a medical monitoring program, would it not,
22 Dr. Peterson?

23 MR. CELBA: The same objection as

24 previously stated.

25 A. Yes.

1 (By Mr. Blanks)

2 Q. And by the same token, sir, would not a
3 medical monitoring program be another means of
4 validating or testing the effectiveness of the controls,
5 if you were using any, that you had in place to - to
6 limit exposures to a hazardous material?

7 MR. CELBA: The same objection.

8 A. That is the ordinary reason given for a
9 medical monitoring program. In my experience mostly
10 since Dow, I don't find that to be a very efficacious
11 use of medical facilities.

12 (By Mr. Blanks)

13 Q. You just don't think it's an efficient use?

14 A. Yes; that's correct. It's too crude
15 unfortunately.

16 Q. You mean because the - the signs of
17 occupational disease many times show up much too late
18 for the industrial hygienist to do anything about -
19 about it?

20 A. Well, if the physicians find a sign, it
21 means that something has occurred that shouldn't have.
22 But that isn't too late for industrial hygienists to
23 find out about it. The two are -- They are two

24 different things entirely.

25 Q. You are saying that if - if the

1 physician -- Excuse me. You are saying that if the
2 physician detects signs of occupational disease in the
3 work force in your plant, for example, that's
4 information that would be immediately useful to the
5 industrial hygienist? Yes?

6 MR. CELBA: I object; calls for
7 speculation; lack of foundation;
8 vague, ambiguous and indefinite.

9 A. In general, yes.

10 (By Mr. Blanks)

11 Q. Even though with respect to the - the
12 worker that has a chronic disease such as asbestosis,
13 there is nothing at that point that the industrial
14 hygienist can do to - to improve the situation of that
15 worker except stop his exposures, would that be true?

16 MR. CELBA: The same objection,
17 argumentative.

18 A. Yes.

19 (By Mr. Blanks)

20 Q. And just so I'm not unsure about this,
21 was - was it the case that at Dow during - during any
22 years there that - that there was a medical monitoring
23 program for workers in the Dow plants?

24 A. My recollection is that anyone who felt a

25 need for a medical examination could have that

1 examination.

2 Q. Was there any class or - or subset of
3 workers that the industrial hygiene group recommended
4 have medical monitoring or be part of a medical
5 monitoring program?

6 A. There may well have been, and I don't
7 recall.

8 Q. Do you recall that the medical department
9 provided any kind of biological monitoring for any group
10 of Dow employees while you were there?

11 A. Yes; in fact, that was done.

12 Q. What - what - what sort of monitoring was
13 done?

14 A. Monitoring for cholinesterase levels -
15 c-h-o-l-i-n-e-s-t-e-r-a-s-e - cholinesterase levels in
16 people handling cholinesterase inhibiting insecticides
17 is one. There may have been others, but that is one I
18 was associated with.

19 Q. Is that one that the industrial hygiene
20 group recommended, or do you know how that came to be
21 done?

22 A. I just don't recall.

23 Q. Tell me about the slide talk that you used

24 throughout the plant.

25 A. A slide talk consisted of three parts as I

1 recall. The first part of it was slides that depicted
2 work done by the toxicology group in determining this
3 property of toxicity.

4 Secondly, we talked a bit without slides or
5 we might have had one or two about the work of the
6 industrial hygiene group in evaluating hazards.

7 And, thirdly, we talked about the potential
8 hazards of materials that were being handled by the
9 group that we were speaking to.

10 Finally, the fourth phase of the
11 three-phase system was that we asked for questions and
12 answered them.

13 Q. Was this a - an approach or a program that
14 had been underway when you arrived?

15 A. Yes.

16 Q. And was it still going on in - in the '60's
17 when you left the company?

18 A. Yes.

19 Q. What - what was the point of this little
20 slide talk program?

21 A. It began as an introduction to an
22 industrial hygiene survey of a plant or a process. And
23 that was what it was developed to do. It became a

24 popular presentation and was requested by many groups.

25 And, of course, when it was requested either by the

1 group or by the safety representative of that group, we
2 we were happy to present the talk.

3 Q. So, if I follow you, if you were going to
4 go do a survey of a particular unit in the plant, then
5 this talk would - would be presented to the people
6 working in that unit before the survey began?

7 A. That's correct.

8 Q. And covered -- You would speak to all of
9 the employees in the unit?

10 A. Yes. And for that reason, the talk was
11 usually given at least twice and maybe three times to
12 cover all employees.

13 Q. And then I think you said it expanded to
14 where it became a part of the ongoing safety program at
15 the plant?

16 A. Well, I -- I wouldn't put it that way. The
17 safety department was aware that we had the talk, and
18 they were aware that it was popular. They encouraged
19 safety meetings, and this became a popular presentation
20 at safety meetings.

21 Q. You found that the - the ordinary workmen
22 in the plants were - were interested about the potential
23 hazards that they faced in the workplace?

24 A. I really can't put myself in the place of
25 an ordinary workman. And all I know is that they showed

1 up at the safety meetings and asked questions and
2 appeared interested, yes.

3 Q. Well, that's what -- That's what I was
4 inquiring about. I mean they struck you as being
5 interested in - in that information, the information of
6 that sort?

7 A. Yes. As I said, it was a popular program.

8 Q. You - you have told us earlier that you
9 placed little reliance on case reports in the literature
10 in developing your opinions about what is hazardous and
11 what is not. Could you explain - explain to us why that
12 is, Dr. Peterson.

13 A. The first awareness of a problem, of a
14 hazard may come about because of case reports in the
15 literature where physicians come across something that
16 is odd; they write up whatever they have found and
17 attribute a potential cause for this usually in their
18 write-up.

19 Sometimes they incorporate past write-ups
20 by other physicians. Probably as often as they are
21 right about the cause, they are wrong about the cause.
22 And, therefore, we have to have something that is more
23 scientific and more thorough to follow case reports.

24 And that's why just case reports, per se, don't mean a
25 great deal to me; and, in fact, I very seldom read case

1 reports.

2 Q. What do you - or what did you rely on to
3 develop your - your knowledge about occupational health
4 hazards?

5 A. I put far more reliance on epidemiological
6 surveys of people where the industrial hygiene was also
7 used in conjunction with the survey to show what
8 exposures actually were rather than what exposures were
9 inferred. And as I indicated previously, I'm skeptical
10 enough so that I like to see epidemiological surveys
11 replicated before they really make a lot of sense to me.

12 Q. How - how long does it take to do an
13 epidemiology study of a sort that would be valid to you?

14 A. It depends on the variety that one is
15 doing. Whether one is doing it retrospectively or
16 prospectively; that is, looking back into the past or
17 trying to follow a group into the future, it can be a
18 year or two for a retrospective study; it can be decades
19 for a prospective study.

20 Q. I mean it could take more than a year or
21 two just to gather the data for a look-back study,
22 couldn't it?

23 A. Sometimes.

24 Q. And when was it that epidemiology studies

25 of occupational diseases came to be available or

1 commonplace?

2 A. I really can't answer that question. I

3 know that, for instance, the Dreessen study is an

4 epidemiological survey with good industrial hygiene.

5 So, this technique was available in 1938 anyway.

6 Q. Can you think of any - any epidemiology

7 studies after Dreessen that would be relevant to

8 asbestos disease hazards?

9 A. Not to a great extent. The

10 Fleischer-Drinker paper is an epidemiological survey as

11 well.

12 Q. You - you would characterize

13 Fleischer-Drinker's paper as an epidemiology survey?

14 A. Well, at least partially because they

15 looked at the medical histories of the people.

16 Q. Now, why do you think it's important to

17 have some industrial hygiene data in connection with the

18 epidemiology study?

19 A. Because unless we have that, we don't know

20 much about exposures. And unless we know something

21 about exposures, we can't know what is necessary for

22 control.

23 Q. Do you think, Dr. Peterson, that if you did

24 an epidemiology study let's say of all the workers in -

25 in certain refineries, a mortality study let's say,

1 without industrial hygiene data to tell you which groups
2 of those people had exposures to what materials, could
3 you draw any - any valid conclusions about let's say
4 asbestos as being a cause of disease in that group of
5 workers?

6 MR. CELBA: I'm going to object
7 as vague and ambiguous, indefinite
8 and calls for speculation; lack of
9 foundation.

10 A. I know that epidemiologists sometimes try
11 to do this. I find that this kind of work is usually
12 unconvincing.

13 (By Mr. Blanks)

14 Q. I mean if you wanted to look at the
15 incidence of let's say asbestos-related cancer among
16 people working in a refinery, wouldn't you naturally
17 want to look at the people that actually had asbestos
18 exposures?

19 A. Of course.

20 Q. Do you know about any of Dow's involvements
21 in the American Petroleum Institute, Dr. Peterson?

22 MR. ALMQUIST: Objection to the
23 form; it assumes that there was an

24 involvement.

25 MR. BLANKS: I think you need to

1 make yourself aware of that,

2 Mr. Almquist.

3 A. No.

4 (By Mr. Blanks)

5 Q. Did you ever do any work with the American
6 Petroleum Institute?

7 A. No.

8 Q. Ever attend any of their meetings?

9 A. No.

10 Q. Ever get any of their publications?

11 A. Oh, I may have. I -- I don't know. I
12 certainly made no attempt to get their publication.

13 Q. Do you remember their Toxicological Reviews
14 from the late '40's and the early '50's that they were
15 publishing?

16 A. I have no current memory of such things,
17 no.

18 Q. Does there come a point in - in your mind
19 when you had enough case reports of a particular kind of
20 a disease to give them credence?

21 A. No, not really. I think that this is an
22 area where science is necessary, not simply medicine.

23 Q. When you say "science," you mean statistics

24 in the form of epidemiology studies, number crunching or

25 what?

1 A. Science is an approach. It is a technique.
2 Medicine is not science. Medicine is a practical
3 discipline, if you will.

4 Q. What - what does an epidemiology study
5 amount to except the gathering of a group of individual
6 case reports?

7 A. Oh, there usually are never case reports in
8 an epidemiology study.

9 Q. What do you consider, the report of - of
10 one individual's death from a - with a particular
11 diagnosis?

12 A. Well, unless it's in the literature as an
13 individual sort of thing, it isn't a case report. So,
14 just by definition, you are not talking about a case
15 report in epidemiological studies.

16 Q. Okay. We are using terms of art. But, in
17 fact, an epidemiology study does look at reports of
18 individual deaths or - or diseases, does it not?

19 A. Yes.

20 Q. It uses -- That's the underlying data that
21 the epidemiologist works with, true?

22 A. That's one portion of the underlying data,
23 yes.

- 24 Q. What else does the epidemiologist use?
- 25 A. Oh, gee, they use all sorts of demographic

1 information such as age, sex, maybe height and weight
2 along with information that they hope will be related to
3 exposures in some way or other, such as duration of
4 employment, time since first employment and so forth.
5 So, they look at a lot of things that one doesn't see in
6 case reports, for instance.

7 Q. Yes, sir. And the purpose is to bring
8 together a large number of reports of disease or death
9 and then try to draw some conclusions based on
10 statistical probability and such; right?

11 A. Well, you - you are asking me to be an
12 epidemiologist; and I'm not. I would much rather you
13 ask these questions of an epidemiologist because I could
14 get way off in left field, and I would rather not.

15 Q. But - but as far as you were concerned, no
16 number of case reports of let's say lung cancer in
17 connection with asbestosis or asbestos exposures would
18 have been sufficient to persuade you that asbestos could
19 be a cause of lung cancer, is that so?

20 A. Yes, that's so.

21 Q. So, no matter how many deaths have been
22 reported in respected medical journals, no matter how
23 many bodies have been counted up by the authors who were

24 surveying the literature, you, Dr. Peterson, would

25 remain unconcerned that asbestos just might be a cause

1 of lung cancer?

2 MR. CELBA: I object to the
3 question as being argumentative.

4 A. I didn't say that.

5 MR. PAPPAS: And it assumes facts
6 not in evidence.

7 (By Mr.Blanks)

8 Q. You would be waiting, in fact, for an
9 epidemiology study to tell you that, yes, there appeared
10 to be a causal relationship; is that true?

11 MR. PAPPAS: The same objection.

12 MR. ALMQUIST: The same
13 objection.

14 MR. CELBA: I join.

15 A. That's what I have said.

16 (By Mr. Blanks)

17 Q. Well, I can I think understand this as a -
18 a philosophical point of view. But how do you apply
19 that philosophy to your practice of industrial hygiene?
20 Do you wait then until you have absolute certainty about
21 a causal connection between a contaminant and death or
22 disease before you start to - to put in controls, before
23 you start to warn the workers that they might be at risk

24 from getting cancer?

25 MR. CELBA: The same objection.

1 I move to strike all the comments.

2 MR. PAPPAS: The same objection.

3 A. There is no such thing as absolute
4 certainty in either medicine or the science of
5 industrial hygiene. A long time ago a physician in
6 Germany named Koch, K-o-c-h, formulated some postulates
7 about how one shows that a particular disease is
8 actually caused by a particular organism. And until all
9 of Koch's postulates are satisfied, one is simply not
10 sure.

11 There - there are many instances where
12 people have been wrong in their case reports about the
13 cause of disease. And if we had relied upon those and
14 only those, we would have spent lots of time, effort and
15 energy pursuing a red herring down a trail somewhere.
16 This isn't the way to do it.

17 (By Mr. Blanks)

18 Q. Would that have been the case with the case
19 reports of lung cancer deaths in connection with
20 asbestosis, Dr. Peterson?

21 MR. ALMQUIST: I object. It's
22 calling for speculation.

23 A. And I ---

24 (By Mr. Blanks)

25 Q. (Interrupting) Would - would Dow have been

1 pursuing a red herring if it had responded to case
2 reports of lung cancer in connection with asbestosis and
3 implemented stricter controls in its plants?

4 MR. ALMQUIST: I object to it as
5 being argumentative and calls for
6 speculation on the part of the
7 witness.

8 A. You - you are asking me to use hindsight
9 and say in this particular circumstance things could
10 have been done differently and better. One can always
11 use hindsight for that purpose.

12 (By Mr. Blanks)

13 Q. Do you think things could have been done
14 differently and better, Dr. Peterson?

15 A. With hindsight certainly.

16 Q. Do you think that the methods existed and
17 were known to Dow in the mid-1950's to control for
18 exposures to asbestos from insulation dust?

19 A. Sure, but I don't see why they would have
20 been used.

21 Q. Do you think, sir, that they - they might
22 have been used in the 1960's when Mr. Hoyle measured
23 asbestos dust concentrations above the threshold limit

24 value?

25 A. I -- I don't know that he did. I know

1 that -- I would rather -- My memory is not perfect. He
2 may well have had some samples that were above the
3 numerical value of the T.L.V. I don't think he showed
4 that the average exposures were above the T.L.V.

5 Q. Is that all that - that you as an
6 industrial hygienist would be concerned with then would
7 be average exposures, Dr. Peterson?

8 A. No, of course not. I'm concerned with all
9 sorts of things.

10 Q. Would you be satisfied to know that on
11 average you were only exposing workers to asbestos
12 concentrations just - just slightly below the asbestos
13 guideline?

14 MR. ALMQUIST: I object to that
15 as mischaracterizing the findings.

16 A. One tenet of industrial hygiene is to
17 reduce exposures where the reduction of exposures is
18 practical. And, therefore, no, I'm not satisfied under
19 such circumstances. On the other hand, the best
20 information we have on the effects of exposures is
21 represented by the T.L.V. And if we are below the
22 T.L.V., the chances are very good that no one is being
23 injured; and that we can apply whatever resources we

24 have to other things, to other problems where exposures

25 are above the T.L.V. We don't have infinite resources.

1 (By Mr. Blanks)

2 Q. Didn't you tell me earlier, though, that
3 even at exposures below the T.L.V. you could say with
4 almost the same degree of certainty that at least some
5 people would get disease?

6 A. No, sir, I didn't say that. I said that
7 the T.L.V. - staying below the T.L.V. did not guarantee
8 that one would not get disease. But there is no almost
9 certainty that someone is going to get disease.

10 Q. How about just under the T.L.V.; how about
11 one tenth - one point under the T.L.V.?

12 A. The T.L.V. is not a fine line between safe
13 and dangerous whether you are going below it or above
14 it.

15 Q. If we look back at average exposures again,
16 if you know that the average exposure to people doing
17 asbestos insulation work is four point nine million
18 particles per cubic foot, does that satisfy you as an
19 industrial hygienist that the controls are adequate to
20 protect all the men doing that work?

21 A. No, that tells me I need to do more air
22 sampling to determine precisely what is going on and
23 which people are being overexposed and which people are

24 not, what jobs are causing overexposures and what

25 aren't. There are all sorts of things that industrial

1 hygienists do under these circumstances.

2 Q. You ---

3 THE WITNESS: (Interrupting) And I

4 would like to take a break.

5 MR. BLANKS: Yes, sir.

6

7 (A BRIEF RECESS WAS TAKEN.)

8

9 MR. BLANKS: Mr. Almquist, it is

10 apparent to me now at a quarter to

11 4:00 that I have got at least another

12 day and a half of inquiry to make of

13 Dr. Peterson; and I suspect that some

14 others here may want to, perhaps you

15 yourself, perhaps even Owens-Corning

16 Fiberglas.

17 I'm suggesting that we adjourn at

18 this time and resume again when

19 Dr. Peterson's schedule permits.

20 MR. ALMQUIST: We are -- It's now

21 a quarter until 4:00 as you have

22 indicated. We are prepared to go to

23 5:00 today. And Dr. Peterson's

24 schedule will allow him to come back

25 and - and testify day-to-day beginning

1 at 9:30 tomorrow morning to complete
2 the deposition.

3 And, so, we have that - you
4 know, we are here and prepared to
5 continue the deposition until its
6 conclusion.

7 MR. BLANKS: I appreciate that.
8 But we are not inclined to resume
9 tomorrow. Some near time in the
10 future when it's mutually convenient I
11 think would be preferable.

12 Unfortunately we didn't
13 anticipate that we would need more
14 than a day or even a full day with
15 Dr. Peterson. But the breadth of his
16 experience now indicates that more
17 time is required.

18 So, I decline to return in the
19 morning. And my brief survey of other
20 attorneys here suggests that they are
21 similarly disinclined to resume
22 tomorrow, particularly in light of
23 the fact that we have been deposing

24 all week out of town, or at least

25 since Tuesday.

1 MR. ALMQUIST: Well, I will
2 object to the last comment as being
3 hearsay, Mr. Blanks.

4 MR. PAPPAS: It's not hearsay
5 because it's true.

6 MR. BLANKS: That's it.

7 MR. PAPPAS: Let me also state
8 for the record that Lone Star
9 Industries reserves the objection to
10 the use of this witness' deposition
11 until such time as it's been
12 completed; and would object to the use
13 of the deposition at trial if it's not
14 completed.

15

16 (THE DEPOSITION WAS RECESSED.)

17

18 REPORTER'S NOTE: (UPON COMPLETION OF THE
19 DEPOSITION, PLAINTIFFS' EXHIBIT 280207
20 PetJacE WAS MARKED FOR IDENTIFICATION.
21 SAME WILL BE FOUND AT THE CONCLUSION OF
22 THIS DEPOSITION.)

23

24

25

1 THE STATE OF _____:

2 COUNTY OF _____:

3

4 I, JACK E. PETERSON, Ph.D., hereby certify
5 that I have read the foregoing transcript of my
6 testimony given in the foregoing numbered and styled
7 case, and that same is true and correct to the best of
8 my knowledge and belief.

9 I further certify that any and all
10 corrections have been made on a separate page and
11 initialed by me.

12

13 This _____ day of _____, 1993

14

15

16 _____
17 JACK E. PETERSON, Ph.D.

18

19 SWORN TO AND SUBSCRIBED BEFORE ME this
20 _____ day of _____, 1993.

21

22 _____
23 NOTARY PUBLIC

24

25

1 STATE OF _____:

2 COUNTY OF _____:

3

4 I, RICK SMITH, a Certified Shorthand
 5 Reporter for the State of Texas, hereby certify pursuant
 6 to the Texas Rules of Civil Procedure and/or agreement
 7 of the parties present to the following:

8 That this deposition transcript is a true
 9 record of the testimony given by JACK E. PETERSON,
 10 Ph.D., the Witness named herein, on March 26, 1993,
 11 after said witness was duly sworn by me.

12 SWORN TO AND SUBSCRIBED by me in Beaumont,
 13 Texas, on this the _____ day of
 14 _____, 1993.

15

16

17 _____

18 RICK SMITH, CSR

19 Certificate No. 2644

20 Expiration Date of Current

21 Certification: 12/31/93

22 Charlotte Smith Reporting, Inc.

23 235 Orleans, Kyle Building

24 Beaumont, Texas 77701

25 (409) 839-4407

1 CONSOLIDATED
 CAUSE NO. A-135,876
 2 KEITH F. GIBLIN, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 3 A.C.& S., INC., ET AL * 58TH JUDICIAL DISTRICT
 CAUSE NO. A-140,498
 4 JOYCE A. BORNE, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 5 ALLIED SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT

 6 CAUSE NO. E-141,216
 JOSEPH E. BARNARD, ET UX * IN THE DISTRICT COURT OF
 7 VS. * JEFFERSON COUNTY, TEXAS
 ALLIED-SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT
 8 CAUSE NO. B-141,242
 ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
 9 VS. * JEFFERSON COUNTY, TEXAS
 AMERICAN OPTICAL CORPORATION, *
 10 ET AL * 60TH JUDICIAL DISTRICT
 CONSOLIDATED
 11 CAUSE NO. A-134,614
 FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
 12 VS. * JEFFERSON COUNTY, TEXAS
 BETHLEHEM STEEL CORP., ET AL * 58TH JUDICIAL DISTRICT
 13 CAUSE NO. B-126,986
 RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
 14 VS. * JEFFERSON COUNTY, TEXAS
 AMERICAN PETROFINA, INC., ET AL * 60TH JUDICIAL DISTRICT
 15 CONSOLIDATED
 CAUSE NO. A-144,426
 16 GLADYS FORRESTIER, ET AL * IN THE DISTRICT COURT OF
 VS. * JEFFERSON COUNTY, TEXAS
 17 AC&S, INC., ET AL * 58TH JUDICIAL DISTRICT

18

19 VIDEOTAPED DEPOSITION OF JACK E. PETERSON, P.E., Ph.D.

20

VOLUME II

21 Taken on the 27th day of September, 1996, beginning at
 22 9:32 a.m. at the US Grant Hotel; San Diego, California,
 23 before Laura Dee Bates, a Certified Shorthand Reporter and
 24 Notary Public in and for the State of Texas, Pursuant to the
 25 attached Notice.

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 4 Attorney at Law
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19
VIDEOTAPED BY:

20 Hon. Joseph Blanks

21

22

23

24

25

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1 THE REPORTER: Pursuant to the Rules?

2 MR. BEASON: Can we have the agreement that one
3 objection is good for all?

4 MR. BLANKS: We can indeed have that agreement.

5 MR. BEASON: Thank you, Joe.

6 MR. BLANKS: Any other stipulations we need?

7 JACK E. PETERSON, P.E., Ph.D.,
8 was called as a witness by the Plaintiff and, after having
9 been duly sworn, testified as follows:

10 EXAMINATION

11 BY MR. BLANKS:

12 Q Good morning, Dr. Peterson.

13 A Good morning, Mr. Blanks.

14 Q It's a pleasure to see you again, sir.

15 A The pleasure is mine, as well.

16 Q I know we covered a lot of things when we began this
17 deposition back on March the 26th of 1993, and you would
18 have thought we could have finished then. I'm going to try
19 not to repeat all those things but I guess of necessity
20 we'll stumble back into some of them and with apologies but
21 we'll just kind of get on through it as promptly as we can.

22 You by now must have seen a copy of that transcript
23 from March of 1993?

24 A I have.

25 Q Have you had a chance to just read through it and see

1 what we talked about, refresh your memory?

2 A Yes.

3 Q If I were to ask you those same questions that I asked
4 back then, would you give, essentially, the same answers?

5 A Essentially, with one exception.

6 Q I knew it.

7 A Well, the exception is that I have seen an awful lot
8 more documents and stuff between now and then than I saw
9 then.

10 Q All right.

11 A So, other than that, my answers would be the same.

12 Q I mean, do you adopt this testimony from the March
13 26th, 1993, deposition beginning as your testimony today?

14 A Yes.

15 Q Very good, sir.

16 MR. JONES: Joe, for clarification, would that
17 include any errata sheets he might have supplied to that
18 deposition? I don't know whether he did or didn't.

19 A I don't know whether I did or didn't, either. I just
20 don't remember.

21 Q (By Mr. Blanks) The truth is, I don't either.

22 A The copy that I saw recently had some errors in it.
23 Whether those errors were ever corrected on a master, I
24 don't have any idea.

25 Q Okay.

1 MR. ALMQUIST: I think that it may have been the
2 case, because the deposition was not concluded, that we
3 haven't had him go through for the errata sheet at that
4 point.

5 MR. BLANKS: That -- that could well be. So, I
6 guess that remains to be done.

7 Q (By Mr. Blanks) We had your CV attached as an exhibit
8 to that deposition and we don't need to go back through that
9 but I have had a chance at least to go through it myself and
10 we'll have a few questions about that along the way. And I
11 I'm suggesting at this point that to the extent that we are
12 taking any new deposition or beginning any new deposition
13 today or that is in cases other than those that you were
14 noticed in or appeared in back on March 26th of 1993 that I
15 want to attach your CV, which was our Exhibit No. 280207
16 capital PET capital JAC capital E as an exhibit to any other
17 transcript, including the one that Mrs. Bates is going to
18 prepare.

19 And looking at the document that has been so labeled,
20 would you identify that for us, sir?

21 A Yes. That is my CV dated November 9, 1992.

22 Q No doubt you have been busy since then, but is there
23 anything that you would want to add to that by way of
24 publications or anything else worthy to note?

25 A Yeah. There have been three more publications; and my

1 activities, professional activities and the organizations
2 have changed since then.

3 MR. ALMQUIST: And, Joe, if you want to just
4 attach this, here is an updated copy as of September 10th.

5 MR. BLANKS: Oh, well, splendid. Okay. Well,
6 then, we'll make this an exhibit to the deposition with the
7 same number followed by a 1 after the E, your middle
8 initial.

9 (Marked Exhibit No. 280207PetJacE1 and is attached
10 hereto.)

11 Q (By Mr. Blanks) So, this will list the new
12 publications?

13 A Yes.

14 Q Anything interesting here?

15 A Well, all my publications are interesting.

16 Q I walked right into that one. We would be talking
17 about the ones that are numbered 53 through 55 are the new
18 ones?

19 A No. There is another one or two new ones that got
20 pushed back because these publications are listed
21 chronologically; and I found a couple of others where I had
22 been listed as an author on NIOSH publications, as I recall,
23 and stuck them in. So, they pushed everything down. The
24 only new one, really, is -- well, let's see. 52 was --
25 yeah. Well, anything dated from 1993, the last two here in

1 '94 and '95, are new.

2 Q Very good. Okay. And then, you say another one from
3 the past has been inserted in here somewhere, perhaps?

4 A Yes. Somewhere. I don't even know where.

5 Q Have you ever encountered instances of industrial
6 hygienists using ghost writers to write articles or to
7 coauthor articles with them?

8 A No.

9 Q I've been reading about this in the newspaper lately
10 about some drug companies. I just thought I would ask.

11 A No. I have never seen it. What has happened, what
12 does happen is that there will be a senior author and
13 several junior authors on a publication; and when I was
14 working at the medical college of Wisconsin, my boss, Dick
15 Stewart, wrote several publications where he listed people
16 in the lab almost at random and I got stuck in there as an
17 author because I had contributed to the work but I had no
18 contribution to the publication at all. And that's one of
19 those that I found and stuck back in there somewhere.

20 Q Okay. Well, I remember William Bradley told us once he
21 listed some, I want to say it was, like a maintenance man at
22 the building he was working at as an author on a publication
23 they did; but I hope I am not misquoting him now.

24 Have you been active in litigation work since we met in
25 1993?

1 A Yes.

2 Q Roughly, how many times have you gone and given
3 testimony since then?

4 A Roughly, two or three times a month.

5 Q And would this have been mostly for Owens-Corning
6 Fiberglass?

7 A Mostly, yes, but there have been others, of course.

8 Q What other kind of areas have you been testifying in?

9 A Oh, my. Probably next to the asbestos arena for
10 Owens-Corning and Rapid American and other companies here
11 and there, I've been testifying for the welding rod
12 manufacturing defendants mainly in cases where the complaint
13 is manganism.

14 I've also testified for a couple of plaintiffs in
15 asphyxiation cases.

16 What else have I done? No. I don't remember.

17 Q All right, sir. We talked at some length last time
18 about, generally, the nature of the testimony that you give
19 when Owens-Corning Fiberglass engages you. Has the content
20 of your testimony for OCF changed in any significant way
21 from what you told me about before?

22 A I don't believe so.

23 Q Okay.

24 A Virtually every time I testify, I say about the same
25 thing; but some attorneys want to emphasize some areas of my

1 testimony more than others. So, it does vary from case to
2 case; but I talk about industrial hygiene.

3 Q Okay. I'm thinking that you have been listed as an
4 expert in at least one of these cases that you are here in
5 today that's still an active case against OCF. Is -- what's
6 going to be the essence of the opinion you give, if you are
7 asked; or have you even been asked to give one in
8 connection, let's say, with the Hicks case?

9 A I know nothing about the Hicks case.

10 Q Okay. Do you know whether you are going to be used as
11 an expert or called to a trial or not?

12 A No, I do not know.

13 Q All right. But if the past performance is any
14 indication, your testimony will be along the lines of about
15 the same specific areas as its been in the past for OCF?

16 A So far as I'm concerned, it will be, yes.

17 Q All right, sir. Have you been teaching any courses
18 since we visited before?

19 A No. No. I have not done any teaching at all.

20 Q Was there a time during your teaching years that you
21 taught industrial hygiene courses?

22 A Oh, yes.

23 Q Was that the topic?

24 A I taught, basically, industrial hygiene and air
25 pollution courses. In addition, toward the end of my

1 teaching career, when I was teaching at the University of
2 Wisconsin Parkside campus, I taught toxicology;
3 pathophysiology; a course called "The Body in Question,"
4 which was designed to try and interest students in science,
5 industrial hygiene, and air pollution laboratories. I think
6 that's about it.

7 Q Were your industrial hygiene courses just general,
8 survey-type courses; or did they deal with specific areas?

9 A Yes.

10 Q Yes and yes. Okay. I mean, so you --

11 A Yeah. Generally, a survey -- if you read my book,
12 that's what I use as a text for my industrial hygiene
13 course; and that book arose from an outline that I would
14 pass out to students for my industrial hygiene course.

15 Q You probably made the students buy the book, too?

16 A No. I didn't make them do anything. The book was
17 available if they wanted to buy it.

18 Q Oh, okay. Well, did you teach any specially --
19 specialized industrial hygiene courses --

20 A Oh.

21 Q -- focusing on anything like, maybe, ventilation or,
22 you know, some narrow niche?

23 A No.

24 Q Okay. We didn't get a chance to talk much about the
25 folks that you had worked with along the way. I mean, you

1 mentioned some gentlemen from Dow, as I recall. You, no
2 doubt, met a lot of people going to the AIHA annual meetings
3 and section meetings and so forth, would I be right?

4 A You would be right.

5 Q And I think you said you started in the AIHA around
6 '56?

7 A Yes. The -- one of the requirements for membership is
8 that one work as an industrial hygienist for three years,
9 and I had started in industrial hygiene in '53. So that I
10 joined AIHA in '56, as soon as I was eligible.

11 Q Before actually joining, had you attended any AIHA
12 meetings?

13 A Only local section meetings.

14 Q Was there a local section?

15 A There was a Michigan section that met in the Detroit
16 area that those of us in the industrial hygiene group
17 attended now and then. We didn't attend all their meetings.

18 Q Was Mr. Patty a member there?

19 A I don't think I ever met Frank Patty. I don't recall
20 meeting him, if I did.

21 Q Did you ever meet William Bradley?

22 A Oh, yes.

23 Q What -- where did you run into him? At the AIHA
24 activities?

25 A Yeah. At one of the national meetings. I have seen

1 him since, of course.

2 Q Do you remember, I bet you do, the first three or four
3 annual meetings you went to, where they were?

4 A I remember the first one in '56 was in Philadelphia. I
5 don't remember the next couple because I didn't go every
6 year. I just went periodically. There were several in our
7 group, and all of us couldn't go to any one meeting.

8 Q You mean, they just wouldn't pay for you to go, huh?

9 A That's correct.

10 Q You did get to go to the one in Philadelphia in '56,
11 you recollect?

12 A Yes.

13 Q And then, did you later set up a local section in the
14 Midland area?

15 A We did.

16 Q You were instrumental in that?

17 A I was one of those who was.

18 Q Roughly, when was that, sir?

19 A Oh, my. Let's see. It would have been the late '50s
20 or early '60s, but I can't pinpoint it anymore than that.

21 Q It probably doesn't matter anymore than that. Did you
22 ever meet Phil Drinker in your professional activities?

23 A No.

24 Q How about Tony Lanza, the physician from Metropolitan?

25 A No. I know who he is, but I've never met him.

1 Q Did you become acquainted with Jim Hammond from Exxon
2 and Standard?

3 A I have known Jim for many years. Where I met him, I
4 don't recall.

5 Q Did you ever go to any of the, oh, Industrial Health
6 Conferences that were put on down in the Houston area by the
7 Houston Chamber of Commerce and the Gulf Coast section?

8 A No.

9 Q Okay. And you told me you recall having no involvement
10 with the API at any time?

11 A That's correct.

12 Q Do you know if Dow had any membership or participation
13 in API activities?

14 A No, I don't know.

15 Q Okay. You had talked about going to free -- I mean, to
16 Texas to Dow plants and that you had been down there a
17 couple of times to Freeport. Am I right?

18 A You are right.

19 Q Do you remember now what the purpose of your visits
20 were?

21 A One was to help solve a customer's problem in extruding
22 polyethylene, but I don't recall what I was doing at the Dow
23 plant for Dow.

24 Q Did -- would -- would you recall enough to say that you
25 didn't go down there specifically to do a plant survey or

1 monitoring?

2 A I can tell you that I'm sure that I did a walk through
3 the plant. I don't recall taking any air samples or
4 measuring noise or anything on that order. Although, I may
5 have done so. I just simply do not recall.

6 Q Can you place these visits in time?

7 A No.

8 Q It's a good thing we moved over.

9 A It is getting noisy.

10 Q I think you told me that the Texas Dow plant did not
11 have an in-plant industrial hygienist when you -- on the
12 times you went down there?

13 A That is correct. They had a physician, but they didn't
14 have an industrial hygienist.

15 Q Do you recall the name of the physician?

16 A Jack Killian, K-i-l-l-i-a-n, I believe.

17 Q Do you know if that gentleman would still be living?

18 A I don't know.

19 Q And when you went to Freeport, were you traveling
20 alone; or were you accompanied by someone else from the
21 biochemical research department?

22 A I think I was the only one from the biochemical
23 research lab who went when I went. I flew back once on a
24 company plane with a number of Dow people, but none of them
25 was from the Dow chem lab.

1 Q Along the way in your professional activities, did you
2 ever run into Wilhelm Hueper?

3 A I know of him, but I've never met him.

4 Q How about Dr. Smith or Smithe from the Pittsburgh area,
5 Mellon Institute?

6 A Yes. I met Henry and knew him as an acquaintance that
7 I ran into at the meetings.

8 Q I think you have told me you don't remember ever going
9 to an Industrial Hygiene Foundation meeting.

10 A I don't know whether I told you or not, but I never
11 did.

12 Q Well, tell me again. But you do remember receiving the
13 "Industrial Hygiene Digest" at Dow?

14 A Dow received it. I didn't. It was in the biochemical
15 research laboratory library.

16 Q Well, let's -- let's talk about the library just a
17 little bit. Dow had more than one library there at the
18 Midland facility, didn't it?

19 A There was a central library to which everyone had
20 access; and then, each small group had its own library, so
21 far as I'm aware. The biochem lab most certainly had its
22 own library, which was quite small.

23 Q Quite small but quite extensive at the same time,
24 wasn't it?

25 A Well, extensive in that it had a couple of the

1 abstracting services volumes there, chemical abstracts or
2 biological abstracts. I've forgotten which.

3 Q Yes, sir.

4 A It had the "Index Medicus" and then a whole slough of
5 magazines and books and so forth.

6 Q And a very good collection of the journals that would
7 be of interest to an occupational physician and an
8 industrial hygienist and a toxicologist, correct?

9 A No, not in the library necessarily. The only journal I
10 recall in the library was the journal of the American
11 Medical Association. Those of us who were interested in,
12 for instance, industrial hygiene usually got that with our
13 membership in AIHA. We got the journal or the quarterly, it
14 started out being. And others subscribed to the AMA
15 "Archives of Environmental Health" or whatever it was
16 called at that time. In fact, that may have been in the Dow
17 biochem lab there.

18 Q And the "Journal of Industrial Hygiene and Toxicology"
19 was there, as well, wasn't it?

20 A Well, that sort of became another journal; and I don't
21 recall that we had any of the old issues there from the
22 "Journal of Industrial Hygiene and Toxicology." That
23 became the AMA "Archives of Environmental Health" or
24 whatever, I think.

25 Q Oh, okay. It started out being published at Harvard

1 under Dr. Drinker's guidance, right?

2 A Your memory is better than mine. I don't recall where
3 it started.

4 Q Okay. At any rate, in terms of technical reference
5 material and resources, you weren't lacking at the Dow plant
6 in those, were you?

7 A No.

8 Q If you needed it, you could either find it there
9 in-house or you had professionals who could find it
10 somewhere and get it for you?

11 A Yes. We, also, of course, had access to the central
12 Dow library where we could either get professional help, if
13 we needed it; or we could simply browse, if we wished.

14 Q Was that something that you would do from time to time?

15 A Oh, I think I was over there two or three times in the
16 13 years I was at Dow.

17 Q You only browsed two or three times, you say?

18 A I only ran across problems where I needed to get into
19 nonindustrial hygiene, nontoxicology literature a couple of
20 times that were over there.

21 Q Oh, you were only at the central library a couple of
22 times, you say?

23 A That's right.

24 Q Otherwise, the resources in the biomedical library were
25 adequate?

1 A Yes.

2 Q And I suppose if you needed an article that had been
3 published in a foreign language journal, those would have
4 been available to you for the asking?

5 A They would have been, yes. We had translation
6 facilities at Dow.

7 Q Indeed, the old "Industrial Hygiene Digest" even
8 abstracted foreign language journal articles, didn't it?

9 A Probably. I don't right offhand remember any of such,
10 but I don't know why they wouldn't. So, I suspect they did.

11 Q Okay. And the same would have been true in the
12 "Journal of Industrial Hygiene and Toxicology," correct?

13 A I don't understand what you mean by "the same."

14 Q That one could find in the "Journal of Industrial
15 Hygiene and Toxicology" abstracts of articles from
16 professional journals in Germany or France or Scandinavia?

17 A I don't remember.

18 Q Were these journals of the type we have been discussing
19 among the resources that you used in the early '50s and even
20 later to continue educating yourself and broadening your
21 training --

22 A Of course.

23 Q -- in industrial hygiene?

24 A Of course.

25 Q All right. Would I be right in thinking that you would

1 routinely review the journals as they came in both your AIHA
2 quarterly and perhaps one or more of these others that you
3 have mentioned?

4 A Yes. Not necessarily as they came in. I was pretty
5 busy, as we all were; but as time became available, a few
6 hours here and there, --

7 Q Yes, sir.

8 A -- I would review the journals, yes.

9 Q Okay. Did you -- did you ever get acquainted with
10 Kerry McCord?

11 A I met Kerry when I went back to school --

12 Q All right.

13 A -- at Ann Arbor in '65. He may have appeared at one of
14 the meetings of the local section, as well. I can still
15 remember what he looks like. I never had any real
16 conversation with him. I was part of a group that went past
17 his facilities.

18 Q What -- what was he doing when you met him in the mid
19 '60s?

20 A He was a professor emeritus, as I recall, and mainly
21 writing.

22 Q And he had been active in the industrial health field
23 in the Detroit area for many years, had he not?

24 A Decades, yes.

25 Q Okay. Do you recall what company he had worked with

1 along the way?

2 A No. No. I have no recollection of that at all.

3 Q Now, Mr. Patty was affiliated for many years with

4 General Motors Corporation, was he not?

5 A Yes. He was the head honcho industrial hygienist at GM

6 for many years.

7 Q Did Bill Bradley ever tell you how he and Frank Patty

8 had started out together?

9 A No. I never sat down to reminisce with Bill.

10 Q I'll tell you at the break. Did you ever come across a

11 Dr. William Fulton from the Pennsylvania Department of

12 Health?

13 A No.

14 Q Dow didn't have any plants in Pennsylvania, did it?

15 A Not that I'm aware of.

16 Q In your training, did you ever get a chance to go to

17 Harvard and take any short courses up there?

18 A No.

19 Q Were any of the gentlemen at Dow who you knew in the

20 industrial hygiene department trained at the Harvard Public

21 Health School?

22 A No, not that I'm aware of.

23 Q Am I right in thinking that most of these men had

24 engineering backgrounds like yourself?

25 A Yes. Well, while I was there, almost everybody had an

1 engineering background, except for Mr. Hoyle, who did not,
2 and Larry Silverstein had a background in radiation biology
3 or something on that order but most of the other people who
4 came through the lab or who subsequently got hired were
5 engineers.

6 Q Okay. Where did Mr. Silverstein go after Dow? Do you
7 know?

8 A To Dow subsidiaries of one kind or another. He went --
9 he eventually wound up at Dow Corning and retired from Dow
10 Corning, but he worked for another Dow something or another
11 in the meantime.

12 Q Do you know if he is still living?

13 A The last I knew, he was, yes.

14 Q We asked about Phil Drinker, and I wonder in that
15 connection if you ever meet Ted Hatch?

16 A Yes. I did meet Ted Hatch.

17 Q Just kind of in passing or --

18 A No. This was in probably '63 or '64 when I was
19 seriously considering going back to school. So, I found Ted
20 Hatch at one of the meetings and talked with him about going
21 to Pittsburgh. I also found Russell Silverman; and I talked
22 to him, as well. I eventually, of course, went with Warren
23 Cooke at the University of Michigan.

24 Q So, you were in Mr. Cooke's program?

25 A Yes.

1 Q Okay. And can you tell us anything about Warren
2 Cooke's background?

3 A Warren worked for an insurance company of some kind or
4 another for many years. He was one of those people who
5 evaluated the exposures of radium dial painters; but whether
6 he did that for the insurance company or for the Public
7 Health Service, I don't remember. But Warren was rather
8 proud of the fact that everybody thought that these gals
9 were getting their major exposure because they pointed the
10 brushes with their lips they used to paint the radium dials;
11 and he and the crew that he was working with showed that it
12 was inhalation of radon that overexposed them, not the oral
13 ingestion.

14 Q Really?

15 A Yes.

16 Q Did you use Drinker's and Hatch's textbook or technical
17 book in your work at Dow?

18 A We had it available. Whether I actually used it or
19 not, I don't recall. I recall reading it, but I don't
20 remember that I had other access to it subsequent to that.

21 Q Okay. Is it -- was it from that book, at least in
22 part, that you learned principles of air monitoring and
23 sampling and such as that?

24 A No. I was taught how to do air monitoring and sampling
25 by Mr. Hoyle and Mr. Schneider; and I occasionally, of

1 course, would check up on a new method or something on this
2 order. But most of what I learned about how to do this kind
3 of thing I learned from Hoyle and Schneider.

4 Q I noticed on your -- on your resume that most of the
5 articles you wrote in the years you worked at Dow and
6 sometime after that focused on vapors and gases; is that
7 fair?

8 A Yes, it is fair.

9 Q And I inferred from that that most of the work you did
10 at Dow that involved sampling and monitoring was in that
11 same area?

12 A That is correct.

13 Q In the early '50s, could you tell me what kind of
14 devices you used at Dow for sampling for vapors and gases?

15 A One of the techniques that I did quite a bit of
16 research on was the use of silica gel as an adsorbent for
17 vapors, and all of us used that technique quite a bit.

18 We also used a combustion technique that we had fitted
19 out into a -- well, it wasn't a portable. It was a mobile
20 sampler. It was something you can take out and sit in the
21 middle of someplace or another and run it. It simply took
22 air through a heated quartz tube to break down the organic
23 chemical so that we could adsorb the chlorine or bromine or
24 whatever halogen was attached to it, and most of the organic
25 chemicals that we had at Dow had a halogen attached. So,

1 this was a good, rough-and-ready technique we used.

2 When they came out, we began to use detector tubes.

3 Mainly, the Drager tube was the first one that we had; and,
4 in fact, we had a small program of evaluating detector tubes
5 because we wouldn't use anything until we had proved to
6 ourselves that it worked.

7 We used sampling in saran bags for various vapors and
8 then put the air from the bag into either an infrared
9 spectrometer or another gadget or we took it to the lab and
10 burned it in our own furnaces to determine the halogen in
11 it. Those are the main methods we used.

12 Q Did you have the means to sample for benzene in the
13 air?

14 A Sure. Benzene will adsorb onto silica gel. And then,
15 when the charcoal tubes came out with the battery-powered
16 pumps in the late '50s and early '60s, we began to use
17 those, as well.

18 Q Would benzene have been a material that you would have
19 had present in the Dow plants in the '50s and '60s?

20 A Yes.

21 Q In connection with what kind of processes?

22 A It wasn't something I had anything at all to do with.
23 So, I'm afraid that my memory is hazy. Probably, it was a
24 reactive with a chemical to form chlorobenzene or
25 dichlorobenzene or something on this order; and that was

1 further used in something else. But we didn't have very
2 many processes that began with benzene as a raw material,
3 but we had benzene in all the laboratories and so forth.

4 Q You probably had some acquaintance with benzene from
5 your laboratory experiences as a student, correct?

6 A Yes. How did you know?

7 Q That is what I've heard.

8 A No, not at as a student. When I was a teaching fellow
9 at the University of Michigan in the 1952 or '53 era, I
10 worked for a gentleman by the name of Dr. Townsend who
11 taught a laboratory for mechanical engineers to teach them
12 how to do some of the testing things that mechanical
13 engineers did, such as dynability testing and so forth. We
14 were forever using oils in that lab, and his favorite
15 solvent was the constant boiling mixture of benzene and
16 carbon tetrachloride. That was the first time I ran across
17 benzene in the laboratory with any use other than sitting in
18 a bottle.

19 Q Did you learn while you were at school that this was a
20 material that needed to be handled carefully and had health
21 effects?

22 A No.

23 Q Did you learn that at Dow?

24 A Oh, yes.

25 Q I think you have told me before that you really didn't

1 get much training at university undergraduate or on your
2 masters level about the health hazards or toxicity of the
3 materials that even a chemical engineer might be working
4 with. Am I right?

5 A You are correct. I got no training in that area
6 whatsoever.

7 Q So, what you learned, you learned at Dow beginning in
8 1953?

9 A Three, yes.

10 Q And how did you go about being taught those things or
11 learning those things about what materials were hazards in
12 the workplace or could be?

13 A First of all, my very first job other than doing the
14 work with silica gel and the various hydrocarbons or health
15 and your hydrocarbons that we used was to read Patty. So, I
16 read Patty's first volume, only volume, of "Industrial
17 Hygiene and Toxicology" from cover to cover and discussed
18 various portions of it with Mr. Hoyle and Mr. Schneider.

19 And then, I went out into the field with these two
20 gentlemen and learned how to do things. It was the
21 apprenticeship route more than anything else.

22 Q All right. Probably the only one that works.

23 A Sometimes it is the only one that works, yes.

24 Q Do you recall, Dr. Peterson, if in the early '50s when
25 you were the apprentice of Mr. Hoyle if he had something

1 like an inventory of stressors for the different units in
2 the plant?

3 A He didn't at the time I went to work for him.

4 Q I'm gathering that maybe there came a point when there
5 was. Did you work on that?

6 A Yes, I did. That was one of my first big jobs was to
7 go to every production plant in the Midland area that Dow
8 had and to inventory the materials that were brought into
9 the plant for processing, the by-products of the processing,
10 and the products that they were producing as well as to draw
11 a flow diagram of each process. I did that over a period of
12 about two years and eventually got to every process,
13 including pilot plants and semi-plants in the Midland
14 division area.

15 Q So, this project of yours resulted, then, in a -- some
16 sort of an inventory that was current for each unit in the
17 Midland plant?

18 A Yes.

19 Q Was a similar effort made for other Dow plants in the
20 country?

21 A I don't think so.

22 Q And then, could you tell me how the industrial hygiene
23 department and perhaps the medical department, as well, made
24 use of this inventory of stressors?

25 A Most of the jobs that we got to do out in the plant

1 were initiated either through the safety department, which
2 had safety engineers going throughout the plant all the
3 time; and they would see things that we didn't see.

4 Sometimes we got calls from plant superintendents.
5 Sometimes we got a call from somebody at the medical
6 department that they had come across a potential problem.

7 We would, then, use the flow diagram and the inventory
8 of materials to see what we might have to encounter or to
9 look for or to look at when we went out to visit the plant.

10 Q Maybe it would be worthwhile if you could take me
11 through the projects that you remember doing and I know you
12 won't know all of them but the ones that stick in your mind
13 in a chronological order.

14 A Okay.

15 Q And then, we won't -- well, we can approach it in a
16 more organized fashion and move on that way.

17 A All right. Throughout the whole period I was there, I
18 either on my own or along with one of the other fellows in
19 the group would go out and handle problems. We would grease
20 the squeaking wheel, so to speak. So, that started from
21 Day 1 and went on. So that is a continuing thing underlying
22 everything else.

23 The first real project I had was the analytical one
24 that we've talked about already.

25 The next real project I had was this inventory and flow

1 diagram project that we have talked about. In doing that
2 project, I became acquainted with every building that Dow
3 had; and at that time, there were a few hundred buildings in
4 the plant. And I saw problems, too, that -- or problem
5 areas or areas where problems might exist and initiated
6 surveys and so forth either by myself or by one of the other
7 fellows.

8 When I was working in the laboratory area, I became
9 aware that many of the laboratory hoods appeared to me to be
10 very inefficient. So that started a project of making a lot
11 of measurements of flow into laboratory hoods and that in
12 turn culminating in a paper that I wrote discussing a method
13 that I devised to evaluate laboratory hoods.

14 Soon after I was in the industrial hygiene group, which
15 we called environmental health engineering, incidentally, I
16 was initiated into the slide talk that the group had
17 developed that was used -- well, developed, really, to
18 introduce the industrial hygiene group to people in a plant
19 that we intended to do a survey in. It became a very
20 popular slide talk; and we quite often were requested to
21 give it by members of the safety department for a safety
22 meeting, even though we weren't intending to visit that
23 plant for any particular purpose.

24 The culmination of the slide talk was to ask people in
25 the audience if they had any questions about the materials

1 that they were handling. We used our inventory and flow
2 diagram information to answer those questions, help us
3 answer those questions.

4 That's a preface to the fact that about in the middle
5 of the time that I was there, which would be along about
6 '59, '60, or '61, I was asked by Mr. Hoyle to redo the
7 slides. They were getting old and out of date. So, I got a
8 photographer, a Dow photographer, and we went around and
9 took a bunch of pictures and I culled those pictures and
10 renewed our slide talk.

11 Because I had worked with the laboratories in my
12 laboratory hood investigations, I became well acquainted
13 with everybody in the labs doing research work that might
14 lead to a production process and that began the process that
15 I finally wound up doing and that was helping processes grow
16 from the laboratory bench to a pilot plant to full
17 production and that was the last project I had in the
18 industrial hygiene group.

19 Q And what was it that lead you to leave industry and
20 return to the university?

21 A My wife's nagging. When we married, I had made the
22 remark several times that I had gone back to school after my
23 bachelor's degree with the intention of going on and getting
24 a doctorate. I married my wife instead; and after we had
25 been in Midland for a few years, about six years, in fact,

1 she began to push to leave Midland and go back to school.

2 Seven years later, I acceded to her desires.

3 Q Okay. Well, I can't quibble with that, certainly not

4 now.

5 A No, not now. I -- I wouldn't go back. She did

6 everything just right.

7 Q All right. At Dow, was there any use of your insurers

8 to do surveys or to work with your industrial hygiene

9 department in accident or exposure prevention?

10 A Not with industrial hygiene, no.

11 Q Do you -- are you aware of any cooperation with

12 insurers in the medical department?

13 A No. I know nothing about the insurers at all and

14 whatever they may have done.

15 Q Okay. What were your AIHA committee memberships that

16 you regard as most significant?

17 A Well, they are on my CV; and they are easy to look at

18 there. But the first committee that I got involved with was

19 the Hygienic Guides Committee. I was on that committee

20 from, what, '63 to '73 or something. I don't remember the

21 years now. I'd look at my CV to find out what the years

22 were. And I eventually wound up as chairman of the

23 committee.

24 When I first joined it, the committee was run by

25 Charles Carpenter, who worked for Henry Smith, whom you have

1 mentioned; and Carp did a very good job of running the
2 committee. But after I had been on it for six or seven
3 years, he decided he wanted to do something else with his
4 spare time and asked me to take over the committee for him.

5 I did and decided to change things a little bit, and
6 the change that I tried to institute ruined the committee.
7 We never wrote another "Hygienic Guide" while I was there,
8 unfortunately. I was trying to find a way of getting the
9 people who volunteered to write these things, which is a
10 horrendous task, to get some recompense for what they did;
11 and that was too big a change for AIHA and the members of
12 the committee to accept. And, therefore, they sat on their
13 hands; and I finally decided the only way to get things
14 going was for me to leave and to get somebody else in there,
15 which is what I did.

16 Q Could you tell us, in summary, what a "Hygienic Guide"
17 was?

18 A I have brought some with me, if you would like to see
19 them; but, in summary, they are a small treatise on the
20 industrial hygiene aspects of chemicals. They have physical
21 property information. They have information, in brief,
22 about the toxicological properties of the materials, the
23 hazards of the materials, how to avoid those hazards, how to
24 do the air sampling and so forth that is necessary.

25 Q How far back in time does this project go with the

1 AIHA?

2 A The early '50s.

3 Q Did you yourself work on authoring any of these?

4 A Oh, yes.

5 Q And what would -- what would have been the sources of
6 information that you used in preparing the "Hygienic Guide"?

7 A Okay. What happened was that I was looking for some
8 information about trichloroethylene and I looked at the
9 "Hygienic Guide" and I was very dissatisfied with its
10 format, more than anything else, and decided to rewrite the
11 trichloroethylene hygienic guide. I did that and submitted
12 my rewriting of that guide to the Hygienic Guides Committee
13 and was promptly appointed a member of the Hygienic Guides
14 Committee.

15 Q That will teach you a lesson.

16 A Yeah, that did. I quit volunteering so much at that
17 point in the game. But at any rate, from then on, we used
18 my format for "Hygienic Guides"; and it is a much better one
19 than had been used previously.

20 Q You said modestly.

21 A I said modestly, of course.

22 Q Okay. But I was asking, I think, what -- and it's kind
23 of a general question.

24 A Where did I get the information?

25 Q Yeah. Where would you turn to to pull this together

1 and make a concise guide that would be actually useful to
2 somebody that wasn't a real professional with your knowledge
3 and experience?

4 A Well, the guides are written for industrial
5 hygienists. They aren't written for other people.

6 Q All right. Okay.

7 A They are written for -- they are memory joggers, if you
8 will, for industrial hygienists more than anything else. So
9 that they are written for people such as I.

10 But where did I get the information? From the
11 literature. One doesn't write a "Hygienic Guide" without
12 doing a very complete literature search. And then, I
13 occasionally, when I was writing such guides, would use
14 information that we developed at Dow. But, mostly, we
15 didn't use that unless it had been published. People like
16 AIHA and other organizations don't like information that
17 isn't published. So, we would usually wait until the stuff
18 appeared in print before we used it.

19 Q Okay. When you did your inventory at, I assume,
20 Mr. Hoyle's direction back in the -- in '53, '54, when you
21 started that, did he also have you looking for other
22 stressors in the plant besides things that came in as
23 feedstock and went out as product or fell off as
24 by-products?

25 A No. That was my job to do just as I said. But as I

1 indicated, I was in all the plants; and I would come back
2 and say, "Gee, it seems to me that it's awfully noisy in
3 this plant. I think we ought to evaluate the noise."

4 And because of that, I got also interested in heat
5 stress, which is actually another project that I had that we
6 haven't talked about; and that's what I wound up doing for
7 my Ph.D thesis.

8 So, that kind of thing I would bring back to Mr. Hoyle
9 and to others in the group. We had weekly meetings, as I
10 recall; and we would discuss these things at those meetings
11 and what to do about them.

12 Q How old, roughly, was the industrial hygiene program at
13 Dow when you got there in 1953?

14 A I believe that Mr. Hoyle started the program in 1948.
15 I could be wrong a year or two on that.

16 Q Sure. Did you ever encounter while you were at Dow
17 between '53 and '65 an inventory of nonprocess materials?

18 A No.

19 Q And you understand what I'm --

20 A I know what you are getting at. No.

21 Q -- talking about? No. Okay.

22 A There wasn't any such inventory, so far as I'm aware
23 of. I certainly didn't compile it, and I wasn't aware of
24 anybody who did.

25 Q Okay. If -- if you had been charged with that task,

1 would it have been practical and reasonable to maybe just
2 take the TLV list of that time and just look to see which of
3 the described items were present in the plant?

4 A It -- we could have done that. However, at Midland, at
5 any one time, we were handling between 450 and 650
6 chemicals, most of which had TLV's. So that wouldn't have
7 been very helpful.

8 Q When you say you were handling chemicals, I mean, those
9 are the ones that you looked at in your inventory, correct?

10 A Yes. That's correct.

11 Q The ones that were used in the manufacturing process?

12 A Yeah, or in the laboratories.

13 Q Yeah. Okay. And were there TLV's for those
14 400-and-some-odd chemicals?

15 A No, not by a long shot; but most of the materials on
16 the TLV list were ones that we handled in the plant one way
17 or the other.

18 Q Okay.

19 A Not all but most.

20 Q Okay. And as for those materials, let's say, chemicals
21 that weren't on the TLV list in 1953, '54, '55, did it fall
22 on you fellows in the industrial hygiene and the toxicology
23 departments to come up with some standards for exposures and
24 limits?

25 A Certainly.

1 Q How -- how did you go about doing that in that period?

2 A Basically, the toxicology lab was in charge of this;
3 and it was done by means of animal experiments, either acute
4 or subacute or chronic inhalation toxicology.

5 Q So, at least by 1953, the Dow toxicology laboratory had
6 the capability to do animal inhalation studies?

7 A Oh, yes. That was another project that I did that I
8 didn't mention. Along about 1955 or something on this
9 order, Dow hired a gentleman to run its vapor inhalation
10 chambers, a fellow by the name of Ted Torkelson. And after
11 he had been there for a year or so, Ted and I traded jobs
12 for six months or a year and I ran the animal inhalation
13 chambers and Ted was the industrial hygienist for that
14 period of time.

15 Q Did Ted stay with the company for years?

16 A Yeah. He -- he retired a few years ago and is a
17 consultant somewhere in Michigan now.

18 Q And would this experience you just described around '55
19 have been your introduction to toxicology?

20 A Well, I had been introduced to toxicology by reading
21 Patty's book. So, that was the real introduction. This was
22 my introduction to hands-on toxicology, if you will.

23 Q Okay. That's the question I should have asked,
24 obviously. And you worked in the inhalation lab at this
25 time?

1 A Yes.

2 Q Did you do skin painting there, too?

3 A Not in the inhalation lab. Skin painting was done,
4 sure, from the very start, so far as I know, because one of
5 the things that the toxicology lab was charged with doing
6 was to determine whether this stuff, whatever it might be,
7 was going to be a potential hazard to people and what that
8 hazard would be, whether it would be from getting it on your
9 hide or in your eyes or inhaling it or whatever.

10 Q Did the information that Dow developed in its
11 toxicology lab make its way to the TLV committees of the
12 ACGIH in any way?

13 A Yes, sir.

14 Q How did that happen?

15 A Basically, through publication. The Dow lab,
16 toxicology lab, was a very well-known and very
17 well-respected lab; and they wrote papers and published the
18 results of their papers, whether it was from chronic
19 inhalation toxicology or shorter term work or something more
20 esoteric, such as the metabolism of these materials and so
21 forth. There were papers on all of these subjects that were
22 published by the toxicology lab.

23 Q Were any of the Dow toxicologists actually ex officio
24 members of some of these ACGIH committees?

25 A Not at that time. Later, Ted Torkelson became a

1 consultant to the TLV committee without voting rights but as
2 a -- just as a consultant. He is the only one that I'm
3 aware of whoever did this. That was well after I left Dow.

4 Q Well, all right. I was thinking that maybe VK had done
5 some of that, too, that you are aware of?

6 A I really can't talk to VK. I didn't -- I wasn't that
7 close to VK. He was in toxicology, really; and I was in
8 industrial hygiene. Even though Mr. Hoyle reported to VK
9 for a while, I didn't.

10 Q Yes, sir. Can you give me a little more specifics on
11 your work in the laboratory, what kind of projects you
12 worked on in the animal inhalation lab during that year that
13 you did it around '55?

14 A It may only have been six months.

15 Q Okay.

16 A The -- I had two projects, really. One was to make
17 sure that the animals were properly and correctly exposed.
18 The other one was to try and straighten out the fellow who
19 was actually doing the work who was many, many years my
20 senior. He was about ready to retire and he tended to set
21 things up and then leave and that wasn't what he was hired
22 to do.

23 Ted had been unable to straighten him out; and so, I
24 was asked to do so. And that's the hardest job I have ever
25 done in my life. I am not cut out to be a supervisor and I

1 learned that very easily and well but I did the job and --

2 even though I may have gotten ulcers from doing so, that's

3 what I did.

4 Q Lord, it may have been harder on that man than you.

5 A It may well have been.

6 Q Maybe that's why they put you over there.

7 A That was one of the reasons for putting me over there,

8 yes.

9 Q Okay. But in terms of the science that you were doing,

10 I mean, were there any particular materials you remember?

11 A I remember isopropyl chloride is one of the materials

12 that we ran while I was there. I think vinylidene

13 chloride. We may have even have run vinyl chloride, but I'm

14 not sure. This has been too long ago.

15 Q Did you ever encounter Don Irish, or was he gone by the

16 time you were there?

17 A Oh, no. I knew Don Irish very well.

18 Q And remind me. What was his position there?

19 A He ran the Dow chemical research lab. He was the

20 director of the lab. He had two assistant directors and

21 then several group leaders, if you will, who reported

22 through one of the assistant directors, Edgar Adams, to

23 Irish. But then, Irish poked his nose in everywhere; and

24 all of us got to know him very well. A great talent.

25 Q And was he a toxicologist by training or a physician?

1 A He was a biochemist by training. He had been hired by
2 the founder of the company and was -- told us many times
3 that he was hired and went to work and said to his boss,
4 "What do you want me to do?" The guy says, "Biochemistry,
5 whatever that is. And do whatever you think needs to be
6 done."

7 So, he eventually established the toxicology lab and
8 shortly thereafter hired Mr. Hoyle to do industrial
9 hygiene. He hired Hoyle from the safety department.

10 Q Would you say that during the years you were there, '53
11 to '65, that the Dow biochemical laboratory was on a par
12 with the best in the country?

13 A Either on a par or better than. It was well recognized
14 as being one of the premiere establishments in the world for
15 what it was doing.

16 Q Okay. You have told me when we visited previously that
17 you never really had anything to do with asbestos in the Dow
18 plants?

19 A Well, I did -- I think I told you that I did one, one
20 survey.

21 Q Excuse me. I misstated. That's right.

22 A Other than that, that's the only one that I had
23 anything to do with asbestos in.

24 Q Okay. Let me start over so we have got just one
25 question and answer, then.

1 I think you told me before that you had had one
2 occasion at Dow to survey for asbestos, and that was in
3 connection with a project that was formulating vinyl
4 asbestos floor tile resins and samples, correct?

5 A Yes.

6 Q Okay. And in your inventory project of the plant, you
7 did not become aware that thermal insulation in the Dow
8 plants in 1953 contained asbestos?

9 A I did not.

10 Q And I believe you told me that even by the time you
11 left in 1965, you were not aware that thermal insulation in
12 the Dow plants contained asbestos?

13 A That is correct.

14 Q Okay. Which is not to say that the Dow plant in
15 Midland did not have asbestos-containing insulation during
16 those years, is it?

17 A Today, I'm sure it did; but at that time, I didn't know
18 it.

19 Q Okay. Now, if you had been using the TLV's, the
20 threshold limit value table or the maximum allowable
21 concentration table or whatever it's called in 1953, to
22 inventory, to help you inventory the plant, would you have
23 found asbestos as one of the materials listed on the table?

24 A I can't speak for Jack Peterson in 1953, but I doubt
25 it.

1 Q Well, I --

2 A I didn't have anything to do with the people who were
3 handling asbestos-containing materials.

4 Q Well, I appreciate that; and I'm really not trying to
5 argue that point with you. I was just asking that if the
6 1953 TLV tables list asbestos?

7 A Yes.

8 Q All right.

9 A Absolutely.

10 Q And they also listed silica in 1953?

11 A Yes. They started out listing both materials in 1946
12 and have done so ever since.

13 Q All right, sir. And would benzene also be on the table
14 back as far as 1946?

15 A Yes.

16 Q Would you or did you recognize benzene as a material
17 that was suspected of causing leukemia in the '50s when you
18 started industrial hygiene?

19 A No. We were aware that benzene could cause aplastic
20 anemia, but that was the most severe disease that we were
21 aware of benzene being associated with.

22 Q And that would have been in the early '50s?

23 A Throughout the time I was at Dow, from the early '50s
24 through the mid '60s.

25 Q By the time you left Dow in the mid '60s, had you

1 become aware that benzene was suspected of causing other
2 malignancies or leukemias?

3 A I certainly eventually learned that; but when I learned
4 it, I don't recall.

5 Q Did you have anything to do along the way with the CMA
6 or the MCA?

7 A No, not directly. Our representative to that group was
8 Edgar Adams, who was one of the assistant directors of the
9 lab, and Edgar occasionally would talk to those of us in the
10 industrial hygiene group about things that the group was
11 doing or that group was doing but I didn't have any direct
12 input or -- to it or from it.

13 Q Okay. Never made it to a meeting?

14 A Never.

15 Q Do you recall ever seeing any printed material coming
16 out of the CMA that would deal with industrial hygiene or
17 occupational health?

18 A Sure. They had some data sheets, and we had a
19 collection of those data sheets that MCA -- I think it was
20 MCA at that time, --

21 Q It started.

22 A -- Manufacturing Chemists Association.

23 Q Yes, sir.

24 A Yeah, we had them. I had a set in my desk, in fact.

25 Q Would you tell me what you called those?

1 A No. I don't recall. Probably the MCA sheets. I don't
2 know.

3 Q Were they like the "Hygienic Guides" or like a
4 toxicological review or like an MSD or what?

5 A Well, they were more like "Hygienic Guides" than like
6 anything else. So far as material safety data sheets are
7 concerned, that's one of the projects all of us had
8 beginning about 1960 or so. We devised our own internal
9 data sheet and then helped fill the darn things out for
10 literally thousands of chemicals. So, that's another thing
11 that I got involved in doing. I was pretty busy. We all
12 were.

13 Q Oh, I don't doubt it. You said that was early '60s?

14 A I believe so. Harold published a paper about what we
15 were doing in the AIHA quarterly or journal about a year or
16 so after we started doing it. So that can be pinpointed
17 rather closely.

18 Q Can you say that these MCA data sheets were available
19 around the time you started with Dow in '53?

20 A I don't remember. I just don't recall.

21 Q Do you recall them as being lengthy or brief? I don't
22 think I have ever seen one, and that's why I am asking.

23 A Yeah. I can understand. It varied depending upon the
24 amount of information available, I should imagine.

25 Q Yeah.

1 A But they were generally, as I recall, about four pages,
2 something on that order. That's a vague recollection
3 because it's been a long time since I have looked at one of
4 them.

5 Q Okay. Mr. Adams, would he be deceased by now?

6 A I believe so. It was Dr. Adams.

7 Q Dr. Adams?

8 A Yeah. I'm not sure about that, incidentally; but he
9 was quite a lot older than I, as was Irish and Dunn, the
10 other assistant director. They were all quite a lot older
11 than I was.

12 Q Was Dunn also a doctor?

13 A Yes.

14 Q What was his first name?

15 A Edgar, I believe. Edwin or Edgar. Ed Dunn. Edgar
16 Adams and Ed Dunn.

17 Q Okay. Is there anything -- any other material you can
18 recall that came from or came through the CMA or the MCA
19 besides these data sheets?

20 A No. Incidentally, I hope that I've got that pinpointed
21 and I'm not talking about the things produced by the ASA
22 instead and I could have gotten those two confused. Please
23 don't hold me to that.

24 Q All right, sir.

25 MR. ALMQUIST: Why don't we take a short break

1 now.

2 MR. BLANKS: Well, why don't we take a short break
3 now.

4 THE WITNESS: I think that's a good idea.

5 MR. BLANKS: One hour and 8 minutes later.

6 (After the break, the proceedings continued as
7 follows:)

8 Q (By Mr. Blanks) Picking up probably not where we left
9 off, Dr. Peterson, when you do work for Owens-Corning
10 Fiberglass or its attorneys in connection with litigation,
11 what do you charge them?

12 A Oh, I charge everybody the same thing, \$300 an hour,
13 except when I travel on nonbusiness hours, for which I
14 charge \$150 an hour.

15 Q It's a good thing I didn't have any coffee in my
16 mouth.

17 A One charges what the traffic will bear.

18 Q In the -- in the litigation work you have done in
19 recent years, I'm wondering what kind of projects you have
20 worked on, excluding the Owens-Corning Fiberglass expert
21 testimony, if you could summarize that for me.

22 A I already have. I've talked about working for the
23 welding rod defendant companies and so forth. This is what
24 I have done. I have mentioned I have been employed by
25 attorneys representing plaintiffs a few times; but it's,

1 basically, everything in industrial hygiene. Let's see.

2 I've done nonionizing radiation, vibration, noise, various

3 gases, various vapors, various dusts, the whole -- almost

4 the whole area of industrial hygiene.

5 Q Other than some earlier testimony for Owens Illinois

6 and the more frequent testimony for Owens-Corning, have you

7 testified in other -- have you testified in other

8 asbestos-related cases?

9 A Yes. I've testified in a Rapid American case or two.

10 I have testified for an attorney representing Unibestos in a

11 Seattle case; and, yes, there have been others. I've gotten

12 involved in some of the marine litigation but never to the

13 point of testimony.

14 Q "Marine litigation" meaning what? Asbestos disease

15 claims for seamen?

16 A Yes. That kind of thing.

17 Q Have you testified for defendants other than asbestos

18 manufacturers in regard to asbestos claims?

19 A Most certainly. We have the previous edition of this,

20 which is premises liability cases. I got involved in a

21 premises liability case or two in the San Francisco area,

22 never to point of testimony, however. It was investigation

23 and reading and so forth.

24 Q Any other premise-type asbestos cases?

25 A None that comes to mind. Although, there could well

1 have been. These are fairly recent that I am talking about.

2 Q Okay. In the past, you can't recall any?

3 A No.

4 Q And, of course, in this case or these cases we are here

5 on today, I mean, you are here, really, as a -- well, what I

6 call a precipitant expert. I mean, you are not a retained

7 expert here for me or at this point for anybody else, that

8 you know of?

9 A That's correct.

10 Q And you are here today really not to give opinions so

11 much as to give us your historical recollection on various

12 things that I am asking you about?

13 A That's my understanding.

14 Q Okay. Have you worked on any silicosis cases?

15 A Yes, but not to the point of testimony.

16 Q Were these for sandblasters? No. Let me -- let me

17 re-put that.

18 Did these silicosis cases involve claims by

19 sandblasters?

20 A No.

21 Q What type of occupational exposure was involved in the

22 cases you worked on?

23 A People handling sand; that is, loading trucks with it

24 and delivering it and so forth, as I recall.

25 Q Have you worked on any foundry cases?

1 A At one point in my career, I was hired by Conrail
2 people to work on cases that they had. They were mainly
3 workers' comp cases but there were others and they dealt
4 with various things that one encounters in foundries and
5 machine shops. They dealt with silicosis and coal workers
6 and pneumoconiosis, as well as hearing loss. That was way
7 back in the early '80s, as I recall.

8 Q Back to the case or cases involving people handling
9 sand, were you hired by the defendants in those cases --

10 A Yes.

11 Q -- to ascertain whether or not you thought the
12 claimants had had sufficient exposure to silica from the
13 sand?

14 A It never got that far. I was contacted, asked if I
15 knew anything about silica and silicosis; and I said,
16 "Sure. I'm an industrial hygienist."

17 And they said, "Fine. We'll name you as our expert in
18 this case."

19 And I got a two-minute description of what the case
20 was, and that was the extent of it. It never went any
21 further than that.

22 Q Am I right in thinking that silicosis would have been
23 an occupation disease you learned of very early at -- during
24 your time at Dow?

25 A Oh, yes.

1 Q This -- this was an occupational disease that was
2 pretty well known by the time you began your work. Am I
3 right?

4 A Yes.

5 Q Would I be right in saying that silicosis was
6 recognized as a serious occupational disease even back into
7 the -- as far back as the '30s or possibly the '20s in
8 certain trades?

9 A Absolutely.

10 Q Okay. Did -- did you have any occasion to encounter
11 silica hazards at Dow in connection with sandblasting?

12 A I recall doing some air sampling inside a sandblaster's
13 hood and so forth; but whether that was at Dow or shortly
14 after I became a consultant, I just don't remember. It
15 could have been either.

16 Q Would you have any other recollections of Dow and
17 sandblasting? And I don't know whether there was any done
18 there or not, but maybe you will recall.

19 A I'm not sure any was done there either. I'm glad you
20 went that far with your questioning. I -- I just don't have
21 any recollection of where it would have been done, if in
22 fact it was done, because I've done a fair amount of silica
23 evaluations as a consultant; and it kind of all runs
24 together. It's all way back in the past now, and I just
25 don't have any separate recollection of silica at Dow.

1 Q Okay. Would I be correct in stating that you
2 certainly, after a couple of years at Dow and a couple of
3 years of training by Mr. Hoyle and self-instruction, that
4 you would have known how to prevent and to limit exposures
5 to silica dust in connection with sandblasting while you
6 were at Dow in 1955?

7 A Yes. This is true.

8 Q And, likewise, are you confident that Mr. Hoyle had the
9 knowledge to deal with any potential silica exposures in
10 connection with sandblasting, had they arisen?

11 A He did.

12 Q Based on your experience and all the training and
13 reading you have done, is it -- is it true that or would you
14 say that it was known how to prevent harmful exposures to
15 silica dust during sandblasting even back in the '40s?

16 A Very probably.

17 Q Did the protective gear that is especially needed for
18 sandblasters, such as the air-fed hoods, exist in the -- in
19 the decades before or, let's say, in the 1940's?

20 A I'm sure they did, yes.

21 Q Okay.

22 A That kind of gear has been around for a long time.
23 When it was first developed, I couldn't tell you. I don't
24 know.

25 Q Okay. How long, approximately, would you say the air

1 line respirator has been around?

2 A It was certainly well-known when I got into industrial
3 hygiene; but how much earlier than that, I really don't
4 know.

5 Q You wouldn't be surprised to see it illustrated in
6 textbooks in the '40s or even late '30s, would you?

7 A No, not at all. It's a natural thing to do. So that,
8 gee, you can go back to writings of the ancient Greeks and
9 the early people in industrial hygiene and occupational
10 medicine in England and France and so forth and Germany; and
11 one of the big problems was silica. They recognized this,
12 and they had ways of handling it.

13 They didn't, in general, recognize that people died
14 from the combination of silicosis and tuberculosis; but
15 other than that, silicosis has been known as a problem for
16 occupations for centuries, probably.

17 MR. BEASON: Objection. Nonresponsive.

18 Q (By Mr. Blanks) I wonder what, based on your education
19 and experience, you would say to this question, Doctor: How
20 long has silicosis been recognized as an occupational health
21 hazard in certain trades?

22 A For centuries.

23 Q When you did your sampling inside the hood, wherever it
24 was, was this an air-fed hood?

25 A Oh, yes, definitely.

1 Q Do you recall anything more about this activity than
2 that you did it?

3 A No. I really don't. It's -- I have sampled outside of
4 cabinets that people use with gloves that stick into them.
5 I've sampled once, that I recall, where I went to all the
6 trouble of getting the sampler inside an air-fed hood - and
7 that is a very difficult thing to do - to get a good
8 breathing-zone sample inside one of those things. But I
9 think I only did it once, and I don't remember where or just
10 when.

11 Q Do you -- can you get a good result doing that?

12 A Sure.

13 Q I mean, one you have confidence in with all that air
14 moving around in there in the hood?

15 A Yeah, you can, because all you need to do is use the
16 conventional cyclone sampler where you aren't even handling
17 liquids. You don't have to use an impinger or something on
18 this order. And if you can get this thing attached to a
19 guy's collar and then run the tube that's sucking air
20 through it out from under the drapery of the hood that he
21 fastens around his waist, you are all right; but it takes an
22 especially long tube to do this. And if you wind up with a
23 short tube, you can't do it.

24 Q Have you ever given testimony in front of any
25 government entity in connection with your work or your

1 profession or professional opinion?

2 A Yes.

3 Q What would the occasion for that have been?

4 A There were two occasions. The first one was a hearing

5 held by the Occupational Safety and Health Administration

6 concerning a regulation of a chemical that's known by an

7 acronym MOCA, M-O-C-A. The chemical is

8 methylene-ortho-chloro-amylen. I was asked to testify

9 about the proposed regulation by an attorney representing a

10 Polyurethane Manufacturers Association.

11 A few years later, OSHA came up with what they called

12 the generic carcinogen standard; and the Polyurethane

13 Manufacturers Association people asked me to testify about

14 that, as well.

15 Q The generic --

16 A Generic carcinogen standard. Trying to write one

17 standard for any and all possible carcinogens. I testified

18 that is absolutely impossible. It cannot be done.

19 Q What came of that proposal?

20 A It vanished.

21 Q All right. Did you ever have anything to do with the

22 National Safety Council?

23 A I wrote chapters in the book that was produced by the

24 National Safety Council entitled "Fundamentals of Industrial

25 Hygiene." When the book was in the process of being finally

1 edited, I took my name off two of the chapters and left it
2 on one.

3 Q Why did you do that?

4 A Because the editing was not to my liking.

5 Q When was this published?

6 A Early '80s, perhaps. I don't remember. I didn't work
7 directly for the National Safety Council. The editor of the
8 book was a friend of mine named Julian Olishifski. Your
9 guess is as good as mine how to spell it. And he was a
10 member of the Chicago section of the American Industrial
11 Hygiene Association and asked me to write some chapters:
12 One on heat stress and one on evaluation of exposures and so
13 forth.

14 Q Which were the two chapters you deauthored?

15 A I deauthored the one on heat stress and -- which is the
16 one I wrote from scratch and got put on as an author in the
17 evaluation chapter, which I had very little to do with
18 except that the actual author of it, Dr. Hermann, had
19 cribbed stuff from my book to write the chapter. So, he put
20 me on as an author of it.

21 There was another chapter, too; and I don't even
22 remember what it was that I took my name off.

23 Q Okay. Can you think of any other dealings with NSC?

24 A No.

25 Q You never went to any of their meetings?

1 A Once I attended a meeting in Chicago. I -- but that's
2 the full extent of it. I didn't join the group; and I
3 didn't join any of its parts, either.

4 Q Roughly, what -- what time frame would you have gone to
5 that annual meeting?

6 A Oh, probably in the late '70s.

7 Q And am I right in recalling that the NSC publications
8 would have been available in the Dow library, one or more of
9 the libraries?

10 A Oh, certainly. Probably at the safety department. I
11 don't think we had any of them in the industrial hygiene
12 group.

13 Q Okay. Do you -- can you think of anybody else that you
14 worked with at Dow who would have been a member of the
15 National Safety Council?

16 A No. Just the safety people that we had. Probably all
17 were members, so far as I know. I never asked them.

18 Q Did you ever attend any American Public Health
19 Association functions?

20 A No.

21 Q You never belonged to that, either?

22 A Never belonged to it.

23 Q Did you ever get any of their publications?

24 A Well, I've -- no. I never subscribed or purchased any
25 of their publications, no.

1 Q Okay.

2 A I have run across papers --

3 Q Sure.

4 A -- published in the APH Journal, but that's the extent

5 of it.

6 Q That's the name of their periodical, the "American

7 Public Health Journal," as you remember it?

8 A "APHA Journal," probably. I don't remember. I don't

9 put much stock in the stuff they publish. So, I don't

10 ordinarily collect that kind of stuff.

11 Q Well, why do you say that?

12 A The papers that I have read in -- that appear in that

13 journal appear to me to be, generally, more political than

14 scientific. So, I just ignore them.

15 Q Do I recall correctly that somewhere along the way you

16 became involved with the ACGIH?

17 A I joined the ACGIH in the mid '80s when I was teaching

18 at the University of Wisconsin Parkside campus. Then, I

19 remained a member for two or three years, until all of a

20 sudden it was realized by ACGIH that I was no longer

21 teaching full-time; and I was demembered.

22 Q Dismembered?

23 A Dismembered. A couple of years later, they established

24 the category of affiliate member; and then, I joined, mainly

25 because then I would get the TLV booklet automatically and

1 so forth.

2 Q Okay. And were you ever on the TLV committee of the
3 ACGIH?

4 A No.

5 Q So, if I asked you how that committee worked over the
6 years, you really wouldn't have any direct personal
7 knowledge of that, would you?

8 A No. Just it would all be hearsay and stuff that I have
9 read and talked about. I know Herb -- Herb Stockinger quite
10 well, for instance.

11 Q Yes, sir.

12 A And I have talked to him about what goes on at the TLV
13 committee meetings, how they operate and so forth; and he
14 has written about this and I have read the stuff that he has
15 written.

16 Q How far back does Mr. Stockinger go?

17 A Dr. Stockinger goes way back. He is older than I. He
18 ran the toxicology group for the US Public Health Service;
19 and then, when NIOSH took over that kind of activity, he ran
20 that group for them, as well. He was chairman of the TLV
21 committee for a few years, a member for many more.

22 Q Is he still around?

23 A So far as I know.

24 Q Where in the world would we find him? Do you have any
25 idea?

1 A I would look in Cincinnati. I think that's where he
2 made his home. Either that or look for places that sell an
3 awful lot of the red hot sauce. What a crime. He put it on
4 everything.

5 Q Okay.

6 A NIOSH people may know where Herb is, if he is around.

7 Q Did you meet him early on in your Dow years, or did
8 this come much later?

9 A Oh, it was early on.

10 Q That you would have encounter him, what, at AIHA
11 activities?

12 A Yes. That's correct.

13 Q And I guess you wouldn't know whether anybody at Dow
14 ever had any direct input into a particular TLV or not at
15 any time, would you?

16 A No.

17 Q I wonder if you ever encountered the Texas Chemical
18 Council?

19 A No.

20 Q How about the National Petroleum Refiners Association?

21 A No.

22 Q How about the Permian Basin Landman's Association?

23 A What? No. I have never even heard of them.

24 Q It's not. I made it up.

25 A Oh, okay.

1 Q Let me, as we are moving very rapidly through the
2 material here, ask you about any contacts you remember with
3 the State Health Department in Michigan while you were at
4 Dow.

5 A Yes.

6 Q And I'm assuming there was one?

7 A There was one. All the time I was an industrial
8 hygienist at Dow, there was.

9 Q Now, Michigan was actually -- would have been one of
10 the first states to develop an industrial hygiene department
11 in the State Health Department, wasn't it?

12 A That's correct.

13 Q And I guess because of the automotive industry and the
14 other industries that were tied to it? I mean, like --

15 A Well, Michigan is an industrial state. So that's the
16 reason for the development of industrial hygiene there.

17 Q Can you tell me a little bit about the State Health
18 Department and how it related to whatever you all were doing
19 at Dow?

20 A The representative of the industrial hygiene group who
21 had Dow as part of his territory was a gentleman by the name
22 of Russell Scovill. Russell would show up at the biochem
23 lab about every six months and would -- we would all get
24 together and talk. He was there, mainly, to find out what
25 was new in industrial hygiene from us. He never took a

1 plant tour, never went out of the biochem lab, so far as I'm
2 aware.

3 Q Okay.

4 A He eventually wound up on the TLV committee,
5 incidentally.

6 Q I gather that it would not have been the practice in
7 the '50s or up to the mid '60s, while you were at Dow, for
8 the Michigan State Health Department to come in and make an
9 inspection of the Dow plant?

10 A We always offered that to Russ, if he wanted to do so;
11 but he was using us as a resource. He wasn't about to come
12 by and second-guess us for what we were doing.

13 Q Well, I wasn't suggesting anything sinister or
14 otherwise; but do you know whether or not the State Health
15 Department even had the power or the authority during those
16 years to enter a plant and make an inspection without the
17 consent of the plant owner?

18 A I don't know that for sure, but I doubt if they did.

19 Q Yeah. I mean, in your experience, that probably would
20 have been the case, then, with many, if not most, of the
21 states during the pre-OSHA period, correct?

22 A Yes. That's, in fact, one of the reasons for the
23 development of OSHA.

24 Q I am -- I gather, correct me if I am wrong, that this
25 was one of the legal facts that handicapped the US Public

1 Health Service from perhaps doing more extensive work in
2 investigating occupational health hazards in the decades
3 before OSHA?

4 A Well, that could well be. However, I never talked to
5 anybody who was in the Public Health Service at that time
6 that looked upon it as a handicap because mostly when they
7 wanted to go in someplace, they'd just simply go and ask to
8 go in; and they were usually invited in, in my circles,
9 anyway.

10 Q Oh, okay. Okay. Did you do any work at Dow that you
11 know became part of an epidemiology study?

12 A Epidemiology studies were done at Dow. Whether any of
13 the work that I did became part of them, I'm not positive.

14 I certainly had no input into the writing of such reports.

15 But I did a lot of sampling hither, thither, and yon and, in
16 fact, developed, along with a guy from the physical research
17 laboratory, a device that enabled us to sample automatically
18 from several different places in a plant and I believe that
19 that kind of data were incorporated in a paper, an
20 epidemiological paper, but I had nothing to do with it.

21 That's as close as I came to the sort of thing you are
22 talking about.

23 Q Okay. Do you know if Dow ever did a or had done an
24 epidemiology study about the health of its plant workers or
25 retirees?

1 A They have done -- they have done several.

2 Q How far back in time do you place these epistudies?

3 A Well, there are two portions to that. One is when the
4 people work there. That is when the exposures existed and
5 when they were analyzed, so far as looking at other
6 employees and so forth.

7 We did a study of hearing loss in people, which is sort
8 of an epidemiological study; and I had a little hand in
9 that, incidentally.

10 I know that the Dow medical department did a study of
11 people who had been exposed to arsenical insecticides
12 manufactured at Dow and, in fact, were instrumental in
13 showing that arsenic was a carcinogen.

14 I know they have done epidemiological studies of people
15 exposed to benzene and a few other compounds, but I had
16 nothing to do with these. I just know it's been done. They
17 have been published. When, I couldn't tell you.

18 Q Okay. Okay. Would you say that in that 12-year period
19 you were at Dow that you had sufficient staff to do the
20 necessary industrial hygiene work?

21 A Never. There was always far more work than we could
22 handle, and we kept looking for other people to join our
23 group. The group expanded to the point where it is several
24 tens of people now.

25 Q Were there any other large companies that were in your

1 vicinity, chemical companies or petroleum companies with
2 whom you had dealings while a Dow employee?

3 A Well, there weren't any chemical or petroleum companies
4 nearby physically. At the annual meetings of AIHA, I met
5 people from DuPont and Carbide and Westinghouse and Shell
6 and Exxon and so forth; but we didn't have any direct work
7 with these people.

8 Q Did you ever have occasion to visit the plants of any
9 of these gentlemen that you met from other petro or chemical
10 companies?

11 A I have visited several petrochemical company plants,
12 but it's been not in conjunction with my acquaintanceship
13 with industrial hygienists who work there. It's all been
14 litigation, really.

15 Q As an expert for the company whose plant you were
16 visiting?

17 A Not necessarily. Not necessarily. I visited a couple
18 of plants at the behest of Owens-Corning Fiberglass
19 attorneys, for instance.

20 Q Okay. Do you remember any folks from DuPont that you
21 became acquainted with at your annual meetings and
22 professional activities?

23 A Yes. I knew John Zapp before we died and Dorothy Hood
24 was his right-hand person and Dorothy was on a group of us
25 or in a group of us who went to China together and I got to

1 know Dorothy fairly well on that trip.

2 Q Anybody else?

3 A Those are the only ones at DuPont that I recall.

4 Q Okay.

5 A They had a different organization. They didn't do

6 things centrally. Their people were scattered all over the

7 place, and we very seldom saw them anywhere.

8 Q Did you ever go to the Haskell Lab in Delaware?

9 A No. I know of the Haskell Lab and I have been in

10 Bloomington but I haven't been to the Haskell Lab.

11 Q Okay. Who do you remember meeting from Exxon?

12 A The person I knew best is Dick Brief. I got to know

13 him well because he and I were both doing ventilation work,

14 laboratory hood work and so forth and publishing papers.

15 Gee, who else do I know at Exxon?

16 Q Well, you've mentioned Jim Hammond?

17 A I know Jim Hammond. He was in Texas. Dick is in New

18 Jersey.

19 Q How about Van -- excuse me.

20 A Huh?

21 Q How about Van Hendricks?

22 A I don't think I ever met Van Hendricks. I met people

23 who worked for Dick Brief in New Jersey. I was there on a

24 project as a consultant doing a walk-through of various

25 places and met several of the people there. I don't

1 remember their names right offhand.

2 Q Okay. How about Shell people?

3 A The person I knew best at Shell, the first one I knew

4 was Norm White. Norm was their toxicologist and I kibitzed

5 a poker game at the first AIHA meeting I went to in 1956

6 when Harold Hoyle and V.K. Rowe and Norm White and perhaps a

7 couple of other fellows were playing poker and I was not

8 enough of a poker player to join with them and, besides, I

9 knew better than to stick my head in a nest of alligators.

10 They were good. So, I've -- I've known Norm ever since

11 then, until he died. I got -- I haven't met him since.

12 Howard Kuznitz was the more or less replacement for

13 Norm. He was hired from NIOSH by Shell, and Howard has

14 become one of my best friends.

15 Q Is he still down in the Texas area?

16 A Yeah. He is in Houston.

17 Q Maybe we'll get to visit with him soon.

18 A Good.

19 Q I'll give him your regards.

20 A Please do.

21 Q Has Norm White died?

22 A I think so, yes. He was quite a bit older than I, but

23 I don't know. I know he retired from Shell and I think he

24 was sick at the time but I just don't know.

25 Q Huh. Okay. Let's see. Did you ever make the

1 acquaintance of Dr. Skeepers along the way?

2 A No. I never met him. I have crossed swords with him a
3 couple of times but it's been by correspondence and in
4 litigation but I never met the gentleman.

5 Q How about Bill Hazard?

6 A Oh, yes. I knew Bill Hazard quite well.

7 Q And this was from your professional work?

8 A Yes. I met him at one of the AIHA meetings. I was
9 introduced to him by probably Harold Hoyle or V.K. or one of
10 the other people from Dow and followed his career from then
11 on.

12 Q What was Mr. Hazard's reputation in your professional
13 field?

14 A Oh, great. Very good. Good man.

15 Q You say you crossed swords with Dr. Skeepers. What --
16 what were the topics of your disagreement?

17 A One was a lawsuit in New Jersey, I believe, where a
18 gentleman had died of a lung cancer. Dr. Skeepers on the
19 basis, apparently, of one of the medical reports called it
20 mesothelioma. The toxicologist -- not the toxicologist, the
21 pathologist, on the other hand, said it was adenoma
22 carcinoma; and I wrote a report saying so. And then, he
23 changed his report because of what I wrote and, in fact,
24 changed his report a third time before the trial.

25 Q Okay. Do you regard yourself as a toxicologist?

1 A Sure.

2 Q Just so I'll have a clear picture, what do you do to
3 become trained as a toxicologist other than this -- after
4 that six months or a year stint in the Dow lab?

5 A The toxicology that I have done has all been in
6 conjunction with either animals or people breathing things
7 and analyzing the results. When I worked at the Medical
8 College of Wisconsin after leaving Dow and getting my Ph.D,
9 all the work I did there was as a human inhalation
10 toxicologist.

11 Q You mean, you were using humans to do your experiments?

12 A Yeah.

13 Q These were just, what, for irritants?

14 A No. We did a lot of work with carbon monoxide. Most
15 of the work that we did to the humans involved were with
16 staff. I was one of those that was exposed, but mostly my
17 job was to expose others. Again, on the staff, until we
18 needed more volunteers; and we got -- we hired people to act
19 as volunteers for exposures. And then, we got a contract
20 with NIOSH through Herb Stockinger to do the human
21 inhalation toxicology on a group of 12 solvents; and we
22 spent about three years working on that project and never
23 did complete it, incidentally, and lost our contract.

24 Q It's a good thing. Well, when you are doing that, what
25 do you do? Do you expose people to known concentrations;

1 and then, you do blood sampling and urinalysis and such as
2 that?

3 A And such and such and such, yeah.

4 Q Okay.

5 A Basically, we were looking for behavioral changes,
6 trying to see if we could determine results of exposure
7 without invasive techniques. We did breath analysis. We
8 did blood analysis, urinalysis, and then, all sorts of tests
9 of the people. They were always exposed at or below the
10 threshold limit value.

11 Q You didn't lose anybody, did you?

12 A No, not by a long shot.

13 Q Okay. You haven't done any follow-up on them now to
14 see what's happened since your experiment, have you?

15 A I'm -- I'm one of the people who was exposed, sir.

16 Q Well, it kind of speaks for itself then.

17 A It sure does. All of my deficits result from that.

18 Q Let's jump back a second to the folks you knew from
19 other companies. I think I heard you say Carbide was a
20 company whose scientists or hygienists you encountered. Do
21 you remember specifically any folks from Carbide?

22 A No, I don't.

23 Q Well, certainly, they are more memorable than that?

24 A None come to mind at the moment.

25 Q How about -- how about Newt Ketcham? Do you remember

1 him?

2 A No. I don't think I met Newt. Oh, wait a minute. Who
3 was it from Carbide that I knew? Newt? No. It wasn't a
4 Newt.

5 Q There was a Newell Bolton?

6 A Newell Bolton. I knew a Newell Bolton, yes. He was
7 from Carbide. Oh, gee, there were a couple of other guys
8 whose names escape me.

9 Q Bob Peele?

10 A No. Never met Peele.

11 Q Ketcham was trained at Harvard under Drinker about the
12 time you started at Dow, if I remember right. It don't ring
13 a bell?

14 A No. It doesn't ring a bell at all.

15 Q Okay.

16 A Newell Bolton, that's it. Newell Bolton not Newt.
17 Newell Bolton, yeah.

18 Q Well, it was Newt Ketcham --

19 A Yeah.

20 Q -- and Newell Bolton?

21 A And Newell Bolton, yes.

22 Q All right.

23 A I didn't know Ketcham. I know Newell quite well.

24 Q I think he went on up to the top headquarters.

25 A Pretty much.

1 Q Now Hilton Head?

2 A Yes. He is at Hilton Head, as I recall.

3 Q Okay. Along the way in your education and training,
4 did you acquire any foreign languages?

5 A Yes.

6 Q Which ones?

7 A I, at one time, could read French and German with some
8 facility.

9 Q There was a sneeze there. You said you could read
10 French and German?

11 A Yes.

12 Q This was the requirement; and I propose the acquired
13 ability to deal in a foreign language was not unusual in a
14 technical education in the years you went to school, was it?

15 A No. It was not at all unusual. I actually started
16 with German and Spanish in high school, as I recall.
17 Spanish in high school. German in college. And then, when
18 I was working on my Ph.D, I took a couple of four hour
19 courses in reading scientific German; and, along with my
20 best friend at college, we taught each other how to read
21 French.

22 Q That's impressive. While you were at Dow, could you
23 point to any individuals who were responsible for kind of
24 staying current on the literature in the industrial hygiene
25 field?

1 A All of us in the industrial hygiene group had that
2 responsibility.

3 Q Okay. And was it the case that all of you in the
4 industrial hygiene group lived up to that responsibility?

5 A We did our best. Those of us who had specific areas of
6 expertise, for instance, Mr. Schneider, Ed Schneider, was
7 our noise expert; and he read far more noise literature than
8 I did. But I tried to keep up, as he did, and we had
9 meetings and in these meetings we discussed what was going
10 on.

11 Q So, one benefit of the meetings was exchanging
12 information that you might have had a particular interest in
13 that somebody else's specialty wouldn't cover?

14 A Yes. Well, for instance, I was doing this work on
15 laboratory hood ventilation and I kept the group abreast of
16 not only what I was doing but what Mr. Brief and others were
17 doing in that area.

18 Q Okay. And so, there was a bit of, what shall we say,
19 cross-pollination occurring between you guys as topics of
20 interest were read about?

21 A Oh, yes, always. We had another input to that in that
22 monthly the heads of industrial hygiene, safety, and medical
23 would meet; and we would get input through Mr. Hoyle from
24 that meeting. And, occasionally, we would be invited to the
25 meeting to talk to the group there about what we were doing

1 or what we knew was happening or whatever.

2 Q Okay. So, not only was this something that you
3 gentlemen in the Dow, what, biochemical?

4 A Well, it would be the industrial hygiene group of the
5 biochemical lab. We didn't meet with the toxicologists or
6 with the organic chemists or the wood preservative people or
7 whatever. We just met within our own group there.

8 Q Okay. Well, within your own groups not only -- within
9 your own group, not only did you industrial hygienists as a
10 matter of just professional interest share new knowledge but
11 it was -- it was actually built into the job that you would
12 do so because there were routine or periodic meetings for
13 that purpose?

14 A Yes.

15 Q Is that right?

16 A That is correct.

17 Q And I gather where you said there were monthly meetings
18 between the department heads of industrial hygiene, safety,
19 and medicine for the sharing of information that this, too,
20 was institutionalized at the level above you?

21 A It was.

22 Q So that it really wasn't something that was left to
23 chance at Dow, I believe?

24 A No chance at all. It was a monthly thing that
25 everybody -- they did every month without fail. They had

1 lunch over at the medical department and had a meeting.

2 Q Did -- did the medical department report to industrial
3 hygiene at Dow while you were there instances of suspected
4 occupational disease in the workers in the plants?

5 A Absolutely. The one sampling I did for asbestos
6 evaluating exposure there was at the behest of the medical
7 department.

8 Q And then, I am remembering that the doctor had had some
9 reason to be concerned about the particular man or men
10 involved in that work?

11 A No. The gentleman was ill, and the physician wanted to
12 rule out occupational exposure and couldn't do that without
13 a knowledge of what those exposures were and so asked me to
14 -- well, asked the industrial hygiene group; and I was the
15 one picked to go over and do the work.

16 Q I believe you said that your best memory of that was
17 that you did that monitoring in the vinyl asbestos floor
18 tile project area in 1958. Is that --

19 A That's what I said, yes. Since that time, I have
20 forgotten the date; and it was recalled to me when I read
21 the transcript of the previous portion of this deposition.

22 Q Is that still a good date?

23 A Yes. I think so.

24 Q Okay. Was that a survey that a written report would
25 have been made on?

1 A Yes.

2 Q And would that report have your name on it?

3 A Yes.

4 Q Were you provided or shown a copy of that report?

5 A Duncan Stewart showed me a copy of that prior to our
6 previous meeting and then retrieved it from my hands, and I
7 haven't seen it since.

8 Q Oh. I wonder if Mr. Almquist would have a copy of it
9 at this time because --

10 MR. ALMQUIST: We're coming up on our lunch break,
11 and I'll check and see.

12 Q (By Mr. Blanks) I confess. I have not -- I don't
13 think I've seen it. Well, now, Dr. Peterson, do you -- do
14 you appreciate that there has been sampling or monitoring --
15 what do we call it? Do we call it sampling or shall we call
16 it monitoring?

17 A Air sampling is a much more limited thing than
18 monitoring. Monitoring is following an exposure over an
19 extended period of time, generally, using air sampling
20 techniques. So, --

21 Q Okay. So, here we would be talking about sampling?

22 A Yes.

23 Q All right.

24 A This was sampling one or two days, no more than that.

25 Q Do you appreciate that there had been sampling done in

1 this work area at Dow earlier than your 1958 effort?

2 A Yes. I believe Mr. Schneider was the one who went over
3 and did the work.

4 Q This would have been maybe on the third floor of
5 Building 433?

6 A Yes, sir. Absolutely. Plastics technical service.

7 Q Okay. Who was Mr. Johann? Do you remember that name?

8 A Stan Johann was an engineer that we hired who worked
9 with our group for a short period of time and then left.

10 Q Did you have the benefit of his report from 1955 when
11 you went in 1958 to sample again that area?

12 A I don't have any independent memory of that. So, I
13 can't answer your question. I don't know.

14 Q Was the --

15 A I would say probably, but I don't know.

16 Q Was the routine or the procedure at Dow for you to go
17 and look at reports of prior sampling efforts before you
18 would go out and do a new one?

19 A Generally, yes.

20 Q Was it the case that these reports of sampling were
21 kept in the files in your department there at Dow?

22 A They were.

23 Q How were they organized?

24 A That's a good question.

25 Q Thank you.

1 A You are welcome.

2 Q I've been trying all morning to get a good question
3 out.

4 A I knew you would get there sometime.

5 MR. JONES: He had more confidence in you than we
6 did.

7 MR. BLANKS: Somebody is supposed to object now.

8 A We had two ways of getting to reports. One was by
9 building, if I remember correctly. And then, we had another
10 outside index that was a very peculiar kind of filing system
11 that had a tabbed card for this kind of work that we did;
12 and we could trace something down that way. But beyond
13 knowing that there were these two things, I can't give you
14 any further details. I just don't remember.

15 MR. FLATTEN: I think that is Art's stomach.

16 MR. BLANKS: Lord have mercy. Did you pay extra
17 to get this?

18 MR. ALMQUIST: I had nothing to do with the
19 arrangements, Mr. Blanks. That was strictly your doing.

20 Q (By Mr. Blanks) In 1950 -- gee. In 1955, as best you
21 remember it, what would have been the sampling device that
22 should have been used at Dow to sample for asbestos in the
23 air in Building 433?

24 A It depends. What I used was a membrane filter method;
25 and I did this deliberately, knowing that the midget

1 impinger was the method of choice. I had taken too many
2 samples with the midget impinger and spoiled them. It's a
3 very difficult procedure to use. So, I used the membrane
4 filter; and I realized that the membrane filter is a far
5 more efficient method of picking up particles and fibers
6 than was the midget impinger. And, therefore, it was a
7 conservative method. I used that, had it analyzed at the
8 analytical lab, and reported what my results were.

9 Q But you jumped right around my question. What --

10 A What method should I have used?

11 Q No. No. No. In 1955, --

12 A Uh-huh.

13 Q -- when Mr. Johann made a survey of Building 433, what
14 device would have been available to use?

15 A Available? Midget impinger, electrostatic
16 precipitator, cascade impactor, AISI tape sampler, filter
17 paper sampler. I don't know whether the membranes --
18 membrane filters were developed by then or not. It was
19 about that period of time that the mixed cellulose ester
20 membrane filter appeared on the market. So that would have
21 been another thing he could have used. There were others,
22 too. We had, oh, perhaps a dozen different ways of sampling
23 the air for particulate material.

24 Q But to get a sample that you could compare against the
25 TLV, what would you have had to use?

1 A The best way of doing that would have been to use the
2 midget impinger because that is the method that Dreessen and
3 his bunch used to gather the data that eventually became the
4 TLV.

5 Q I'm out of tape.

6 A Oh.

7 Q You may have run --

8 A You will just have to rely on your memory then.

9 Q -- 30 seconds or 11 seconds.

10 MR. ALMQUIST: This will probably a good lunch
11 break.

12 MR. BLANKS: Do we get to stop for lunch?

13 MR. ALMQUIST: Yeah, we do.

14 MR. BLANKS: Okay.

15 THE WITNESS: Absolutely.

16 MR. BLANKS: Are you taking us to lunch? I'm
17 taking you to lunch?

18 (After the lunch break, the proceedings continued
19 as follows:)

20 Q (By Mr. Blanks) Okay. Dr. Peterson, we've returned
21 from lunch; and I think we were talking about using the
22 midget impinger to sample for compliance with the TLV
23 standards because the midget impinger was the method used to
24 do the sampling that the TLV standards were based upon.

25 A That's correct.

1 Q Okay. And that's the way Mr. Hoyle taught you or you
2 read it or both when you started early with Dow, right?

3 A Sure. That's right.

4 Q And am I right in remembering that while at Dow you did
5 not use a midget impinger, ever, to sample for asbestos in
6 air?

7 A That's correct.

8 Q And you did use a membrane filter to sample for
9 asbestos in air in 1958, you said?

10 A Yes.

11 Q Now, are you really pretty sure about that date and
12 that method?

13 A I'm sure about the method. The date is being quoted by
14 me today after reading the previous transcript of this. I
15 don't have an independent recollection of the year. I'm
16 sorry.

17 Q I was just -- I'm not arguing with you but just
18 thinking that that might be a few years early for the
19 membrane filter method. I don't know.

20 A I don't think so. No.

21 Q You don't think so?

22 A Millipore Filter had come out with their filter
23 sometime in the late '50s and I don't recall exactly when
24 but we were right on that technology and using it as soon as
25 the technology was available.

1 Q And you also mentioned using a Bausch and Lomb dust
2 counter somewhere along the way as one of the devices that
3 would have been in the arsenal back in the early '50s.

4 A We had at least one, maybe more, B&L dust counters,
5 yes.

6 Q And that device gave you, like, kind of a quick and
7 dirty sampling tool. Would that be fair?

8 A It's certainly quick. So far as being dirty is
9 concerned, it is more conservative than the impinger because
10 the illumination used to examine the particles is dark field
11 rather than light field; and with dark-field illumination,
12 one can see a lot more particles than one can see with
13 light-field illumination.

14 Q But the B&L dust counter was not really the right
15 device to use if you were going to be sampling against the
16 TLV standard, correct?

17 A That's correct. It wasn't; but it was the one used,
18 for instance, by Fleischer and Drinker and Hugh in 1946 and
19 they knew that as well. But it's handy. It's quick, and
20 you -- it does not require a transfer of liquids in the
21 field. It's a nifty device. I used it several times at Dow
22 but never for asbestos.

23 Q When was it, as best you understand, that Dow began to
24 collect information on incidents of occupational disease in
25 its own work force?

1 A I can't answer the question. I don't know.

2 Q Was this being done when you came to the company in the
3 early '50s, as you recall?

4 A So far as I'm aware, it was.

5 Q Do you know, Dr. Peterson, if any of your colleagues at
6 Dow attended the -- that late 1964 symposium in New York
7 that was held at Mount Sinai on asbestos?

8 A I don't know.

9 Q You never heard?

10 A So far as I'm aware, none of our crew went there.
11 However, a toxicologist could have gone. I wouldn't have
12 been aware of it.

13 Q All right.

14 A But none of the industrial hygiene crew attended.

15 Q In any event, you would have had the proceedings
16 available in publications whenever they appeared in print
17 from the Mount Sinai and Dr. Selikoff symposium, right?

18 A Yes.

19 Q Mr. Almquist has handed me a document that looks like
20 it was Exhibit No. 3 in Mr. Hoyle's deposition from three or
21 four years ago. It's dated January 22nd, '58, and
22 apparently by a J.E. Peterson. Let me hand that over and
23 see if you recognize that as the report that you talked
24 about earlier on the asbestos sampling at Dow?

25 A It is.

1 MR. BLANKS: With your consent, Mr. Almquist, I'm
2 going to make a copy of this and attach this to the
3 deposition as Exhibit 580122 capital DOWC.

4 MR. ALMQUIST: You have my permission. You do
5 have a copy of it already, I'm sure, in the exhibits to
6 Mr. Hoyle's deposition.

7 MR. BLANKS: Somewhere. Somewhere, but I didn't
8 bring all of Mr. Hoyle with me, unfortunately. So, we'll
9 make a copy and provide that to the reporter.

10 MR. ALMQUIST: Sure. You've identified what that
11 is?

12 THE WITNESS: Yeah. Yeah.

13 MR. ALMQUIST: I don't want my copy to get away
14 from me.

15 MR. BLANKS: No. I -- I understand. That's why I
16 keep pulling it away from you.

17 (Marked Exhibit No. 580122 DOWC and is attached
18 hereto.)

19 Q (By Mr. Blanks) Just out of curiosity, is there a
20 place in the report where we would likely read about the
21 methodology you used?

22 A Sure. There -- there must be. That's the way -- I
23 always did it that way.

24 Q Okay. You'll recognize the format better than I. So,
25 perhaps you could look.

1 A Oh, for goodness sake. I used the B&L dust counting
2 microscope - how do you like that? - and electrostatic
3 precipitator.

4 Q Well, I really wasn't trying to lay a trap here for you
5 because I --

6 A Well, that's fine.

7 Q I don't remember having seen this thing before.

8 Although, I'm sure I did somewhere.

9 A Apparently, I used the B&L dust counter and an
10 electrostatic precipitator in the analysis. I thought it
11 was a membrane filter.

12 Q Well, I understand. So, it's possible, then, the
13 membrane filters came out a little after this 1958?

14 A It certainly is possible. Now, you also asked if I had
15 seen Stan Johann's report; and I mention it in this report
16 that I had seen it.

17 Q Oh, okay. Now, I had the impression, perhaps wrong,
18 that this Bausch and Lomb dust counter device had a
19 magnifier built into it. Am I wrong about that it?

20 A It is a magnifier. The B&L dust counter consists of,
21 actually, about three different pieces, all in one
22 apparatus. It only weighed about two or three pounds.
23 There was a tube that was about three-quarters of an inch in
24 diameter and about six inches long that one would put some
25 wet blotting paper in.

1 And then, using a squeeze bulb, one would suck air into
2 that tube and let it sit there for a few seconds until the
3 air became saturated with water vapor. And then, you pulled
4 a plunger, either halfway out, it was marked, or all the way
5 to determine the amount of air that was being sampled.

6 The air that was being sampled went through a slot.
7 And when it got through the slot, it expanded; and the
8 expansion cooled the air. And because everything was cool,
9 the water vapor condensed on all of the particles there.
10 Just beneath that slot was a microscope slide that could be
11 rotated to contain, I think, about 32 samples, if I remember
12 correctly.

13 That was the sampling that was done. So, you could
14 squeeze the squeeze bulb, get a sample in there. The
15 squeeze bulb flushed this tube. It didn't do anything else,
16 just flushed the tube with air, and you'd squeeze it a few
17 times, take a sample, and you were ready to take another
18 sample a minute later, if you wanted to do it that way.

19 Later, one would use the built-in microscope, which was
20 a dark-field microscope with dark-field illumination built
21 in so that the particles appeared in a line because they
22 were beneath this slot in the apparatus and were separated
23 and appeared like stars in a dark sky. And that's the
24 so-called dark-field illumination. So that you could see
25 many more and much smaller particles than you could with the

1 light-field illumination used on midjet impinger samples.

2 Q And was this about a -- okay. That is the most clear
3 picture I have heard of that device. Thank you.

4 A Good. You are entirely welcome.

5 Q Did -- what, was there some sort of a sticky medium on
6 the slides to catch these particles to hold them there like
7 a Vaseline?

8 A Some people used that, used Vaseline. We never did.
9 The thing is, the particles were wet; and they stuck to the
10 slide because they were wet when they hit. And then, the
11 water would evaporate and leave the particle.

12 Q Would the -- was the magnification, what, on the order
13 of about 100 power?

14 A I don't recall the magnification.

15 Q Okay. Do you remember using at Dow the textbook
16 "Industrial Hygiene" edited by Lanza and Goldberg, per
17 chance, from about 1939?

18 A I don't believe so. I don't think I have seen that.

19 Q How about a text called "Industrial Toxicology"? Does
20 that ring a bell?

21 A Fairhall, yes.

22 Q That's one you all would have had there?

23 A Yes.

24 Q I think you said that earlier.

25 A Yes. We did have Fairhall's text. In fact, we had two

1 or three copies of it, at least.

2 Q And Drinker and Hatch's "Industrial Dust" from '36?

3 A When that -- yes. When that came out, we -- we had a

4 copy. I'm -- I'm sure that I read it from cover to cover,

5 but I don't recall anything about it.

6 Q Okay. I'm thinking that the first edition was 1936.

7 A That could be. That was not the edition that I read.

8 It was a later edition.

9 Q How about the text "Silicosis and Asbestosis" by Lanza

10 from right before the war?

11 A I don't think so.

12 Q You don't remember seeing that one?

13 A No, I don't.

14 Q In any event, you don't have any of these in your

15 personal library now, do you?

16 A I do not.

17 Q Do you recall any time when it was the practice at Dow

18 to use contractors to do the dustier work in the plants,

19 sir?

20 A We had contractors in the plant, but they weren't hired

21 to do the dustier work. They were hired to do work that

22 just didn't fit into the work schedule of the crews that we

23 had around.

24 For instance, I recall one circumstance where a carbon

25 tetrachloride producing plant was torn down. We didn't have

1 people that did that kind of work. So, a contractor came in
2 and did it.

3 So, there were -- there were lots of things that
4 contractors did, but it wasn't simply because the work was
5 dusty. It was because that was what contractors did.

6 Q Do you recollect that Dow had insulators among its
7 employees or that Dow had employees who did insulation work?

8 A I have no such recollection. It could be. It could
9 not be. I just don't know.

10 Q All right. Do you understand that Dow was one of the
11 first US companies that actually had its own toxicology
12 laboratory and tox department?

13 A Yes. This is true.

14 Q Can you tell us what the other early ones would have
15 been?

16 A DuPont certainly established the Haskell Lab around the
17 same time that Dow did. I know that others followed. I
18 know that Monsanto didn't. I think Carbide had a group
19 doing some work, but I wasn't very familiar with their
20 toxicology group and when it started and so forth.

21 Q I think that the testimony we've had from others was
22 that Carbide was relying on an outside lab in the Pittsburgh
23 area for special projects maybe run by a Dr. Henry Smith?

24 A In fact, that's right. The Mellon Institute Lab,
25 that's correct.

1 Q Back to contractors a second. Did the Dow industrial
2 hygiene program that you worked in, '53 to '65, concern
3 itself with contractors in the Dow plants?

4 A Sure.

5 Q And as a practical matter, what did that amount to, in
6 general terms?

7 A I recall and I told you about this demolition of the
8 carbon tet plant that took place. I was assigned to go
9 visit the demolition site and to make sure that people were
10 not doing things in variance with the Dow policy.

11 Before going out into the site and wandering around and
12 watching people work, I talked with the contractors as a
13 group; and, basically, I wanted to warn them that they were
14 likely to encounter some hydrogen sulfide in the plant.
15 They knew far more about hydrogen sulfide than I did. So, I
16 learned more about the acute effects of hydrogen sulfide
17 from those people; and they impressed me sufficiently that I
18 didn't bother them about it. They knew what they were
19 doing.

20 Q And did I understand from the things you said that Dow
21 was also requiring the contractors to, basically, follow the
22 same safety and safety rules as the Dow employees did?

23 A Yes, that's correct.

24 Q And would I be right that the safety department at Dow
25 would have been the ones to, generally, to -- to enforce

1 that requirement?

2 A That's correct.

3 Q Would you recollect any occasions when you had to go do
4 any sampling of work areas for contractors or not?

5 A I don't recall, specifically, any air sampling that I
6 did where contractors were working; but I did an awful lot
7 of air sampling in some that could well have been under such
8 circumstances. It was nothing special at the time. So, I
9 didn't worry about it.

10 Q You did mention one of your projects being concerned
11 with ventilation and vent hoods that you observed while you
12 were doing your plant inventory. Do you recollect that you
13 encountered any exhaust ventilation in fabricating shops
14 where thermal insulation was being handled with that?

15 A No. I don't recall any fabricating shops. Let's put
16 it that way.

17 Q Okay. It may have been there, maybe not, maybe you had
18 ventilation, maybe you didn't?

19 A Yes. I don't recall a fabrication shop there. I
20 recall other fabrication shops but not Dow.

21 Q Okay. Well, as a general proposition, based on the
22 state-of-the-art in the 19 -- early 1950's, would the use of
23 mechanical ventilation in an insulation fabricating shop be
24 a not only sensible but probably necessary engineering
25 control for dust?

1 A Sure. Absolutely. I mean, this is mentioned in the
2 Fleischer and Drinker paper that the Navy people spent a lot
3 of time, effort, and energy trying to devise ways of
4 handling these materials safely; and I don't see any reason
5 why others couldn't have done so, too.

6 Q And, in fact, ventilation of this sort was one of the
7 controls that was used in these shipyard insulation shops,
8 right?

9 A Yes.

10 Q Am I right in thinking, Dr. Peterson, that this
11 principle of ventilation was not something newly discovered
12 in the '50s or the '40s?

13 A That's correct.

14 Q Okay. So, even if we go back to the '30s or the '20s,
15 I mean, the machines may have differed; but the principle
16 was well-known to industrial hygienists?

17 A You can go back centuries, if you wish.

18 Q All right, sir. Do you recollect that the shipyard
19 workers that Mr. Fleischer and Drinker and others reported
20 on in 1946 also had the benefit of other engineering
21 controls like wet methods and --

22 A Yes.

23 Q -- good housekeeping procedures?

24 A These are all accepted standard procedures in
25 industrial hygiene and have been since way before I got in

1 the field.

2 Q Well, while we are here on this stop along the way,
3 then, would you tick off for me the general principles that
4 would be applicable to dust control that have been
5 well-known in your field back through the early part of this
6 century?

7 A Okay. Once upon a time, I wrote a chapter in the NIOSH
8 instruction manual about controlling hazards in the
9 occupational environment. You will find that in my CV.
10 But, basically, one controls hazards from materials that one
11 can inhale by -- oh, I'm not even going to try and count
12 them all offhand.

13 One either isolates the process or one isolates the
14 workman or one changes the materials or the process that is
15 being used or one uses wet methods to suppress dust. The
16 isolation process can be very complex or very simple. You
17 can isolate with time, distance, or mechanical barriers
18 around the workmen or around the process.

19 This -- this stuff is not new. It's been used in some
20 form or another since there were people working with
21 hazardous materials with greater success as time went on.
22 We know more today than we did a long time ago.

23 Q A lot of this has to do just with good housekeeping, as
24 well, in the worksite, doesn't it?

25 A Oh, yes. That's correct.

1 Q And I suppose if we are talking about, let's say,
2 thermal insulation, for example, just the way you handle the
3 material, physically handle it in cutting it and installing
4 it and removing it can have some effect on the amount of
5 dust that might be generated?

6 A There is no question about that.

7 Q And what happens with the refuse as it is put on the
8 ground or falls to the ground and how frequently that's
9 cleaned up can bear on the amount of dust put into the
10 environment, as well, doesn't it?

11 A Certainly.

12 Q And that, too, was a principal that Fleischer and
13 Drinker espoused in the shipyard program?

14 A They did.

15 Q And am I right in remembering that there was, also, a
16 medical monitoring program that went along with this
17 shipyard insulation?

18 A Yes.

19 Q And all of these principles you have been discussing in
20 the last couple of minutes were ones that Drinker and others
21 laid out early on in the war when they proposed regulations
22 for the Navy shipyard shipbuilding programs, right?

23 A Yes.

24 Q And covered not only asbestos but silica and welding
25 fumes, for example?

1 A Just about anything that people could get into.

2 Q All right. So, looking back, we could say that the --
3 while the machines and the tools and the technology today
4 has advanced to some degree or another, the basic principles
5 of industrial hygiene really haven't changed much over your
6 lifetime, not just your work lifetime but your lifetime, as
7 well?

8 A That's right. The same philosophy has pertained all
9 the way along.

10 Q One thing we forgot to mention in this series that you
11 were setting out for us was protective equipment,
12 respirators. I guess that would be a way of isolating the
13 workmen themselves. So, that would be an example --

14 A Yes.

15 Q -- of isolating the workmen?

16 A In fact, that's the best example is the use of
17 protective gear of all kinds by the workmen, whether it's
18 boots and gloves or a respirator or whatever that one wears,
19 an apron, so forth.

20 Q And I guess that's the reason why in a lot of
21 industries and even back to the turn of the century the
22 workmen would have factory garb to wear at work to where
23 they wouldn't actually be wearing their street clothes in
24 their job with dust and chemicals?

25 A That certainly has pertained all the way along as a way

1 of protecting the workmen, yes.

2 Q And by the same token, a way of preventing that dust or
3 hazardous liquids not be carried home on the workman's
4 person to his household, as well, right?

5 A Yeah. Where that could be a problem and the problem
6 was recognized, that was a reason for using different gear,
7 clothing, and so forth at work, to not carry it home. We
8 did that a lot in the formulation of insecticides. We had
9 the people that worked in the insecticides wear
10 company-supplied clothing of all kinds so they wouldn't
11 carry the stuff home with them.

12 Q Do you have any clear recollection of the nature of the
13 Dow respirator program while you worked there?

14 A We didn't have a respirator program, per se. The
15 industrial hygiene group or the safety people usually would
16 make recommendations about respirators. The industrial
17 hygiene crew was mostly interested in making sure that if
18 people were using respirators they were using the proper
19 respirators.

20 The only group that I'm aware of that routinely used
21 respirators were those people running the chlorine cells and
22 they had the so-called sucker respirators for chlorine that
23 they wore around their necks until they smelled some
24 chlorine. And then, they put the nose clip on and stuck the
25 respirator in their mouth and went on working. This became

1 a very controversial thing at one point; but at any rate,
2 that's the only group that I recall that routinely used
3 respirators.

4 Q Did you ever have occasion to do any work out at the
5 Colorado facility that Dow was running for the ADC?

6 A No. I almost got there once, but the problem that I
7 was to go out on apparently got solved. And so, they didn't
8 go ahead and get my Q clearance that would have been
9 required.

10 Q I'm sure you and your colleagues must have appreciated
11 that there were problems getting a good fit of respirators
12 on your workmen back in the '50s?

13 A That would have been the case if we had very many
14 people using fitted respirators, but the sucker respirator
15 you stick in your mouth. It's a piece of tubing, and there
16 is no fit there. So that those respirators required no fit,
17 and we didn't have a problem with the fit.

18 Q But on a half-face, mechanical, filter-type respirator,
19 fit is an issue, isn't it?

20 A It certainly is.

21 Q You might remember one of the Dow hygienists out at the
22 Colorado facility -- what is it? Rushing Flats? Rocky
23 Flats?

24 A Rocky Flats.

25 Q Rocky Flats. -- actually developed a fit-testing

1 program for respirators probably around the time you left
2 Dow.

3 A I think it was about that time. We were aware that not
4 all respirators fit all people. I mean, any idiot can be
5 aware of that. And, therefore, even attorneys might be
6 aware of it. You never can tell.

7 At any rate, we at the safety department always had
8 respirators available that had been made by very many
9 manufacturers so that one could obtain a good fit if you
10 tried.

11 Q Okay. I mean, it was the case that no single
12 respirator would fit every person in the group?

13 A That's true.

14 Q And probably no person in the group could get a fit
15 with every single respirator in your inventory?

16 A One would expect that to be the case, as well.

17 Q Very briefly, on medical monitoring at Dow, is this an
18 area that you can help us with for that period the early
19 '50s to mid '60s?

20 A Very peripherally, yes. I was aware of medical
21 monitoring programs that I requested; but other than that, I
22 wasn't aware of the details of the medical monitoring done
23 by the medical people.

24 Q There was enough staff to do medical monitoring at Dow
25 in the early '50s, I assume?

1 A Yes, there was.

2 Q I think you told us before that periodic physical
3 examinations were available for any individual who requested
4 one?

5 A Yes. I think that's my recollection of Dow policy.

6 Q Do you recollect that physical examinations were
7 regularly required for any particular trade or craft?

8 A Not a trade or craft. Instead, it was as a result of
9 potential exposures, particularly as Dow got into the
10 cholinesterase-inhibiting insecticide business. Then, we
11 had periodic monitoring of plasma and red cell
12 cholinesterase levels in the people who were so potentially
13 exposed. That's one that I had something to do with. So, I
14 know about it.

15 I know that other medical monitoring was done; but
16 where and under what circumstances, I don't know.

17 Q Okay. Were you aware that at least by the time of
18 World War II that Standard Oil, now Exxon, had a medical
19 monitoring program for its workers potentially exposed to
20 asbestos?

21 A No. I was not aware of that.

22 Q Do you know if there was any regular program at Dow for
23 having chest films made of people who would be potentially
24 exposed to dust in the workplace?

25 A I'm not aware of that.

1 Q Was there any kind of biological monitoring program at
2 Dow, other than for the cholinesterase-exposed workers?

3 A Once Dick Stewart started working with Dow as a
4 physician in the medical department, he started using breath
5 monitoring or breath analysis as a technique for monitoring
6 exposures to various solvents. I helped Dick do some of the
7 basic research that lead to being able to do that. But
8 that's the only biological monitoring that I'm aware of,
9 unless urine analysis was used where trichloroacetic acid or
10 trichloroethanol would be expected as a result of exposures
11 to trichloroethylene or perchloroethylene or something of
12 that sort.

13 Q So, you would take a chemical analysis of a person's
14 exhalation to look for solvent exposures? Is that what I
15 understood?

16 A Yes. That's correct. Look for the concentration of
17 solvent in the exhaled air, yes.

18 Q I see. Okay. Do you know if pulmonary function
19 testing was done at the Dow plant in Midland?

20 A I don't recall.

21 Q You never had one there, anyway?

22 A No, I never did.

23 Q When we visited before, you said something to me to the
24 effect that the 5 million particle TLV for asbestos was
25 based on the wrong kind of sampling method. Do you remember

1 that?

2 A Sure.

3 Q Could you explain to me what you meant by that?

4 A Well, it turned out as a result of subsequent research
5 that it's the fibers of asbestos that cause injury. Whereas
6 the midget impinger sampling and counting methods, you can't
7 separate one from the other except physically. I was
8 looking at all particles, and it isn't the rounded particles
9 that cause any injury at all. It's the fibers. So, in that
10 respect, we were looking at the wrong thing so far as the
11 sampling method is concerned because the midget impinger is
12 a pretty rotten sampler for fibers; and we were looking at
13 the wrong counting method because we were looking at all
14 particles and not just fibers.

15 The subsequent research, some of which was done at
16 Saranac Lake by the people there, showed that it's fibers
17 that count in this business; and the British taught us to
18 use the membrane filter method for analyzing air and
19 counting fibers.

20 Q Are you -- was it the case, then, of when the -- what
21 became the TLV or what was originally called the maximum
22 allowable concentration for asbestos was developed that
23 these particles were counted, basically, as a surrogate for
24 the potentially harmful material in the dust?

25 A Not as a surrogate. The people who were doing this

1 thought that it was all the particles that caused the
2 injury. They had no appreciation for the fact that injury
3 was caused only by fibers.

4 Q Well, were they able to count fibers back in the late
5 '30s when this TLV was proposed?

6 A Sure. Read the Dreessen report, and you will find some
7 fiber counts in it. Nevertheless, subsequent research has
8 shown that the midget impinger is a pretty crummy sampling
9 method for fibers. It is much better for nonfibrous
10 particles than it is for fibers. We didn't know that then.

11 Q Okay. You are saying back then, though, when Dreessen
12 did his studies that he had the technical capability, the
13 equipment that would let him see and count fibers?

14 A Yes, but not to sample fibers. He didn't have the
15 technical equipment that would allow him to sample and then
16 count only fibers. We didn't have the membrane filter,
17 which is what is necessary to do that.

18 Q Okay. Let me make sure I understand. You say he
19 didn't have the capability to sample and count fibers?

20 A (Witness nodding head affirmatively.)

21 Q So, what was your reference to Dreessen's report about
22 fibers, then? You threw me there.

23 A Oh, there is a table - I don't remember the table
24 number. There are a lot of tables in that report - where he
25 talks about the percentage of fibers amongst the particles

1 that were counted in some areas. So that, sure, with a
2 light-field microscope and midget impinger sampler you can
3 see fibers, no question about it, if you are exposed to
4 asbestos.

5 You can't see very many of the fibers that actually
6 were present in the air that was sampled, however, because
7 the sampling method is inefficient for fibers. Just because
8 it's inefficient, however, doesn't mean that it didn't find
9 any. Sure, it found fibers.

10 Q Okay. And so, with the -- with the sample, you get
11 some of them -- some fibers, if you were dealing with air,
12 that had asbestos in it and you could see and count some
13 fibers with the light-field microscope but you would be
14 undercounting what was really there. Is that --

15 A That's correct.

16 Q -- what you are telling me?

17 A You wouldn't be undercounting. You would be counting
18 all the fibers you could see. So that's not undercounting.
19 That's undersampling, if you would. We are missing a lot of
20 the fibers when using the midget impinger to sample air.

21 Q But, nevertheless, the TLV that came to be developed in
22 roughly -- when was this? Tell us. '46, did you say?

23 A '38 was the Dreessen report. The first TLV was '46.

24 Q Okay. And as we saw in something we were looking at
25 after lunch, that's also been called a MAC, maximum

1 allowable concentration.

2 A It was called the MAC when it was first developed.

3 They didn't start using the phrase "threshold limit value"

4 until the late '50s or early '60s.

5 Q Okay. But the -- then, this standard for maximum

6 allowable concentrations that you said first was published

7 in '46 was, nevertheless, based on samples taken with a

8 midget impinger and counts made with the light-field

9 microscopy to determine the number of particles per cubic

10 foot?

11 A That's right. That's a very short summary of the

12 process. There is a lot more that goes into it, but that's

13 fine.

14 Q Okay. And the method on which the asbestos standard

15 was based didn't change until when? Sometime in the late

16 '60s?

17 A About 1974.

18 Q And the standard itself, the 5 million particles per

19 cubic foot for asbestos, when did that change?

20 A Well, it began to be changed in 1968. The change did

21 not take place fully until the '70s. I think it was '74.

22 It might have been '72. I don't remember for sure.

23 Q Well, in 1968, I think at Dow the -- your department

24 was preparing to move to a lower number, like a 2 million

25 particle standard, if I remember correctly?

1 A That's probably correct. I wasn't there.

2 Q Yes, sir. But am I right, then, that it wasn't until
3 sometime in the early 1970's that the 2 million particles
4 per cubic foot standard for asbestos took the place of the
5 5 million particle standard?

6 A The 2 million particle standard never took the place of
7 the 5 million particle standard. It was proposed in 1968
8 that the standard be changed to either 2 million particles
9 per cubic foot or 12 fibers per CC. After 1968, we only had
10 proposed standards until 1974, when the standard that was
11 adopted was 5 fibers per CC.

12 Q So, in terms of the ACGIH standard recommendation, it
13 went from being 5 million particles per cubic foot to 5
14 fibers per CC in one jump, with --

15 A Yes.

16 Q -- proposed changes in between that never took --
17 really became the standard?

18 A Yes. That's correct. That is the way it went.

19 Q Okay. And I know that they don't exactly equate to
20 each other, but what is the -- what multiple of five fibers
21 per CC is the 5 million particles per cubic foot?

22 A Well, the way one looks at that is to say, okay, maybe
23 ACGIH and OSHA and so forth knew what they were talking
24 about and that 2 million particles per cubic foot was
25 equivalence to 12 fibers per CC, maybe. Actually, earlier

1 work and subsequent work has shown that that kind of
2 equivalent would only apply to one circumstance, at best.
3 So that it's a wild, hairy ass guess, really.

4 Q Okay. But is there a --

5 A That's the way it is.

6 Q Is there a relation between the five fibers per CC to
7 -- relative to 5 million particles per cubic foot, or are
8 they just not comparable?

9 A No. You have got -- no. They aren't really
10 comparable. However, if 2 million particles per cubic foot
11 is equivalent to 12 fibers per CC, that means that we've got
12 a factor of six between the two. And so that six fibers per
13 CC -- no. I'm sorry.

14 Q Equal 1 million particles per cubic foot.

15 A Something like that.

16 Q Yeah. Okay. Now, it's -- it's often said, I think,
17 that the ACGIH reviews these standards every year and they
18 publish in perhaps not yearly but every few years their
19 TLV's but the truth is that there wasn't any serious review
20 of the asbestos standard by the ACGIH between 1946 and 1966,
21 was there?

22 A There may well have been. The fact of the matter is,
23 we didn't have any publications that they could refer to
24 that would mandate the change in anything. So that whether
25 the standard was reviewed annually, as ACGIH says it is, I

1 really can't say because I wasn't there.

2 Q Okay. So, there may have been. There may not have
3 been. You don't know?

4 A That's correct.

5 Q When you began to work on the ACGIH committees in --
6 after 1965 --

7 A (Witness shaking head negatively.)

8 Q You didn't?

9 A Your predicate is wrong. I never worked on an ACGIH
10 committee.

11 Q Well, you probably should have.

12 A That could be.

13 Q Okay. You never worked on an ACGIH TLV committee at
14 all?

15 A Of any kind of committee for ACGIH.

16 Q Well, then, I'll leave that alone; and we'll move on.

17 A Thank you.

18 Q Do you know of any products that Dow made that had
19 asbestos in them?

20 A No, I don't.

21 Q Did Dow make a stop leak or antifreeze product?

22 A Dow made an ethylene glycol antifreeze; but it was
23 never sold under a Dow label, as far as I am concerned.

24 They may have supplied ethylene glycol as an antifreeze
25 formulation to others. Wait a minute. There was a Dow

1 product that was based upon distilled or deionized water,
2 and it wasn't an added product. They would replace the
3 coolant in a vehicle's engine with this coolant based on
4 very, very pure water and pure ethylene glycol; and it
5 wouldn't corrode anything in the system. And it may have
6 had corrosion inhibitors in it, so far as I know; but I
7 don't think there was any asbestos in it.

8 Q Okay. Dow made an ethylene glycol product which you
9 think it sold to someone else for packaging and --

10 A Oh, I'm sure of that. Sure.

11 Q -- and retail?

12 A Yes. Ethylene glycol was one of Dow's big products,
13 and it sold it to all sorts of people, all sorts of other
14 chemical companies.

15 Q Yes, sir. But Dow never sold under its own label at
16 retail, so far as you know?

17 A Just that one I'm talking about. I think that was sold
18 under the Dow name, but I'm not even positive of that.

19 Q Okay. You don't know if Dow used asbestos in its
20 ethylene glycol formulation?

21 A I don't know why they would; but, no, I'm not aware of
22 how they formulated the ethylene glycol that was sold. To
23 the best of my knowledge, what Dow sold was pure ethylene
24 glycol.

25 Q Okay.

1 A Other people might have used it and mixed it with all
2 sorts of things.

3 Q While you were a Dow industrial hygienist, do you
4 remember seeing insulators at work in the plants?

5 A Never.

6 Q And you have already told us you don't know if or what,
7 if at all, asbestos insulation materials were used in Dow
8 plants?

9 A That's correct.

10 Q Whose they were, if they were, --

11 A That's right. I just --

12 Q -- or how they were?

13 A I know nothing about it. Even less than that. We get
14 into negative numbers.

15 Q Did you Dow industrial hygienists do work for other
16 companies while you were there, sir?

17 A In one respect and only one that I am aware of and that
18 is one of Dow's big products was Styrofoam. Styrofoam was

19 polystyrene blown with methylene chloride. So, all the
20 little bubbles -- not methylene. Methyl chloride. All the

21 little bubbles had methyl chloride, and a lot of this stuff

22 was fabricated by Dow customers by sawing it up. And when
23 you saw these little bubbles, methyl chloride was released;

24 and Dow was scared silly this was going to hurt somebody.

25 So, they had a deal with their customers that any time

1 Dow wanted to, Dow could come into the customer's plant and
2 monitor for methyl chloride concentrations where the
3 Styrofoam was being cut up.

4 I had nothing directly to do with that program. That
5 was Ed Schneider's program, and he ran all over the country
6 doing this periodically. But with that program, no Dow
7 customer was ever injured by methyl chloride, to the best of
8 my knowledge.

9 Q This is a form of a products stewardship program, you
10 might say, correct?

11 A Yes.

12 Q Did you Dow hygienists do any work for Dow Corning
13 along the way?

14 A Very occasionally. I think one of us would go over
15 there on an emergency basis of one kind or another. I
16 recall going over to Dow Corning once, I believe. I think
17 Larry Silverstein went over a couple of times while I was
18 there, and that was the extent of it.

19 Q Do you recall ever seeing people sandblasting in the
20 Dow plants?

21 A As I said, I may have monitored the -- or sampled the
22 silica exposures of a sandblaster at Dow; but beyond saying
23 that that may have happened, I can't answer the question any
24 better than that. I just don't know.

25 Q Okay. How many plants were you responsible for or how

1 many plants did you have to cover while you were a Dow
2 hygienist?

3 A Well, most of my work was done in Midland, in the
4 Midland division. Most of the work in outlying plants,
5 outlying divisions of the company was done by Mr. Hoyle. It
6 was only if Harold were unavailable or for some other reason
7 that one of us went to the other plants.

8 I actually got to Freeport, Texas, twice, I believe. I
9 got to Sarnia, Ontario, once or twice; over in Bay City once
10 or twice; to Ludington, Michigan, once; and I think that is
11 it. I don't think I did any other work elsewhere.

12 Q Okay. During your plant talks, slide talks, you called
13 them, to the workers, while you were at Dow was asbestos
14 ever discussed in those slide talks --

15 A I don't recall --

16 Q -- with the workers?

17 A -- ever doing so. I don't recall any plant where
18 asbestos was handled in Midland.

19 Q Were there meetings between industrial hygiene persons
20 and union representatives in the Dow facilities while you
21 were there?

22 A Sure.

23 Q Did you participate in any of those?

24 A No. Mr. Hoyle did that kind of work.

25 Q Do you know whether or not such meetings had records

1 made to show what was discussed?

2 A I don't know. Let me back up a little bit. Whenever
3 we went out to give a slide talk, we would have as many
4 people as the plant could spare for production in our slide
5 talks; and we almost always had union representatives in
6 that group. So that I met a lot of union reps but not on a
7 formal basis. I believe Harold did eventually, but that's
8 simply a belief. I don't know that from seeing it or being
9 told about it directly.

10 Q In addition to the slide talks, were there other
11 methods you used at Dow to inform your workers of
12 occupational disease hazards they might face in the plants?

13 A Not directly that I recall, no. That was the main one
14 until we developed our data sheets; and then, they became
15 available to everyone in the plant.

16 Q And you place the data sheets in what period, sir?

17 A You just found the publication. Was it '61? At any
18 rate, it was before that. It was probably '59, '60,
19 something in that neighborhood.

20 Q And data sheets being, let's say, a forerunner of the
21 material safety data sheets we speak of today?

22 A Yes, they were. In fact, I think they are better than
23 the MSDS's of today. They generally are.

24 Q Prior to 1965, when you left Dow to go back to the
25 university, are you aware of any efforts at Dow to warn or

1 instruct people, workers potentially exposed to asbestos

2 about the health hazards that they might face?

3 A No.

4 Q Would you say that in 1965, at the time you left Dow,

5 that you and your colleagues knew what a no effect exposure

6 level for asbestos was?

7 A We would take the no effect level as being at the TLV.

8 All of us were. And at that time, in 1965, it was 5 million

9 particles per cubic foot.

10 Q That seems to be a little bit at odds with your

11 statement to me earlier that you also recognized in the '50s

12 and '60s that it was possible to -- for a person exposed at

13 levels below the TLV to develop disease?

14 A Oh, I know that now. At that time, I didn't know it.

15 No way. Unless we look at the TLV's in a philosophical

16 fashion to realize that a threshold limit value is not an

17 absolute line between safe and dangerous, that you can be

18 exposed to above a TLV and perhaps not suffer any injury.

19 You can be exposed below it and perhaps suffer some injury.

20 But these are perhapses. And so far as a line exists, the

21 line is the TLV at any particular time, for me and for most

22 industrial hygienists.

23 Q So, you're recalling that in the '50s and '60s you

24 treated the TLV as a bright line between a safe and a

25 possibly harmful level of exposure?

1 A In so many words, yes.

2 Q Okay.

3 A However, all of us, certainly at Dow and most
4 industrial hygienists I know of, did their best to make sure
5 that exposures would never exceed the TLV and would be kept
6 as low below the TLV as practical.

7 Q And why would you want to keep exposures as low as
8 practical?

9 A Simply because of the very faint possibility of injury
10 and because of the idea that we didn't want people exposed
11 to things where an exposure was not a necessary part of what
12 they were doing.

13 Q And would I be right in thinking that even in the mid
14 '50s you would have recognized that there was a wide
15 variation in individual susceptibility to different
16 stressors that you might have in the workplace?

17 A I think that's been known as long as people have
18 thought about such things.

19 Q And in your teaching and studying in the health science
20 area, you certainly would have learned or known that even in
21 major epidemics not everyone falls prey to the virus or the
22 bacteria or the disease; isn't that true?

23 A That's true.

24 Q Well, was it the practice at Dow to err on the side of
25 caution when dealing with TLV's for harmful materials or

1 just to run right up to the line?

2 A We tried to be safe always. We tried to err on the
3 side of caution, not on the side of possibly overexposing
4 people. That was our aim always.

5 Q And did you think that was the only reasonable approach
6 to take to protecting the workers from hazards and chemical
7 hazards and --

8 A Sure. I can't think of any report that I have written
9 where I didn't say, "Okay. This exposure is safe. It's
10 okay to have. However, if you do this, you can reduce the
11 exposure." I think we all do that. We all adopt that
12 philosophy on just a part of industrial hygiene. I'm not
13 simply saying this is Dow people. I think it's every
14 industrial hygienist I know will do that.

15 Q Or ought to do that?

16 A Most of them do do it. They say if the exposure is
17 okay, if you go over the TLV, they will still point out ways
18 you can reduce the exposure. I think this is a very logical
19 part of industrial hygiene.

20 MR. BLANKS: A short stop, Art?

21 MR. ALMQUIST: Yes. You read my mind.

22 (After the break, the proceedings continued as
23 follows:)

24 Q (By Mr. Blanks) All right. We were talking about
25 keeping those exposures as low as possible when we broke

1 and --

2 A As low as practical.

3 Q As practical. With as low as possible being the goal

4 and as low as practical being the practical effect and I

5 mean --

6 A Joe, one time somebody sat down and calculated that

7 each breath we take contains 200 molecules of air that went

8 through the lungs of Cleopatra. You can never get things as

9 low as possible. All you can do is stay within the realm of

10 practicality.

11 Q All right. And that was certainly the goal of the

12 industrial hygiene program at Dow while you worked there,

13 right?

14 A It was.

15 Q Now, do you know by the time you left if there was some

16 kind of a database kept at Dow on the death certificates of

17 annuitants and employees that would give them a basis for an

18 epistudy?

19 A I would be surprised if that weren't the case, but I

20 sure don't know from my own knowledge.

21 Q Okay.

22 A Gee, the way you are paging through those things, we

23 don't have much to go.

24 Q Well, just about half the pile; and we are doing good.

25 A Okay.

1 Q I noticed on your CV you had listed some representative
2 clients, and you noted Monsanto as one of them. Could you
3 just tell me what sort of projects you have done for
4 Monsanto?

5 A Good question. Monsanto has a plant in Charleston,
6 West Virginia, and they were having some problems and
7 contacted me as a consultant to come down and help them
8 solve their problems and I did.

9 Q In the plant?

10 A In the plant.

11 Q It had nothing to do with litigation?

12 A No. That's right. Not at that time. I did some other
13 work for Monsanto that had something to do with litigation;
14 but it was preparing a book, if you will, that was to be
15 used to educate attorneys on the issues surrounding dioxin
16 exposures and their consequences.

17 Q Per chance in connection with the agent orange
18 litigation?

19 A Yes.

20 Q So, when you went to the Charleston plant, you were
21 there just as an outside industrial hygiene consultant to
22 provide expertise for a particular issue that had come up at
23 the plant?

24 A Yes.

25 Q There were folks that were available to do just that

1 sort of thing, that is, consult on industrial hygiene

2 questions back even in the early 1950's, were there not?

3 A Let me back up. Maybe that wasn't for Monsanto. That

4 was for FMC that I did this. What did I do for Monsanto

5 except that book? I don't remember right offhand.

6 Q Well, okay. Let me go back to the question I put to

7 you. Whether it was Monsanto or FMC or Dow or anybody else,

8 Stouffer Chemical, you came in as an outside consultant to

9 offer your expertise in solving a problem or a perceived

10 problem?

11 A Yes, I did.

12 Q To make recommendations for --

13 A Whatever.

14 Q -- controls and preventive measures, whatever might be

15 appropriate?

16 A Yes.

17 Q Now, my question, then, was: Weren't there people,

18 industrial hygienists, available to do that kind of

19 consulting work for companies even back in the 1950's?

20 A Probably. I certainly don't know anybody who was a

21 consultant in industrial hygiene in the '50s, but I would be

22 surprised if there weren't such people. I just don't know

23 who they would be.

24 Q But did you ever come to learn that, for instance, the

25 Industrial Hygiene Foundation would do surveys on request?

1 A For their members, --

2 Q Yes.

3 A -- yes; but not just on a general basis.

4 Q And did you ever learn that Phil Drinker and others
5 from the Harvard Public Health School were available to do
6 consulting with private industry?

7 A No.

8 Q Will you be surprised to learn that that occurred?

9 A No, not at all. I just didn't happen to know it.

10 That's all.

11 Q Okay. And this wasn't a problem at Dow because you had
12 your own industrial hygiene department, at least by the time
13 that Mr. Hoyle was hired?

14 A That's right.

15 Q Do you recall seeing any material data sheets or safety
16 data sheets before you left Dow that dealt with
17 asbestos-containing insulation materials?

18 A No.

19 Q If these had come to Dow for its use, would it have
20 come into your department?

21 A Yes.

22 Q Would you think that by 1960, for example, that at Dow
23 you would have needed to be told by an insulation supplier
24 about the potential health hazards of asbestos in its
25 insulation?

1 A No.

2 Q How about in 1955, when you had had a couple of years
3 experience?

4 A Same answer.

5 Q You wouldn't have needed the asbestos companies to tell
6 you that there were health hazards associated with certain
7 levels of exposure to their product?

8 A No.

9 Q Has your welding rod work or your welding fume work
10 been focused on the manganese issue exclusively?

11 A No. When we first had lawsuits regarding welding rods,
12 they were focused on asbestos that was used in the coatings
13 of some electrodes.

14 Q And what conclusions or opinions did you express about
15 any asbestos hazard connected with the welding rod coatings
16 and fumes?

17 A That there was none.

18 Q What did you base that on?

19 A Two things: One, that asbestos is completely destroyed
20 when it hits the arc and the first contentions were that
21 people were breathing asbestos that appeared in welding fume
22 and this simply cannot be.

23 The second contention was that people got exposed to
24 asbestos from the coatings when they bent the welding rods.

25 A welder will maybe bend a welding rod once or twice in his

1 lifetime, but it isn't likely to happen much more often than
2 that.

3 And on that basis, I said I don't believe that there is
4 any hazard whatsoever from asbestos and welding rod fumes.

5 Q Okay. Nobody ever suggested to you that it was
6 customary to take a rod and crush it to roll or crush the
7 coating so you could use the rod for a filler?

8 A Sure. That was done; but not a filler, really. A
9 spacer is what they usually used the doggone things for, and
10 that wasn't very often. I have never talked to a welder who
11 did much of that. I have talked to a lot of welders.

12 Q It must have been better welders than me, then.

13 A That could be. I wouldn't know.

14 Q Okay. Stouffer, do you know what kind of work you did
15 for them, Stouffer Chemical?

16 A It was in conjunction with the coating of plastic films
17 with paint one way or the other, whether it was paint or ink
18 or whatever that they were doing at some plant or another,
19 that I came in and did a walk-through inspection and told
20 them how they should handle this so their people wouldn't be
21 overexposed to the chromates in that.

22 Q How about your work for GMC, Ford, and Chrysler, sir?
23 What did that involve?

24 A Several things. The very first consulting I ever did
25 was for GMC in a case litigation in Colorado which involved

1 carbon monoxide. Did I ever do anything else for GMC? I

2 don't recall.

3 International Harvester, did you list that?

4 MR. ALMQUIST: Forgot that one.

5 A That was carbon monoxide cases, as well.

6 Q (By Mr. Blanks) How about GM -- I'm sorry, Ford and

7 Chrysler?

8 A Ford was some sort of litigation. Chrysler was not --

9 well, it was workers' comp where a guy was -- well, there

10 were two or three workers' comp cases that I got involved

11 in.

12 Q Involving exposures at work?

13 A Yeah, that's right.

14 Q Not involving asbestos, silica, benzene?

15 A No, none of those materials.

16 Q Did you ever do any brake shoe cases for the automotive

17 companies?

18 A No. I have evaluated exposures from working with brake

19 shoes, but I have never done anything for the companies.

20 Q Ever done any litigation work in the asbestos brakes

21 material area?

22 A Once upon a time, I was shipped a lot of information, a

23 lot of papers regarding brake shoes and asbestos in a case

24 or cases in Orange County. This is when I was still in

25 Wisconsin, but it never went beyond that. It never even

1 went to deposition. So, I don't know what happened with the
2 cases or anything else; but that's the only time I have
3 gotten involved in that at all.

4 Q You told me last time we chatted that you had had some
5 dealings with a Jon Konzen a Konzen of --

6 A Yes.

7 Q -- OCF. Could you tell me about that?

8 A Jon was at the University of Michigan working on his
9 Master of Public Health. At the same time, I was at the
10 University of Michigan working on my Ph.D. So, I met Jon at
11 that time. I, to the best of my knowledge, haven't seen him
12 since.

13 Q Was he an Owens-Corning Fiberglass employee at the time
14 he was working on his postgraduate degree?

15 A I have no idea. He was a physician, but I don't know
16 who sent him there. It could have been OCF. I just don't
17 know.

18 Q Well, I was just curious. If you haven't seen him
19 since then, how do you -- is it you associate him with OCF?

20 A Oh, I have seen his name on some papers where he is
21 identified as an OCF medical director; and it's a peculiar
22 name. It's J-o-n rather than J-o-h-n, and Konzen is a
23 peculiar name. So, it stuck in my mind. I doubt if I could
24 pick him out of a group of people; but, nevertheless, I have
25 met him, I do know him, and I respected him.

1 Q Do you understand he is still living?

2 A Yes.

3 Q Do you know where, more or less?

4 A I have no idea.

5 Q How about Ms. Cathy Johnson?

6 A Cathy is a gal that I worked with in producing that

7 book for the Monsanto attorneys. She, at that time, was not

8 working for OCF. She left OCF and -- or whatever. She

9 wasn't working for OCF, anyway. She was an independent

10 consultant. She may have gone to OCF since then. I am not

11 even sure of that. I don't see Cathy very often, either.

12 Q What was her area of expertise?

13 A In industrial hygienist.

14 Q And where did you last believe her to be living or

15 working?

16 A In Ohio, northern Ohio somewhere.

17 Q Do you know that -- whether or not she is a member of

18 your association?

19 A Well, I belong to three associations, in fact, several

20 associations.

21 Q Well, I mean --

22 A She is probably a member of the AIHA. Beyond that, I

23 don't know.

24 Q And your dealings with Mr. Hazard, we mentioned him a

25 little earlier today, but that was limited to contacts at

1 professional society meetings?

2 A Yes, that's correct.

3 Q You never had occasion to call on him for any

4 information or vice versa?

5 A Not that I recall, no.

6 Q You suggested earlier that the Fleischer-Drinker study

7 was maybe the best information available in the early '50s

8 on asbestos insulation work; is that fair?

9 A Yeah.

10 Q Can you tell us to what extent Dow tried to follow this

11 program that Fleischer and Drinker discussed in their

12 article?

13 A Dow didn't follow the program, so far as I'm aware.

14 I'm not aware of any work the industrial hygiene group at

15 Dow did with asbestos in any form and certainly not with

16 thermal insulation.

17 Q Do you -- have you learned whether OCF's insulator

18 employees to any extent followed this program that Fleischer

19 and Drinker laid out in their 1946 article?

20 A I know very little about OCF and OCF employees. So,

21 the answer is no.

22 Q You know just what they choose to tell you; is that

23 right?

24 A They don't tell me very much. Let's put it that way.

25 Q Would I be right in thinking that if we -- if we added

1 up all of your consulting fees since you left Dow that OCF
2 would have paid you more than all the rest of the clients
3 combined?

4 A Oh, no. No. I don't think so.

5 Q No?

6 A No. If we did that, added up all my consulting fees
7 since I left Dow, what I have billed and been paid by OCF
8 might be as high as 20 percent of those fees. It certainly
9 wouldn't be any more than that.

10 Q You have been working for OCF in litigation since,
11 what, the late '80s?

12 A No. Since about '92.

13 Q Oh, that recently?

14 A Yes.

15 Q You had done some work in the late '80s for somebody
16 else?

17 A I did some work in the early '80s for OI through one of
18 their outside attorneys. He was trying to prepare me to
19 become a state-of-the-art expert for OI. That culminated in
20 a portion of a deposition and never did anything more from
21 OI than that.

22 In the mid '80s, I did some work. I did some -- I will
23 try and talk more clearly. I did some work for this
24 consortium of asbestos manufacturers in litigation. I was
25 in two or three trials for the firm of Foley & Lardener in

1 Milwaukee, but I never was aware of what companies were in
2 that consortium. So, I can't tell you much more than that.
3 It wasn't until about '92 that I got involved with OCF at
4 all.

5 Q Okay. In your consulting for Dow since you left the
6 company, has any of that involved occupational disease
7 claims?

8 A No.

9 Q Jumping back to the time you monitored removal of
10 asbestos-containing material from a building in
11 Milwaukee, --

12 A Yes.

13 Q -- I think you said that involved ceiling tile,
14 acoustical plaster, and some pipe insulation. Do you have
15 any recollection today what -- roughly when that was done?

16 A Yes. I can tell you when. 1984. In fact, in the fall
17 of 1984.

18 Q And for whom it was done?

19 A It was done for a company that used an acronym for its
20 name. The acronym was MARS, and I believe it was Midwest
21 Asbestos Removal Service from northern Illinois somewhere.

22 Q So, this was on an abatement project of a single
23 building for the abatement contractor?

24 A Yes, that's right.

25 Q Your asbestos brake shoe monitoring projects, I gather

1 at least one of these was done for Municipal Bus Company;

2 and there was more than one time you did this, right?

3 Milwaukee and St. Louis?

4 A Gee, excellent memory or whatever.

5 Q Short term.

6 A Yes. Milwaukee and St. Louis. Milwaukee a couple of

7 times and St. Louis once.

8 Q You monitored while the workers were turning the actual

9 asbestos brake shoes or pads on a lathe?

10 A These were brake blocks in St. Louis. I didn't do any

11 of that in Milwaukee. They didn't do any trimming of the

12 brake blocks there.

13 Q In Milwaukee?

14 A In Milwaukee. They did in St. Louis.

15 Q And do you remember what kind of dust levels you

16 measured there?

17 A They weren't hazardous in comparison to the TLV.

18 That's all I recall. I don't know the numbers.

19 Q Okay.

20 A I just know they weren't above the TLV or even a major

21 fraction of the TLV.

22 Q Did you do any monitoring when the men were blowing out

23 the brake drums?

24 A I don't really remember. What struck me was this

25 turning on the lathe of the darn brake blocks, and I

1 remember doing that. I did some other work there, too. I
2 was concerned about lead exposures and repairing radiators
3 and so forth, and I think that the only time I sampled for
4 asbestos was in this turning process.

5 Q So, you wouldn't have taken any area samples in the
6 shop?

7 A That's correct. Not for asbestos, at any rate. I
8 might have taken area samples.

9 Q And you weren't concerned one way or the other with
10 ventilation issues in the shop?

11 A No. The -- the results of my sampling were that there
12 wasn't any hazard involved in the process, certainly for the
13 people doing it, standing right there operating the lathe.

14 So, it -- there wouldn't have been a hazard for other people
15 either.

16 Q Okay. And in these cases you were hired by -- in these
17 instances you were hired by Municipal Bus Company?

18 A No. In St. Louis, I was hired by Fred S. James and
19 Company, insurance brokers out of Chicago, to monitor one of
20 their clients.

21 In Milwaukee, I was hired directly by the Municipal
22 Transportation facility or whatever they are called.

23 Q So, I suppose you, the way you figure it, that a person
24 doing brake work full-time is not going to get sufficient
25 occupational exposure to asbestos dust to cause disease?

1 A That was my feeling then, on the basis of the samples
2 that I took and the TLV at the time, yes.

3 Q Well --

4 A They were working very carefully, and they didn't put
5 much dust in the air. They certainly didn't go up there
6 with an air hose and blow dust all over the place. That had
7 been outlawed in both shops, I'm sure, for some time before
8 I got there.

9 In Milwaukee, they were experimenting, incidentally,
10 with brake blocks that didn't contain asbestos; and they
11 hated the things. They didn't work.

12 Q Okay. So, your opinion that you wouldn't get hazardous
13 asbestos dust levels doing brake work was based on
14 observations of how it was being done when you did this
15 sampling?

16 A In conjunction with the sampling results, yes.

17 Q Right.

18 A Yes.

19 Q Right. And then, it isn't necessarily an opinion about
20 conditions that may have existed in the past in any facility
21 or any workshop?

22 A That's correct.

23 Q Okay. I understand you now. Let's go back to the
24 University of Michigan when you were there with Warren
25 Cooke. Did you actually take courses from Mr. Cooke?

1 A Yes.

2 Q Was it Dr. Cooke?

3 A No. Mr. Cooke.

4 Q Mr. Cooke?

5 A He never even got a master's degree, to the best of my
6 knowledge.

7 Q Was it the Zurich Insurance Company that they were
8 with?

9 A Yes, that's it, Zurich. Thank you. Good for you. I
10 had forgotten. That tickled my memory.

11 Q A regular storehouse of knowledge here.

12 A Oh, obviously, yeah.

13 Q And had Mr. Cooke had experience as an industrial
14 hygienist other than at the insurance company, do you know?

15 A I really don't know. I never really talked to him
16 about -- very much about his past. I told you about the
17 radiation stuff, and I knew that he had worked for Zurich as
18 an industrial hygienist. But other than that, I didn't know
19 anything about his past.

20 Q Did you take courses from Warren Cooke himself?

21 A Yes, sir.

22 Q What were the subjects that you covered or he covered?

23 A General industrial hygiene. In fact, the course that I
24 eventually taught myself was modeled very much after
25 Warren's course at that time. So, again, to find out what

1 it is, read my book. Memorize my book.

2 Q Did you bring your book today?

3 A No, I didn't. I was sure you must have several copies

4 of it.

5 Q Well, if I knew where to get one, I would probably get

6 one.

7 A You would get it from ACGIH. They are the publishers

8 of the 1991 edition.

9 Q And you would autograph a copy if I sent it to you?

10 A I would be delighted to autograph a copy.

11 Q When did the book first come out?

12 A 1977.

13 Q Now, that's the one I would really rather have.

14 A That, I have one copy left; and that's one where the

15 cover was put on upside down. It was -- and somebody who

16 bought it sent it to me and said, "Can you send me a

17 replacement for this?"

18 And I said, "Sure." So, I traded.

19 But that's the only one I have left. I've made the

20 mistake of lending copies to attorneys, and I -- I never get

21 them back.

22 Q Did you have any other teachers that are worth

23 remembering from Michigan? Well, I mean, anybody with a

24 reputation or the big name that Warren Cooke had?

25 A Nobody can come to close to Warren's name. I took

1 toxicology courses from Herb Cornish, one or two courses
2 from him. I had a course in health physics from a Donald
3 Barber. And I've forgotten the name of the guy that taught
4 the analytical chemistry or analytical industrial hygiene
5 stuff. I had all the conventional course work there.

6 Q Did the doctoral program involve any field work?

7 A No. Certainly not for me. I had more field experience
8 than the sum total of the staff and the students at the time
9 I was there.

10 Q Well, I don't doubt it. Okay. You know, we were
11 talking sometime ago; and there were -- there was at least
12 one question that you didn't answer.

13 A Uh-oh.

14 Q And I should have written it out before we resumed; but
15 you had expressed a distrust for case reports of disease and
16 a high level of confidence, I think, in epidemiology
17 studies, particularly those that were supported by
18 industrial hygiene data or work.

19 A Sure.

20 Q And I was asking you whether you -- your philosophy was
21 to wait until you had a valid epidemiology study showing a
22 causal relationship between a material and a health effect
23 before you would implement controls to protect the workers.

24 A And I didn't answer the question?

25 Q I think that you didn't because that nasty gentleman

1 that was with you -- I mean, that was there started
2 objecting and then Mr. Almquist got into the act and it all
3 went downhill from there.

4 A At Dow -- to answer your question, at Dow --

5 MR. ALMQUIST: Let's -- just a minute. Do you
6 have a question pending, basically?

7 Q (By Mr. Blanks) I do. What -- if you were going to
8 answer that question that you didn't get to because of all
9 the attorney distraction, what would the answer have been?

10 MR. ALMQUIST: Just for my purposes of clarity,
11 can you tell me what the question is?

12 MR. BLANKS: See, here they go. Here they go
13 again.

14 MR. ALMQUIST: I haven't said a word all day, Joe;
15 but I am not really sure what your question is. I want to
16 be clear on that.

17 Q (By Mr. Blanks) Why don't you give me the answer; and
18 then, we'll figure out the question?

19 A Okay. That's fine. We are --

20 MR. JONES: Toxicology for 100.

21 A At Dow we often were involved in controlling exposures
22 when we had no idea what the TLV might be or what the
23 results of epidemiology might be or, in fact, what the
24 results of animal experiments might be, just based on the
25 idea that you try and keep exposures as low as practical.

1 And sometimes it was to avoid irritation. Sometimes it was
2 to avoid an increase in plasma or a decrease in plasma
3 cholinesterase or red cell cholinesterase or things on this
4 order.

5 So that, when possible, if I am making a decision, I
6 would like to base a decision of a TLV, if you will, on the
7 basis of chronic animal inhalation toxicology, as well as at
8 least a couple of good epidemiological studies of people who
9 are exposed. But we can't always have that. So, quite
10 often, we have to deal with part of that.

11 The problem with case reports is that very seldom do we
12 have any idea what the exposures have been. It's the very
13 odd, unusual case report that has exposure information; and
14 without that, the report is essentially worthless, as far as
15 I'm concerned.

16 Q (By Mr. Blanks) Okay. That seems to be a fair answer
17 to the question.

18 A That wasn't asked. Okay.

19 Q That in the best of all possible situations, you have
20 epidemiology studies backed up with industrial hygiene
21 studies where you could form an opinion about exposure
22 levels and consequences?

23 A And we'll also toss in animal studies, as well, with
24 that.

25 Q All right.

1 A One of my students at one time, when I was teaching at
2 the University of Illinois, formulated a thing with regard
3 to TLV's for cholinesterase-inhibiting materials,
4 insecticides, and pointed out that most of them had no basis
5 of animal studies, human studies, or anything else. They
6 were simply done by comparison with parathion and what it
7 would do to people and some ideas about how much less toxic
8 this stuff was than parathion. That's not a good TLV, as
9 far as I'm concerned.

10 Q But it's maybe better than nothing?

11 A Sure, absolutely, it can be better than nothing,
12 particularly when a number is decided upon by a group of
13 people who really are experts in the area and are giving us
14 their best guess. Although, it may be a best guess in the
15 form of a TLV; and it isn't labeled as a best guess.
16 Nevertheless, they probably know more about it than I do;
17 and, therefore, I'll go along with what they say.

18 Q Now, this didn't stop you folks at Dow from sometimes
19 validating these TLV's on your own. Am I right?

20 A That's correct.

21 Q And you had, obviously, the capability to do that when
22 you felt the need to?

23 A We can. And, in fact, on the basis of chronic animal
24 work, we sometimes promoted a Dow TLV, you are misusing the
25 term, that was lower or more restrictive than the TLV

1 committee and then tried to persuade the TLV committee that
2 that's the way to go. This was done particularly for vinyl
3 chloride. That's one compound that comes to mind where at
4 Dow we would allow exposures that were far less than the
5 TLV. That's all. Then, the stuff turns out to be a pretty
6 good liver carcinogen. We didn't know that at the time, but
7 the animal experiments had shown that it was doing things to
8 the liver that it shouldn't be doing at lower concentrations
9 than the TLV.

10 Q And I suppose if you hadn't have been looking for this,
11 it would have been a long time before it would have come to
12 your attention?

13 A Certainly a possibility that we can't discount.

14 Q And wasn't otherwise brought to your attention by
15 outside sources until, what, some years after Dow decided to
16 take an extra level of care with the vinyl chlorides,
17 correct?

18 A That's right.

19 Q On the subject of carcinogens, cancer-causing
20 materials, if we can go back to the Dow mind-set or
21 philosophy or policy program while you were working there,
22 was there a point where the company thought it ought to tell
23 workers about potential cancer hazards; and let me try and
24 be more precise with that preface.

25 If you suspected that a certain material were a

1 carcinogen, was it the Dow policy to inform workers of that
2 fact?

3 A Not per se. There was never such a policy. On the
4 other hand, if we suspected that a material was a carcinogen
5 and we were giving a talk in an area where this stuff was
6 handled, we certainly would mention that to the workers as
7 part of our presentation of the slide talk or in answer to
8 questions about it.

9 Q Okay.

10 A But we wouldn't make a special effort to go out and
11 say, "Hey, this stuff is -- can cause cancer. Stay away
12 from it." Instead, it was our policy to try and make sure
13 that people wouldn't get hurt, period, whether it was cancer
14 or whether the stuff would reach up and bite them in the
15 eye. This was our policy.

16 Q Okay. Let's move up the causal ladder a step to talk
17 about something that you regard as a possible carcinogen as
18 opposed to merely suspected. Was it the policy to tell the
19 workers potentially exposed about possible carcinogens?

20 A Same answer.

21 Q All right. How about the material that you had come to
22 regard as a probable carcinogen?

23 A Same answer, except that we probably wouldn't be
24 handling it. There were very doggone few known human
25 carcinogens amongst the chemicals that could have been

1 handled at Dow and that were handled at Dow. So, I am
2 talking about my perception of what our policy would be.
3 Right offhand, the only thing I can think of that Dow's
4 chemical employees might have been handling that was a
5 carcinogen was beta naphthalene; and we didn't have any beta
6 naphthalene in the plant, as far as I know. And this stuff
7 was a potent enough bladder carcinogen that we probably
8 would have said, "We don't want to handle it here. Somebody
9 else can handle it."

10 Benzidine came to be in that category, again; but we
11 didn't have any processes that used benzidine. So, it's a
12 kind of a moot question. I don't think it ever really arose
13 while I was at Dow.

14 Q Okay. How about if we ask those questions about
15 materials that you regarded as being a known carcinogen.
16 Was it the Dow policy while you were there to tell employees
17 they were working with a known carcinogen?

18 A In the same -- the same answer that I gave you before.
19 It's in conjunction with what we were doing in the plant.
20 If the question arose, we certainly would answer it that
21 way. We might have pointed out this the stuff is a possible
22 or possibly could cause cancer if the exposure is great
23 enough. I mean, we didn't hide things like this; but we
24 didn't make a special effort to go out and contact each
25 employee who might be exposed and say, "This stuff might

1 give you cancer."

2 Q Was there a reason why you wouldn't have done that?

3 A Sure. Every chemical handled at Dow, every chemical
4 handled at any chemical plant has the capability of killing
5 people. How that death occurs is kind of immaterial in many
6 respects. Certainly, to the person who dies, it's
7 immaterial how he died, once he is dead.

8 So that to single out cancer as being the thing to tell
9 people about, no, we didn't. We would tell them that the
10 stuff could chew up your liver; and as a result of that,
11 sure, you could die. It could chew up any organ you had;
12 and as a result of that, you could die. But we didn't focus
13 on the death. We focused on what one has to do to avoid the
14 injury this stuff can cause.

15 Q So, am I understanding that your approach, then, was
16 even with a -- merely a suspected carcinogen was to attempt
17 to minimize or eliminate the exposures wherever practical to
18 that material in your workplace at Dow?

19 A Sure. But you don't even have to use the word
20 "carcinogen." This was always our philosophy with
21 everything that we handled, to try and reduce exposures to
22 the lowest practical exposure.

23 Now, when we handled stuff that was extremely toxic for
24 one reason or another and, in particular, the
25 cholinesterase-inhibiting insecticides, we had plants that

1 were essentially enclosed. We isolated the plant from the
2 worker so that people just didn't have exposure to this
3 stuff; and we could use that technique with anything and for
4 any reason.

5 But we didn't have materials that we recognized as
6 being possible carcinogens in the plant when I was there.
7 So, to say that we had a policy, we didn't. I'm just
8 talking about Dow's philosophy or the philosophy of the
9 industrial hygiene group and how it would have treated such
10 things.

11 Q When did you first come to learn of mesothelioma as a
12 disease?

13 A 1965. The fall of 1965, August of 1965.

14 Q Back when you were at the -- when you went to the
15 university?

16 A That's right.

17 Q Would you be surprised to know that the API Medical
18 Advisory Committee had actually listed mesothelioma as a
19 tumor to follow in their tumor registry back in the early
20 1950's?

21 A Yes. That would surprise me. They must have had a
22 pretty good crystal ball.

23 Q Did you ever have any contact with the folks at
24 Kettering Institute?

25 A "Ever" is a big word. Ever. I have been to the

1 Kettering Institute, and I have given talks to the NIOSH
2 people in conjunction with a foundry survey that we did. I
3 guess I have been at Kettering three or four times in my
4 life.

5 Q Ever meet Dr. Kehoe there?

6 A No, never did. I know about Dr. Kehoe, but I've never
7 met him.

8 Q J.J. Fair?

9 A I know about him, too, but never met him.

10 Q Okay. Did you ever learn of the epistudy that the
11 folks at Kettering had begun for the API member companies in
12 the '50s?

13 A No.

14 Q Let me run through some names here that we didn't get
15 to talk about last time and maybe you can tell me if you
16 know what these people did. And these are going to be Dow
17 names, I'm thinking.

18 A Okay.

19 Q Dale McCouskey?

20 A Doesn't ring any bells.

21 Q R.H. Boundy?

22 A Yes. Dr. Boundy was one of the high muckity-mucks at
23 Dow in the laboratory area; but exactly what his job was, I
24 don't remember.

25 Q An M.D. or a Ph.D?

1 A No, Ph.D.

2 Q Roy De --

3 A Degesero.

4 Q Degesero.

5 A Roy went to the industrial hygiene lab, was hired by
6 the industrial hygiene group after I left. I had dinner
7 with the industrial hygiene group at a couple of the annual
8 meetings and met Roy that way.

9 Q Now, did that have plants outside the United States
10 while you were there?

11 A Yeah. In Canada.

12 Q Did they have any in the Netherlands, South America,
13 or --

14 A Not that I'm aware of. It could well have happened. I
15 just didn't know about it.

16 Q And what was Roy's background?

17 A I don't know. I know he was an industrial hygienist
18 working for Royal, and that's all.

19 Q Oh, he was there while you were there?

20 A No.

21 Q No?

22 A He left. I left; and then, Roy came.

23 Q Oh, I see. Excuse me. Let's see. Dr. Gay, do you
24 remember him?

25 A Oh, yes, very well.

1 Q And his job was?

2 A He was director of the medical department.

3 Q During the --

4 A Whole time I was there.

5 Q Okay. How about Dr. Earhart?

6 A That doesn't ring a bell at all.

7 Q Did you ever meet John Hill?

8 A John Hill was working at the Pittsburg, California

9 plant as an industrial hygienist. And, yes, I did meet

10 him. He came to Midland once, I believe, and was there for

11 a couple of days; and that's the extent of it.

12 Q Do you remember him also being out at Rocky Flats at

13 some point?

14 A That could be. No. I don't remember that, but I

15 wouldn't be surprised.

16 Q How about a fellow named Hobbs, Farrell David Hobbs?

17 A I'm sure that I met him at one time, but I don't place

18 him.

19 Q Let's see. Donald Irish we spoke of earlier.

20 A He was director of the Dow Chemical research

21 department.

22 Q How about Wilbur Kittinger?

23 A No.

24 Q Dr. Leong, L-e-o-n-g, Basil K. Leong?

25 A Basil Leong worked at the -- worked for V.K. in the

1 toxicology group.

2 Q While you were at Dow?

3 A I think he was there when I was there. It was -- we
4 may have crossed paths. I am certainly aware of him since
5 that time. So, we may have been contemporaries for a year
6 or six months or something like that.

7 Q Was he a, you say, a toxicologist?

8 A Yes.

9 Q How about Don McAllister, what was he?

10 A Don McAllister was a toxicologist, and he was a guy who
11 did the writing of warnings on labels for Dow products.

12 Q Did you do any work on the label project?

13 A Don occasionally would ask the industrial hygiene group
14 how this stuff was handled in the plant and what the
15 consequences of overexposure were or something on that order
16 and I was one of those he asked and I had some input on a
17 few labels, not very many.

18 Q How about Kenneth Olson?

19 A Ken was in the tox lab and did the acute work, the --
20 he exposed the animals by ingestion. With ingestion, you
21 put a tube down into them. He exposed rabbit eyes and so
22 forth. He did that kind of stuff.

23 Q Let's see. Dr. Peterson is in here, too.

24 A Oh, my goodness. I know him well.

25 Q How about Ed Putnium?

1 A No. That name is not familiar.

2 Q Let's see. V.K. Rowe you spoke of.

3 A I know V.K. very well, and I know you have met him and
4 talked to him at length.

5 Q Indeed I have and quite enjoyed it, as well. Arnold
6 Shaffer?

7 A Shaffer.

8 Q Shaffer.

9 A He was the guy after Larry that we hired.

10 Q After Larry Silverstein?

11 A Silverstein, yes. The next guy was Arnold. Arnie and
12 Jackie were there for several years. Before I left, he got
13 involved with salespeople and wound up doing industrial
14 hygiene in the interest of sales. He spent several years in
15 Hong Kong, spent some time in Italy. I haven't seen Arnie
16 in years. I'm sure he is still around, but I don't know
17 where he lives or anything else.

18 Q How about Edward Schneider?

19 A Ed Schneider was one of the two employees that Harold
20 hired before me. He -- Ed was the first employee that
21 Harold had.

22 The next one was Jerry Clock. Jerry was there when I
23 was hired, and Jerry was asked to leave a few months later.
24 So, I was kind of a replacement for Jerry.

25 After me, the next one was Larry Silverstein and the

1 next was Arnie Shaffer, as I recall.

2 Q Okay. So, Mr. Shaffer was an industrial hygienist?

3 A Yes.

4 Q And Larry Silverstein was a --

5 A An industrial hygienist, --

6 Q -- industrial hygienist? I get it.

7 A -- with a background in health physics. He was also a

8 health physicist.

9 Q How about John Staudt, S-t-a-u-d-t?

10 A The spelling sounds familiar, but I don't place him.

11 Q Okay. Let's see. Ted Torkelson, you said, --

12 A I have talked about Ted.

13 Q -- came in as a toxicologist?

14 A Yeah. We traded jobs for a while, six months, a year,

15 whatever.

16 Q Okay. He stayed for a while?

17 A Oh, yeah. He retired from Dow, oh, a few years ago,

18 five years ago, maybe.

19 Q How about a Paul Weaver?

20 A Paul Weaver? No. Doesn't ring any bells at all.

21 Q Milton Weinfield?

22 A No. No bells.

23 Q Mark Wolf?

24 A Oh, yes. Mark is a toxicologist. He and his brother,

25 Paul, worked on the toxicology group. Mark was involved

1 more with the kinds of things that Ken Olson was doing than
2 anything else, as I recall. He preceded Ken. And one of
3 the two brothers is dead now, and I don't remember which
4 one.

5 Q Do you -- did you ever hear of the Silica Safety
6 Association?

7 A No.

8 Q It's a Texas outfit.

9 A Never heard of it.

10 Q For some reason or another I am -- I have got a note
11 here connecting Mr. Weaver, Paul Weaver, and Milton
12 Weinfield with this Silica Safety Association back in,
13 roughly, the mid '70s.

14 A It could be. It means nothing to me. I left Dow, of
15 course, in '65. So that means nothing to me.

16 Q Well, fair enough. Okay. Mark Wolf was the last one.
17 You knew him. Did he publish a book, too, that you know of?

18 A He had his name on some papers. I don't know about a
19 book, though.

20 Q Moving over to the silica realm for a few minutes.

21 A Okay.

22 Q Let me hand you our Exhibit 530400 API and ask you to
23 take a look at that, Dr. Peterson. So that the suspense is
24 removed in the room, could you at least read what the title
25 of this paper is, if you can find it there?

1 A "API Toxicological Review - Silica," April, 1953. I

2 have never seen it before, if that was your question.

3 Q Well, that's what I was getting to. Would I be right

4 in thinking that you didn't even know that the API published

5 toxicological reviews?

6 A I think that's a fair approximation of my knowledge,

7 yes.

8 Q Okay. You might notice here on the cover it says this

9 was prepared at the Harvard School of Public Health; Boston,

10 Massachusetts, under the direction of Professor Philip

11 Drinker.

12 A Philip Drinker. My goodness.

13 Q You've heard of him?

14 A Oh, yes. I know who Phil Drinker was.

15 Q Do you want to just take a quick, hasty overview of

16 this and see if this -- if Dr. Drinker's work on silica

17 seems to be appropriate for that time period when you first

18 started plying your profession?

19 A This is done in a manner very similar to that of

20 "Hygienic Guides" that we have talked about.

21 Q Is it -- is it according to the new, improved Peterson

22 format for guides --

23 A No.

24 Q -- or the antiquated method?

25 A The antiquated method, of course. No. It's the same

1 kind of information. It isn't in the same format at all
2 that the "Hygienic Guides" were in. But, yeah, this seems
3 to be very appropriate; and I would expect that from Phil
4 Drinker.

5 Q Mr. Taylor, would like to look at that.

6 MR. JONES: Since he passed judgment on it, I
7 would like to have it attached as an exhibit.

8 (Marked Exhibit No. 530400API and is attached
9 hereto.)

10 MR. BLANKS: Well, certainly, Mr. Jones. I would
11 be only too happy to accommodate you.

12 MR. JONES: All right. Thank you.

13 Q (By Mr. Blanks) You have never seen this before, but
14 did you know that the API had a number of toxicological
15 reviews prepared by Drinker back in this era of the early
16 '50s?

17 A No. Afraid not.

18 Q Let me put another paper in front of you, sir. This is
19 our Exhibit 340209 EXXO and ask you to read the title on
20 that for everyone's benefit.

21 A "Standard Oil Company, (Incorporated in New Jersey),
22 Medical Safety Memorandum, Safeguarding Sandblasting
23 Operations."

24 Q What would the date be on that?

25 A The date is 1934. I don't see an author listed. There

1 may well be one, but I don't see it. This is a very
 2 complete look at sandblasting. Oh, the authors are
 3 something J. Denno, MD; and R.S. Bonsib, Chief Safety
 4 Inspector.

5 Q Dr. Denno, was it?

6 A Yes.

7 Q Would -- having glanced through that and looked at the
 8 table of contents, would you say that lays out a sensible
 9 program for protecting workers engaged in sandblasting?

10 A Yes.

11 Q And as previously discussed, the general principles
 12 covered and the methods for controlling the dust hazard are,
 13 basically, the same ones that you used at Dow generally 20
 14 years later and still recommend even 60 years later today?

15 A Sure.

16 Q Okay.

17 MR. JONES: Would you humor me and attach that as
 18 an exhibit, too, Joe?

19 MR. BLANKS: Why sure, Mr. Jones.

20 MR. JONES: Thank you, sir.

21 (Marked Exhibit No. 340209 EXXO and is attached
 22 hereto.)

23 Q (By Mr. Blanks) I'll -- let me. If you will, let me
 24 put another booklet in front of you that I don't intend to
 25 attach because it's well-known to the denizens of this

1 litigation but which is our famous Exhibit 370715 EXXO and
2 ask you, Dr. Peterson, if you have ever seen this brochure
3 entitled "Dust-producing Operations in the Production of
4 Petroleum Products and Associated Activities." And before
5 you go dashing past the cover page, you might note, just
6 coincidentally, who the author is and who authored the
7 foreward.

8 A The same two people, Roy S. Bonsib and Willard, it is,
9 J. Denno, MD; and, yes, I have seen this.

10 Q This would have been back when you were a young
11 industrial hygienist at Dow?

12 A No. The first time I saw this was in conjunction with
13 a trial in Donaldsonville, Louisiana, about three years ago.

14 Q Did you have a chance then to look at this booklet with
15 a little attention?

16 A Yes, I did.

17 Q This is described on the cover as being a "Medico -
18 Safety Survey." Is that a -- it's not a terribly exact
19 term, but is that a fair description of what's contained
20 therein?

21 A It is, sure.

22 Q And am I right that Mr. Bonsib, it looks like, made a
23 survey of the pertinent literature that would deal with dust
24 hazards you might encounter in a petroleum plant?

25 A Yes, he did.

1 Q And actually caused some sampling to be taken in
2 connection with the different activities that he
3 discusses, --

4 A Yes.

5 Q -- which results he reports in the booklet, correct?

6 A Yes.

7 Q And most significantly, Mr. Bonsib lays out a program
8 for the control of the dust hazards, does he not?

9 A He is an industrial hygienist. We always do that, yes.

10 Q And discusses a medical monitoring program as part of a
11 good program?

12 A Yes.

13 Q All of this effort focused on the prevention of the
14 occupational disease, correct, sir?

15 A Yes, sir.

16 Q You certainly can look inside if you need to refresh
17 your memory; but among the topics discussed in some detail
18 within would be sandblasting, am I right?

19 A Yes.

20 Q And insulating work, as well?

21 A He mentions that. I recall that. That's what I was
22 interested in before. But I read the whole thing. So that
23 for 1937, this is a good piece of work. That's all there is
24 to it. He did a good job.

25 Q Would you flip over there to the back? I think there

1 are some acknowledgments given, if I remember it correctly;

2 and it may be the last page.

3 A The last page. Well, it could be.

4 Q There we go.

5 A Yes. We have them here. Oh, boy.

6 Q There are several people mentioned. Which of those

7 names do you recognize?

8 A I recognize W.P. Yant, Leonard Greenburg, R.R. Sayers,

9 A.J. Lanza, and that's it. I don't know the others. Never

10 have heard of the others.

11 Q All right, sir. And as to the ones you do remember, am

12 I correct in saying these were some of the leading lights or

13 the major figures in industrial hygiene in the years before

14 you got out of high school?

15 A That's right. Precisely. They were, those that I

16 recognize. I don't know about the others, but those I

17 recognize were.

18 Q And among those you didn't recognize, at least

19 according to Mr. Bonsib, Dan Harrington was affiliated with,

20 what, the Bureau of -- US Bureau of Mines?

21 A Yes.

22 Q An organization that was fairly active in industrial

23 hygiene matters during that era, correct?

24 A It was quite active, yes.

25 Q Why would they be in that field?

1 A Well, mines have all sorts of hazards but they were
2 particularly involved in the testing of respirators and gas
3 masks and so forth in their laboratory but they also were
4 involved in the control, particularly, of dust hazards in
5 mines.

6 Q And there is a Mr. --

7 A Barlow.

8 Q -- Barlow, Chief Engineer for Standard Oil Development
9 Company. I'm not sure what that is. And then, a Mr.
10 Blakeslee, who was he with?

11 A Department of Accident Prevention, API, New York.

12 Q And would it be fair to say that what Mr. Bonsib lays
13 out here in the -- in his booklet and in the conclusion
14 summary would represent the state-of-the-art for controlling
15 dust hazards in -- at the time this booklet was put out?

16 A Yes.

17 Q Thank you. Let me --

18 THE WITNESS: Do you want to see this?

19 MR. TAYLOR: I don't think so.

20 MR. ALMQUIST: He has already read it.

21 A I'm sure he has.

22 Q (By Mr. Blanks) -- share with you -- let me share with
23 you another piece of paper from the past, sir. This is our
24 Exhibit 450702 SHEL. The cover is kind of faded and was
25 probably green paper, if I remember, but this is titled

1 Shell Oil Company, Inc., "Carcinogenic Hydrocarbons and
2 Related Compounds - A Literature Survey"; and I'll fold that
3 back and hand it to you so you can see it a little more.

4 This was authored by a Mr. H.H. Zuidema. Is that name at
5 all familiar to you, Dr. Peterson?

6 A No, sir. I have never seen that name before. You know
7 how to spell Zuidema, of course?

8 Q I'll tell you that Bud Zuidema, as he was known, was
9 kind of the original Shell answer man, --

10 A Oh.

11 Q -- a chemist; and he would field customer questions in
12 the way that you men at Dow probably did from time to time
13 about products and toxicity or handling methods and that
14 sort of thing.

15 A We all did.

16 Q Flip back to the -- well, no. Take your time. I'm
17 sorry. Continue.

18 A I'm -- I'm getting there.

19 Q No. No. That's all right.

20 A Slow but sure. Where did you want me to go?

21 Q I was just going to point you to -- and did you note on
22 the front side this said, "This is a contribution of
23 information to members of the API Medical Advisory
24 Committee"?

25 A Yes, I noticed that.

1 Q Okay. An outfit that you never had anything to do
2 with?

3 A Not a thing.

4 Q Let me point you down here to this bottom paragraph
5 where Mr. Zuidema is talking about compounds reported as
6 having cancer-producing ability in 1945. Start down here.

7 A Yeah. Asbestos.

8 Q He does mention asbestos as a material that's been
9 mentioned, along with some others, correct?

10 A Along with aqueous potassium hydroxide and hydrochloric
11 acid, ethyl alcohol, glucose, fructose. Okay.

12 Q Does it surprise you to see asbestos mentioned as a
13 possible carcinogen in 19 -- in the 1945 literature review?

14 A It surprises me more to see fructose listed than to see
15 asbestos listed.

16 Q So, you are not surprised to see the asbestos?

17 A Yes. But I'm even more surprised to see fructose.

18 Q I knew you would be.

19 A I'm surprised it doesn't list water.

20 MR. BLANKS: Objection. Very nonresponsive.

21 Q (By Mr. Blanks) We are out of tape. We are out of
22 time, again. Take a quick breather, sir.

23 A Okay. I'll do that.

24 (After the break, the proceedings continued as
25 follows:)

1 Q (By Mr. Blanks) Let's tumble on here. The night is
2 young. Okay. Back on the record, Laura.

3 A It's working. Okay.

4 Q Well, I hope there is a tape. Oh, goodness. Let's
5 see.

6 (Interruption.)

7 Q (By Mr. Blanks) Let's see. We talked about labeling
8 at Dow and how your input would sometimes be enlisted,
9 anyway. The tox and IH and medical departments had some
10 contribution to make to labels in Dow products, right?

11 A Yes.

12 Q And the view was it was important to let the consumer
13 or purchaser know what the ingredients were and as much as
14 you could on a label about what they ought to do to handle
15 and use it safely, right?

16 A Yes.

17 Q And was it ever suggested at Dow that there was health
18 hazard information that you really didn't want to put on the
19 product, you didn't want the consumer or the customer to
20 know about?

21 A Never. We didn't keep any secrets at all about health
22 hazards.

23 Q Well, speaking as a health professional, I mean, would
24 that have been a reasonable thing to do, to withhold
25 information about the health hazards of your products?

1 A No. It doesn't do any good to try to do that, in the
2 first place. In the second place, it's just not the thing
3 to do.

4 Q Bouncing back to the TLV for a minute or two.

5 A And I'm glad you are keeping it in order.

6 Q Yeah. Well, keep you on your toes here.

7 A Of course.

8 Q Wouldn't you say that a decision to control dust just
9 to the TLV level is necessarily, also, a decision to subject
10 some percentage of a large work force to exposures that
11 could cause disease?

12 A Are you asking me if I would say that?

13 Q Yes, sir.

14 A I would say that the probability is that if you do as
15 you said, that is, hold things right at the TLV, that there
16 will be some evidence of disease in some fraction, small
17 fraction of the work force. That's a given.

18 Q Okay. And would I be right in thinking that if you --

19 A Well, wait a minute. Let me back up a little bit.

20 That is true for those materials for which the TLV relates
21 to hazard or injury. There are several TLV's and always
22 have been that have no relationship whatsoever to hazard or
23 injury.

24 For instance, the TLV for carbon dioxide, the TLV for
25 several of the freons and so forth. They are simply

1 representing good practice and nothing else. So that one
2 can't say that the TLV relates to toxicity at all. It just
3 simply does not always. Sometimes it does.

4 Q Okay. All right. But if we speak of things such
5 asbestos, silica, benzene, and I'm sure many others you
6 could mention, --

7 A I could.

8 Q -- but not all materials, that that proposition would
9 be true?

10 A Yes.

11 Q How would it be possible for an industrial hygienist to
12 say that workers with, say, an asbestos insulation material,
13 for example, or a sandblasting operation or a foundry
14 operation where you are having dust produced from some
15 pneumoconiosis-causing material, how can an industrial
16 hygienist know that there is a safe level of exposure in
17 that workplace if he doesn't do sampling of the air in that
18 workplace?

19 A He can't know without sampling. He can infer sometimes
20 on the basis of work he has done elsewhere or that other
21 people have done and have published.

22 Q If we think about the foundry workplace in general and
23 in particular in the workshops where men would clean the
24 castings, --

25 A May we back up a minute?

1 Q Sure.

2 A Are we talking about an iron or steel foundry or
3 aluminum foundry or a brass foundry? It makes a difference.

4 Q Okay. Let's assume a cast iron foundry where you might
5 be making fireplugs and that sort of product.

6 A Okay.

7 Q In the cleaning room, what would be the sources of
8 pneumoconiosis-producing dusts?

9 A Okay. In the first place, the areas where dust is
10 produced will be anyplace that the casting is moved, whether
11 it's moved on a roller conveyer, whether it's moved on a
12 shaker conveyer. Sometimes, if a rubber continuous conveyer
13 is operated precisely, you don't get much dust produced by
14 that. You get dust produced any time the casting is dropped
15 from the conveyer to something else. You get dust produced
16 any time you get a change in direction of the conveyer, to
17 turn a corner or something on this order. These are --
18 these are all dust-producing areas that, in general, in this
19 kind of a foundry need to be ventilated.

20 Q Now, how do you provide the ventilation for these kind
21 of areas?

22 A This -- it's an arcane art, really. Quite often,
23 people try to ventilate these areas by using overhead --
24 overhead hoods, canopy hoods. These don't work worth beans
25 for most of these areas simply because at this point in the

1 game the dust isn't that hot and it may not rise at all. It
2 may be at the behest of vagrant drafts that come through.
3 So that, quite often, the best kind of a hood is a side
4 draft hood that has an adequate control velocity at its
5 furthest reach, wherever the furthest point is that dust may
6 be produced.

7 But each situation really needs an expert analysis
8 either by an industrial hygienist or by one of the few
9 ventilation engineers who knows what he is talking about
10 before you can get adequate local exhaust ventilation.

11 Q And it's the mould sands on the casting that is the
12 source of the silica dust?

13 A It's either the mould sands or it's the core sand, one
14 or the two or both, that is going to cause you trouble.

15 Q Okay. Have you found harmful levels of dust around the
16 blast cabinets or tumbler-type cabinets that are used in
17 foundries, Dr. Peterson?

18 A Yes, I have.

19 Q Would it be accurate to say that the cleaning room is,
20 in all likelihood, the most hazardous place in the foundry
21 for dust exposures?

22 A In every foundry I have done an industrial hygiene
23 survey, that is true.

24 Q Is it practical to protect men working in such a
25 workshop where the cleaning is done, is it practical to

1 protect them simply with respirators?

2 A No.

3 Q Why would that not be so?

4 A In the first place, it's too hot. Almost always in a
5 cleaning room the temperatures are in excess of ambient,
6 even though the castings aren't red hot at this point in the
7 game; and they may well be red hot. Even if they aren't,
8 they are still warmer than surrounding air; and therefore,
9 things tend to rise. The air rises and carries the dust
10 right along with it. But that also means that there is
11 radiant heat hitting these people and they get hot and they
12 simply don't wear respirators.

13 I have seen situations where supervisors have
14 practically stood over people on a cleaning line with a club
15 trying to get them to wear respirators. They simply won't
16 do it. As soon as the guy's back is turned, the respirator
17 is off and around their neck or whatever.

18 Q And so, to expect a man to wear a mechanical respirator
19 throughout his 8-hour workday in such a workshop is just to
20 expect something that's not going to happen?

21 A Let me agree with that, if we can substitute a word or
22 a phrase for a word, an air-purifying respirator. If you
23 use a hood, an air-supplied hood, and I have seen this done,
24 too, this could be done successfully because the air coming
25 into the hood can be cooled and, in fact, the guy wearing it

1 may be more comfortable with the hood on than without the
2 hood on and, therefore, he will wear it, providing you can
3 make him more comfortable, and it's always men, never women,
4 in these situations, providing you can make him more
5 comfortable with respiratory protection than he would be
6 otherwise.

7 Q Okay. If we focus on a dust concentration in the air
8 at the level of the old TLV, 5 million particles per cubic
9 foot, for asbestos or silica, --

10 A Okay.

11 Q -- is that a level of dustiness that one can see with
12 the naked eye, Dr. Peterson?

13 A Under most circumstances, no, if we are talking about
14 respirable dust.

15 Q All right.

16 A The dust is too small to see. Under the right
17 circumstances, you can see far lower concentrations. That
18 is, under Tyndall illumination with a shaft of bright light
19 coming into a darkened room, you can see dust motes floating
20 around.

21 Q Do you really see the dust motes, or do you just see
22 the absence of light there?

23 A No. You see the dust motes themselves. And, I mean,
24 this technique is used in some spectroscopic method and
25 Tyndall was the guy who did it and was first named for

1 things in liquids rather than air but it's the same
2 process. You can see extremely low concentrations of dust
3 in the air with Tyndall illumination. But under ordinary
4 illumination, such as we have here, we could have 5 million
5 particles per cubic foot of respirable dust; and we would
6 never see it, except maybe a haze in appearance from here to
7 the far wall or something like that.

8 Q When did you acquire your knowledge that there was some
9 synergistic effect between asbestos inhalation and smoking
10 cigarettes?

11 A Sometime in the late '60s, early '70s. One of the
12 papers by Selikoff, I'm sure, was what clued me in.

13 Q If one were addressing the -- in a safety manual
14 questions about asbestos or silica, would it be a reasonable
15 warning to a workman to simply state that asbestos was an
16 irritant to the lung?

17 A No. I don't think that it's a reasonable warning to
18 say that asbestos is a carcinogen, either. I think that
19 what one has to say in a warning label is something to
20 remind the person of what he already knows, what he has
21 already been taught; and that is, that one wants to avoid
22 exposure to the dust of this material. The reasons for
23 avoiding the dust exposure should be part of education, and
24 a label is not part of education. A label is a mind jogger,
25 a reminder, if you will.

1 Q Okay. Back in the context of a workplace manual or
2 safety manual, would a statement that silica was an irritant
3 to the lung be adequate warning or instruction to a workman
4 who might have exposure?

5 A No.

6 Q Did you do any work on safety manuals while you were at
7 Dow?

8 A Not while I was at Dow.

9 Q Okay. Did they have safety manuals at Dow for the
10 employees in the plant?

11 A Yes. The safety department passed out a safety booklet
12 when you were hired and went through the safety department.

13 Q This would have been sort of a general handbook?

14 A Yes. Very general, talking about using side shield
15 safety glasses when they are required, when a face mask is
16 appropriate, and so forth.

17 Q Then, would there have been more specific manuals that
18 would apply to the particular units in the plant, as you
19 remember them?

20 A Not while I was there, that I recall.

21 Q So far as you know, the plant safety booklet was
22 prepared by the safety department and not by industrial
23 hygiene or medical or do you -- do you know at all?

24 A I don't know how it was prepared. I certainly had no
25 input to it. Let's put it that way.

1 Q Up to 19 -- they wait for me to start speaking.

2 A Of course.

3 Q Up to 1965, Dr. Peterson, when you left Dow, was there
4 any material in the Dow safety manuals or safety booklets
5 about dust hazards in the Dow plants?

6 A I don't think so. I could be wrong. It's been a long
7 time since I have read the safety manual I was given when I
8 was hired in '52. So, that could be; but I don't recall.

9 Q Okay. Well, we can certainly look in the book, if we
10 can find one?

11 A Yes.

12 Q You said in your earlier conversation with me that you
13 recognized Saranac Laboratory as at least having a good
14 reputation in the early 1950's; and then, we moved on to
15 something else. And I'm wondering, did you ever meet any
16 folks who worked there, like Dr. Vorwald, for instance?

17 A I met Dr. Vorwald but not while he worked there. I met
18 Dr. Vorwald when he was running the industrial hygiene and
19 toxicology programs at Wright State, and that was well after
20 his work at Saranac Lake.

21 Saranac Lab or Saranac Lake Laboratory or whatever they
22 called it had a reputation as being the only laboratory in
23 the country that had the facilities to expose animals to
24 dust in uniform concentrations. And, in fact, when we
25 talked about that, and we did talk about it, we weren't at

1 all happy with what they were doing but -- how they were
2 doing it but we didn't know how to tell them how to do it
3 better.

4 So, one of the projects that perennially occurred in
5 the industrial hygiene lab was how to achieve a standard,
6 repeatable dust concentration in a volume of air; and we
7 never did get a good answer to that.

8 Q Did there come a time when you learned that silica was
9 a suspected human carcinogen?

10 A Yes.

11 Q Roughly, how long ago was that?

12 A About two years.

13 Q Had you ever suspected that as a possibility earlier?

14 A No.

15 Q As in terms of controlling or, yeah, controlling the
16 potential exposures in the workplace, whether it was or was
17 not a carcinogen, wouldn't have affected your efforts as an
18 industrial hygienist, would it?

19 A No.

20 Q Your aim would have been to get the exposure down as
21 low as practical, in any event, right?

22 A That's right, precisely.

23 Q On the topic of carcinogens and TLV's, wasn't it the
24 case that TLV's were not set at levels intended to or to
25 deal with cancer risk?

1 A That's in general true until we get into the late '70s
2 and '80s; and then, the ACGIH TLV committee started dealing
3 with cancer as a possibility.

4 Q So, if we are looking at asbestos or silica back in the
5 '40s, '50s, '60s, the TLV was not intended to protect from
6 possible cancer exposure?

7 A No, not directly. Most of us at that point in the game
8 didn't think that asbestos was a carcinogen. There were a
9 few who did; and those who did were just certain when they
10 published this, in the many articles that I've read, that if
11 you could avoid silicosis, you would avoid cancer. And the
12 TLV was designed to avoid silicosis. So, if they took that
13 step, they would say, okay, the TLV would prevent cancer.

14 MR. JONES: Excuse me. You said "silicosis." Did
15 you mean "asbestosis"?

16 A I'm sorry. I meant asbestosis. If I said silicosis, I
17 was wrong. It was asbestosis.

18 MR. BEASON: Thank you.

19 Q (By Mr. Blanks) So, how is it --

20 MR. BLANKS: And then, I have to object to the
21 responsiveness of the answer.

22 A Okay.

23 Q (By Mr. Blanks) How is it -- how is it that you can
24 say that most of us, as in, I suppose, most of us industrial
25 hygienists, didn't believe that asbestos could cause

1 cancer? In the first place, what time period are you
2 referring to?

3 A The '50s and '60s. Until the advent of the Selikoff
4 presentation that we have talked about in 1964 from the
5 animals or for the New York Academy of Science and whatever
6 Academy of Science, I -- there were very few of my
7 colleagues who felt that asbestos was a carcinogen.

8 Q Did you base this on some survey you made or what?

9 A No. Just the talk that we had amongst ourselves and
10 the fact that when the Selikoff data became known in 1965,
11 it was regarded as being shocking by everybody I talked to
12 about it.

13 MR. JONES: Excuse me. You said "silica" again.

14 THE WITNESS: I did? I'm sorry.

15 MR. BLANKS: No. He said "Selikoff."

16 THE WITNESS: I said "Selikoff."

17 MR. JONES: Selikoff. I'm sorry.

18 MR. BLANKS: Listen up back there.

19 MR. JONES: I can't hear over your hammer.

20 Q (By Mr. Blanks) So, don't you know that Dr. Lanza in
21 his 1938 book on silicosis and asbestosis listed cancer as a
22 suspected sequelae of asbestosis?

23 A No.

24 Q And --

25 A But even if I had, again, the TLV was set to prevent

1 asbestosis. So, if you prevented asbestosis, you prevented
2 the cancer that could come about as a result of asbestosis.

3 Q And don't --

4 MR. BLANKS: I object to the responsiveness of
5 that last sentence.

6 Q (By Mr. Blanks) And don't you recall that Dr. Hueper
7 in his 1940 text on occupational tumors targeted asbestos as
8 a probable cause of cancer?

9 A No.

10 Q Do you not remember the 1945 editorial in JAMA,
11 "Journal of American Medical Association" that raised
12 asbestos in connection with lung cancer?

13 MR. TAYLOR: It was '49.

14 A I remember seeing or reading such an editorial but it's
15 been too long ago and I certainly can't associate a date
16 with it. Was that one that Hueper wrote?

17 Q (By Mr. Blanks) No. I think it might have been Morris
18 Fishbein. Certainly, he was the author in 1949 of another
19 editorial.

20 A I remember a couple of things that Dr. Hueper wrote,
21 one in the '50s where he said that cigarettes were not
22 carcinogenic, cigarette smoke was not; and another one where
23 he said that aniline was. And it turns out that he was
24 wrong in both instances. Nobody is right all the time, even
25 a Skeepers or a Hueper or a Peterson.

1 Q Let me share with you a little treasure here from 1948
2 that is our Exhibit 481122 API; and I hand you a copy there,
3 Dr. Peterson. This was a memorandum of November, 1948, a
4 subject paper read by Dr. W.C. Hueper on the subject of
5 occupational cancer before the APHA. And it's in the form
6 of a letter to or a memo to Dr. Woody, whom I'll represent
7 to you, sir, was a company doctor with Standard Oil Company
8 of New Jersey back in this era.

9 A Okay.

10 Q Do you want to look further? It's more interesting
11 than just the first page. Look who wrote the memo. Do you
12 recognize the name of the author?

13 A Clyde Berry. Yes, I know Clyde quite well.

14 Q Yes, sir.

15 A In fact, people have mistaken the two of us when they
16 look at us from the rear. Our heads look the same.

17 Q I see.

18 A I'm a little taller than Clyde, but I have been called
19 Clyde many times by our peers.

20 Q Well, I think that's not an insulting
21 misidentification. Have you ever seen this Clyde Berry memo
22 of 1948?

23 A No, I never have.

24 Q You note that he reports on a paper given by Dr. Hueper
25 before the industrial hygiene section and subcommittee on

1 medical care of the American Public Health Association,

2 correct, --

3 A Yes.

4 Q -- back in Boston in '48? Now, this is the same

5 Dr. Hueper you were speaking of a moment ago, correct, --

6 A Yes.

7 Q -- the Chief of the Environmental Cancer Section, --

8 A Yes.

9 Q -- National Cancer Institute? And you know Clyde Berry

10 in later years went on to the University of Iowa as a

11 professor?

12 A Yes.

13 Q But during the late '40s and I think early '50s was the

14 industrial hygienist with Standard Oil in New Jersey?

15 A I didn't realize that.

16 Q Well, I'll tell you that that's true. At least, he

17 admits to it.

18 A No. That's fine. I have no objection. I just didn't

19 happen to know it.

20 Q Okay. In this memorandum, Dr. Berry mentions recent

21 evidence in the second paragraph there and pointed out a

22 definite correlation between cancer incidents and exposures

23 to ultraviolet radiation, asbestos, benzol, and it goes on

24 with some other things here. You may comment on them, if

25 you wish.

1 A Certain -- "certain organic amines" refers to aniline
2 in this context, and it's wrong.

3 Q Okay.

4 A I'm sorry. At this point in the game, Dr. Hueper
5 believed that aniline was a cause of bladder cancer.

6 Q All right.

7 A He was wrong, but that's fine.

8 Q Okay. Read what the suggestion is for an idealized
9 approach to the control of the problem and --

10 A Well, one, "One first evaluates the carcinogenicity of
11 suspected compounds and materials through animal
12 experimentation." I have talked about that.

13 "Investigate vital statistics records for cases of cancer
14 and trace the employment history of these individuals. In
15 certain instances, it might be necessary to employ Social
16 Security records and so forth." In other words, do the kind
17 of epidemiological study that most epidemiologists do. They
18 count dead bodies.

19 "In cases that the foregoing provides evidence
20 pointing to an unusual incidence of cancer in certain
21 industries, the plant records of that industry will be
22 investigated to determine what quantities and exposures
23 within that industry produces a higher incidence of
24 cancer."

25 Gee, this is exactly what I said to do, isn't it?

1 Q All right. Yes. Yes.

2 A "Medical diagnostic procedures must be proved as a
3 great many cases are being --"

4 Q Improved?

5 A Improved, I'm sorry. "-- as a great many cases are
6 being missed at the present time." Well, that's a guess.

7 Q You don't -- you don't really disagree with that --

8 A No, I don't.

9 Q -- proposition, though, do you?

10 A Not at all. I -- one of the things that I have found
11 in my investigation of epidemiological studies is that one
12 of the things that is absolutely necessary, particularly
13 when one is talking about cancer, is what cellular type the
14 cancer originates in. Things that are called lung cancer
15 but actually originate in the brain and the kidneys are not
16 lung cancer. That's metastasis. So that this is one of the
17 areas where the pathologist must get involved, as well as
18 the physicians. That may be said in here as we go on.

19 "Initiate preventive measures as soon as possible
20 since the identification of the offending agent is not
21 necessary. Industrially, the approach would be as follows"
22 and that's --

23 Q Now, let's pause with that Paragraph 5 a second. Am I
24 right --

25 A Yeah.

1 Q Well, we don't know exactly what Mr. Berry thought; but
2 do you get out of that statement in Paragraph 5, "Initiate
3 preventive measures as soon as possible since the
4 identification of the offending agent is not necessary," is
5 that saying to you that you don't have to know exactly what
6 it is about the material that is necessarily causing the
7 cancer, you just need to have your suspicion sufficiently
8 aroused that there is probably some connection or possibly
9 some connection?

10 A That appears to be Clyde's interpretation of what
11 Dr. Hueper said.

12 Q Okay.

13 A I don't think it's Clyde's opinion, and it certainly
14 isn't mine.

15 Q Okay.

16 A But that I would suspect that Dr. Hueper thought this
17 way. That's fine.

18 Q Okay. Now, as a practicing industrial hygienist at
19 Dow, trained by the Dow people, it wasn't your approach to
20 wait until you had every bit of positive evidence and as
21 high a degree of certainty as you could get before you would
22 take preventive steps to try and cut down exposure, was it?

23 A No. I've talked about what our approach was, and it
24 wasn't that.

25 Q Right. So, this is consistent with that, isn't it?

1 A Well, let's -- let's talk about that for a minute. I
2 have mentioned aniline and bladder cancer. Aniline was used
3 and, in fact, is used today as the basis for dye stuffs.
4 Many dyes are based on aniline.

5 One of the first things that one does with aniline to
6 make dyes or one used to do was to make benzidine, which is
7 almost like dye aniline. It's two aniline molecules hooked
8 together.

9 Benzidine is a solid. Aniline is a liquid. Benzidine,
10 as it turns out, is a carcinogen. Aniline is not. But
11 Dr. Hueper and others were calling these bladder cancers
12 associated with dye production aniline cancers. Now, if we
13 had expended a great deal of time, effort, and energy
14 controlling exposures to aniline, we would have missed
15 controlling exposures of the carcinogen itself, benzene,
16 which is in a different step of the process.

17 So, in my opinion, it does help immensely to know
18 precisely what the carcinogen is, not simply that there is a
19 carcinogen present in a process, no.

20 Q Well, how did the people dealing with the aniline act?
21 What did they do to protect the workers there? Just try and
22 isolate the workers from the chemicals in the whole process?

23 A Yeah.

24 Q And did it work?

25 A No.

1 Q No?

2 A The -- the thought was that aniline was causing the
3 trouble. And if you run into aniline in this portion of the
4 process and downstream here you've got some benzidine that's
5 isolated and you protect these workers, these guys are still
6 going to get the bladder cancer, the ones downstream who are
7 exposed to the benzene, the true carcinogen.

8 So that you can't just throw out something at it and
9 say, "Well, we'll spend a billion dollars here and isolate
10 this whole darn process because some phase of it may cause
11 cancer." But the problem is that unless you know what the
12 carcinogen is, all you can say is that cancer is associated
13 with the production of dye.

14 But, gee, maybe it's the dyes themselves that are
15 causing the cancer. In such cases, these shouldn't leave
16 the plant and go out for things that -- clothing to be dyed,
17 for instance, for people to wear. You have got to know what
18 you have to control because we don't have unlimited
19 resources to control anything.

20 Dr. Hueper's approach is go ahead and control and
21 control and control and you never find out what's going on
22 and that's not right. It just doesn't work. And I can't
23 think of a better example than aniline and aniline cancers.

24 But another example might be the business of cigarette
25 smoke and exposures to asbestos and the fact that the two of

1 them go together to be more dangerous, particularly in
2 causing cancer, than either one alone. You don't find that
3 out without investigation. You don't simply say, I'm going
4 to control all exposures to asbestos down to the last gnat's
5 eyelash so that never any gets into the air; but you find
6 out that those people who smoke are the ones who are most
7 likely to get lung cancer from their exposures to asbestos.
8 And then, you have got something to beat them on the head
9 about, not only control their exposure to asbestos but to
10 control their smoking and try to in that way get at the
11 whole problem, not just a portion of it.

12 So, the more knowledge we have, the better; and I'm
13 really against -- philosophically, I'm against the idea of
14 going out and controlling for the purpose of controlling. I
15 want to know what's going on. I would say interject in this
16 process the animal experiments that are necessary to find
17 out precisely what is happening with any of the materials
18 you are running across; and once you find out with your
19 animal experiments that this is a carcinogen, which is what
20 happened with aniline, that benzidine was the carcinogen,
21 not aniline, then you can pinpoint your control and do
22 things right.

23 You may be able to bypass benzidine in the process of
24 producing the dyes and, in fact, that can be done and is
25 done all the time. You never isolate it.

1 That's a lecture. I shouldn't lecture. I'm sorry.

2 Q Well, and indeed, the evaluation through animal
3 experimentation is the first item listed in Mr. Berry's
4 memo, isn't it?

5 A It certainly is, but it is obviated by this No. 5 that
6 you go ahead and control before you know anything.

7 Q Well, what are you going to do? Are you just going to
8 wait until you have got the epistudy from 20 years later or
9 10 years later?

10 A You can get results from an animal study in six months,
11 some results, preliminary results anyway. You don't have to
12 wait for years for an epistudy. You use an epistudy along
13 with the animal work and along with industrial hygiene to
14 say that people are like rats or monkeys or guinea pigs or
15 whatever and that they also get cancer because just because
16 a rat gets cancer doesn't mean a human is or vice versa.
17 So, animal work can provide us with some answers but not
18 all, unfortunately.

19 Q Okay. So, Mr. Berry is saying in here, initiate
20 preventive measures as soon as possible?

21 A He is saying that Dr. Hueper said that. He isn't
22 saying that himself.

23 Q Okay. Fine. And then, he goes on to list five, six
24 specific suggestions or principles?

25 A Sure.

1 Q And I think have you had a chance to look at those?

2 A No.

3 Q I don't think they are much different from what you
4 have been telling me.

5 A No. They would be about what I said. These are
6 industrial hygiene principles that he is outlining. That's
7 fine.

8 Q And in Paragraph 6, as he mentioned, medical control
9 programs including following the worker throughout a latent
10 period of 15, 20 years, correct?

11 A I think that's an advisable thing, particularly when
12 one suspects cancer.

13 Q And then, some other proposals for government
14 inspection and standards and so forth that we didn't really
15 see for another 20, 25 years, correct?

16 A Yes.

17 Q Okay. And you would agree, wouldn't you, that this
18 memorandum that Mr. Berry did, again, lays out the basic
19 principles and state-of-the-art for industrial hygiene as it
20 was in 1948?

21 A As espoused by Dr. Hueper, yes.

22 Q As per Dr. Hueper? Well --

23 A But he is reporting Ed Hueper. He is not -- this isn't
24 his own stuff he is reporting.

25 Q No. But the matters reported here, the content.

1 A Represent state-of-the-art, yes.

2 Q Okay.

3 A They do. I'll go along with that.

4 Q All right, sir. Now, we've got Mr. -- Dr. Fishbein's

5 1949 editorial that Mr. Taylor was mentioning. Is this

6 something you have seen before, sir?

7 A I'm sure it is, if I can open it up. Well, this is

8 part of an editorial, anyway. "Asbestosis and Cancer of the

9 Lung," that's what you referred to?

10 Q Yes, sir.

11 A And I've talked about this, too, that those people who

12 believed that asbestos could cause cancer felt you had to

13 get asbestosis first and that that lead to the cancer and,

14 therefore, if you could prevent the asbestosis, you would

15 prevent the cancer.

16 Q And the reasons that we are -- at that time, 1949 and

17 earlier, we were discussing asbestosis and cancer of the

18 lung had to do with, what, the intensity of the exposures

19 that would have been prevalent at that time --

20 A Why, sure, of course.

21 Q -- sufficient to cause asbestosis within -- before the

22 man developed lung cancer?

23 A Well, nobody, even Dr. Fishbein, said that lung cancer

24 was a necessary sequelae of asbestosis. What they were

25 saying is that if you have got a good case of asbestosis,

1 your chance -- your chance of having lung cancer is
2 increased quite a lot. That's fine. I -- there is nothing
3 wrong with that. It's a good conclusion to draw.

4 But as an industrial hygienist, my job is to prevent
5 the asbestosis in the first place. I don't care whether it
6 will cause lung cancer if you get asbestosis, if I can
7 prevent the asbestosis.

8 MR. TAYLOR: And, Joe, just for the record, this
9 is the -- this is the Hueper editorial. It's -- Fishbein is
10 --

11 MR. BLANKS: Sure.

12 MR. TAYLOR: This is Hueper's editorial. Fishbein
13 is just the editor of the journal. He didn't write this
14 particular editorial. He says -- my understanding is this
15 is one that was written by Wilhelm Hueper in '49. So that
16 is the one I was referring to.

17 MR. BLANKS: Well, okay.

18 MR. TAYLOR: I mean, Fishbein is the editor of the
19 journal; but he is not, as I understand it, generally
20 regarded as the author of the editorial in '49 on
21 "Asbestosis and Cancer of the Lung." I think it's
22 generally regarded that Hueper wrote this, but we can let
23 the experts talk about that.

24 MR. BLANKS: Who is more expert than we?

25 MR. TAYLOR: What do you mean?

1 MR. BLANKS: Well, I am not here to argue that
2 with you one way or the other.

3 A It's immaterial for our purposes, anyway. We don't
4 care who wrote it. I don't care.

5 Q (By Mr. Blanks) Well, that's true. We know that there
6 the Journal of American Medical Association in August, 1949,
7 Volume 140, among other things, did discuss cases reported
8 of asbestosis and cancer of the lung from the US and Germany
9 and elsewhere.

10 A Yes.

11 Q Did you ever make the acquaintance of Charlie Hine from
12 Shell?

13 A Yeah. In fact, I have almost got embroiled in a joint
14 consulting effort with Charlie Hine. It never worked out
15 that way. We did talk on the phone a couple of times, once
16 I was able to get through to him, which is a very difficult
17 thing to do; but we never got together in person to work on
18 the project, whatever it was. And I've forgotten what it
19 was now.

20 Q A long time ago?

21 A A long time ago. 20 years, maybe.

22 Q Did you meet him at the AIHA activities?

23 A I may well have because I have a picture in my mind of
24 what he looks like. And so, I probably had met him; but I
25 couldn't say when or what the circumstances were.

1 Q Well, let me share with you a little piece of work that
2 Dr. Hine did under the letterhead of Shell Development
3 Company in April of 1950, our Exhibit 500428 SHEL, and ask
4 you if you have ever laid eyes on that before.

5 A No. I have never seen this.

6 Q The title of this is "Certain Problems of Environmental
7 Cancer in the Petroleum Industry."

8 A Yes. And I have not seen this.

9 Q This will -- just to satisfy your curiosity, why don't
10 you flip over to the last page, which has Table 2 on it,
11 Page 2.

12 A Uh-huh.

13 Q And do you see down where he talks about lungs,
14 pneumoconioses as a precancerous lesion with asbestosis?

15 A This -- this was the thought at the time.

16 Q All right.

17 A That's fine. In fact, it's the thought of many
18 today --

19 Q Yeah.

20 A -- that lung cancer is associated with asbestosis, not
21 with the minor exposures that may result in mesothelioma.

22 Q And, again, shows the etiological agent or causative
23 agent is asbestos over in the right column?

24 A Yes.

25 Q So, this work by Dr. Hine, which was also sent around

1 like Dr. Berry's memo to the members of the American
2 Petroleum Institute, seems to you to be what you would
3 expect to find from toxicologists looking at these issues
4 during the 1950 era?

5 A Yes.

6 Q Let me -- well, I thought this was from your AIHA
7 quarterly. I don't have that one. This is actually a
8 publication from 1954, "Current Safety Topics in the
9 Petroleum Industry as Presented in Sections of the Petroleum
10 Section of the 42nd National Safety Congress."

11 Now, that -- the National Safety Congress would be the
12 name of the annual meeting such as you once attended
13 somewhere along the way?

14 A Yes.

15 Q Okay. Did you ever meet a gentleman named Art Pabst
16 from Socony or Mobil?

17 A No. I don't believe so.

18 Q Okay. Well, let me share with you Mr. Pabst's article
19 or paper as presented at the National Safety Congress
20 entitled "Industrial Hygiene in the Petroleum Industry"; and
21 I know Dow wasn't, strictly speaking, in the petroleum
22 industry.

23 A No. Dow was not in the petroleum industry at all.

24 Q Except peripherally through Dow Well Company?

25 A Yes.

1 Q But in many respects the -- from an industrial
2 hygienist's standpoint, the plants, the refinery is not
3 extremely dissimilar from a chemical plant, is it?

4 A Oh, no, not at all. The person who isn't aware of
5 what's going on would be hard put to distinguish one from
6 the other simply by walking by or driving by or whatever.

7 Q Hey, and let me ask you to -- take your time, but if
8 you want to flip over there -- well, just take your time.

9 This is a great article by Art Pabst.

10 A It is a good explanation of industrial hygienists and
11 safety people. It really is. He did a good job.

12 Q Okay. You ought to see the Van Hendricks article he
13 knocked it off from.

14 A That doesn't surprise me, either.

15 Q I'm sorry. I don't have that one with me.

16 A Oh, for shame.

17 Q I'll send it to you. But, once again, we see a
18 discussion of safety departments, hygiene, medical
19 departments, toxicology issues, means of exposures, same
20 kind of problems that you and your colleagues were dealing
21 with at Dow in the 1950's, correct?

22 A Sure. Absolutely.

23 Q If you look over there onto -- well --

24 A I can't read the page.

25 Q It's the page where the yellow flag is tabbed, I

1 think.

2 A The page before this. We were having a little
3 discussion of toxicity and toxic. I notice that he lists
4 asbestos as a respiratory irritant and not a toxic material.

5 Q Different semantics, isn't it?

6 A It's semantics. That's right. And it's how one is
7 using the term and when and where. That's fine.

8 Q Well, let's look on that page there. Mr. Pabst lists,
9 "A few of the materials commonly encountered in the
10 petroleum industry are listed below." He has got gases and
11 vapors. We see about eight or nine items there.

12 A Yes.

13 Q And would I be right in thinking that many, if not all
14 of those, you might encounter in a chemical plant, as well?

15 A Absolutely.

16 Q And then --

17 A With the possible exception of octane.

18 Q Yeah. I thought that myself.

19 A When -- well, you encounter gasoline, obviously, but
20 not octane.

21 Q Octane is what? That's not the tetraethyl lead stuff,
22 is it?

23 A No. No. No. Octane -- there are two ways the word is
24 used. One is for the normal octane, which is a straight
25 chain aliphatic hydrocarbon containing eight carbon atoms.

1 That's where the "oct" comes from.

2 The other one refers to isooctane, which is -- it has
3 eight carbon atoms, but it's branched. And isooctane has an
4 octane rating of 100 in an engine. Octane itself has a
5 rating of close to zero. It pings very easily.

6 Q And then, in addition to -- thank you.

7 A I have a fund of useless information.

8 Q As I have, perhaps, a fund of useless questions, they
9 might say.

10 A I wouldn't say a thing like that, Joe.

11 Q Thank you. Mr. Pabst also lists toxic dust fumes and
12 mists and this shows --

13 A This is from a TLV list. That's the way he took this
14 thing, yes.

15 Q Okay. And then, under mineral dust, he lists asbestos,
16 correct?

17 A Yes.

18 Q And "nuisance dust" meaning that without any free
19 silica in it?

20 A Yeah. Well, actually, it was less than five percent
21 but that's good.

22 Q Okay. And then silica?

23 A Yeah.

24 Q And would you think that as well as being commonly
25 found in the petroleum industry, these materials would also

1 be commonly encountered in chemical plants in the mid
2 1950's?

3 A In the same way they would be encountered in the
4 petroleum industry, yes.

5 Q All right, sir. And, regrettably, we don't have
6 Mr. Van Hendricks.

7 A That's a name that's familiar to me, but I don't know
8 why.

9 Q It's Nathan Van Hendricks; and he was Standard Oil of
10 New Jersey, later Exxon.

11 A Okay. I -- I met him in that position. I was
12 introduced to him by Dick Brief or somebody, but I worked
13 with him.

14 Q You surely would have run into him at the AIHA meetings
15 somewhere along the way?

16 A Sure. Undoubtedly.

17 Q Okay. At any rate, I don't suppose you remember having
18 seen Mr. Pabst's paper before I've handed it to you today?

19 A No. Never.

20 MR. TAYLOR: I would like to get that marked as an
21 exhibit, if we could.

22 MR. BEASON: Oh, you would?

23 MR. TAYLOR: Yes.

24 MR. BLANKS: Well, give it here.

25 MR. TAYLOR: Thank you.

1 MR. BLANKS: Let's see. Well, as it is now, this
2 is marked as 540000 NSC. Although, out of fairness to
3 Mobil, we probably should label it here 540000 MOBI.

4 (Marked Exhibit No. 540000 MOBI and is attached
5 hereto.)

6 Q (By Mr. Blanks) Well, let's visit this question of
7 toxic and toxicity. I know you have just been anxious to
8 clarify that for me. So, tell me what you mean when you use
9 the word "toxic" and when you speak of "toxicity."

10 A I prefer to define "toxicity" rather than "toxic."

11 Q All right.

12 A "Toxicity" is a property of matter. It is a property
13 of matter in much the same way that mass is a property of
14 matter, in that each is an extrinsic property of matter,
15 which simply means that the expression of mass or of
16 toxicity depends upon how much of the stuff you've got.

17 In toxicity, it's how much you get in the body. In
18 mass, it's how much you can weigh, if you will, or
19 determining the inertia of or whatever.

20 Toxicity is the ability of the material to injure a
21 living organism by other than mechanical means. Now, if
22 you'd get a copy of my book, you would find that in there in
23 those words.

24 Q I promise. I'm going to buy the book. Every used
25 bookstore I go into, I look for your book; but it's so

1 popular, nobody gets rid of it.

2 A That's right. You might find it from one of Jim

3 Hammond's former students perhaps. He used it in his

4 teaching.

5 Q Okay. The ability to injure an organism --

6 A A living organism.

7 Q -- by other than mechanical means?

8 A Yes.

9 Q Now, for a while it was thought that the asbestos

10 fibers inhaled into the lung injured the body via mechanical

11 means, am I right?

12 A That's correct. Absolutely. In fact, there are people

13 who say that today; but that's -- that's part of the process

14 of injury.

15 Q Okay. But our knowledge has gone beyond that idea,

16 hasn't it, by --

17 A But it goes beyond it and comes back. We don't know

18 today how asbestos causes cancer. We don't. We don't know

19 how it causes -- well, we have an idea about asbestosis; and

20 that's probably the mechanical injury more than anything

21 else.

22 Q Okay. So, if we don't believe that asbestos acts on

23 the body by some means other than mechanical means then, by

24 your definition, it would not have toxicity?

25 A Right.

1 Q Okay. Now, from the way you've talked today and
2 before, I suppose you would say that any substance has
3 toxicity if you do something with enough of it?

4 A If you get enough of it. You can kill yourself by
5 drinking water, if you want to do so.

6 Q Can you really?

7 A Yes, you can.

8 Q How do you --

9 A About 20 years ago -- what happens, if you eat nothing,
10 just drink water, lots of water, as much as you can hold all
11 the time, you wash the electrolytes out of your body and you
12 die.

13 Q Well, what if you eat and drink as much water as you
14 can drink?

15 A Then you get electrolytes.

16 Q Sir?

17 A If you eat, you get electrolytes. Then, you replace
18 what you are trying to wash out with the drinking.

19 Q Okay.

20 A But there were cases about 20 years ago, two cases in
21 England of people who committed suicide by eating nothing
22 and drinking water, lots of water. A horrible way to die.
23 But, nevertheless, it was done; and it can be done.

24 Everything is toxic. Everything.

25 Q So, if the word applies to everything, then what good

1 is the word to us in describing the materials that

2 industrial hygienist need to control?

3 A An industrial hygienist may need to control anything or

4 everything. If people are getting too much of whatever it

5 is, it's the industrial hygienist's job to control it.

6 Industrial hygienists work with hazard, which is the

7 likelihood of injury.

8 Toxicologists work with this property of toxicity.

9 They determine the toxicity of materials, the extent to

10 which they are toxic.

11 Industrial hygienists determine the hazard of the

12 materials, the likelihood of injury from exposure to the

13 stuff, and then try to figure out ways of controlling the

14 exposure so that the injury does not occur.

15 Q Well, now, does the word, the adjective "toxic" have

16 any meaning for you?

17 A Just as a component of toxicity. It's the adjective

18 for the noun "toxicity," yes.

19 Q So, does it mean anything to talk of a material as

20 being toxic?

21 A No.

22 Q No?

23 A No. That's -- it's like people talk about heavy metal

24 toxicity. What is a heavy metal?

25 Q It's a band, isn't it?

1 A It's a meaningless term. It's a band, yeah. But it's
2 a meaningless term because what they are talking about is
3 the toxicity of metals. I don't care whether they are heavy
4 or not. How do you define heavy? Is it heavy to feel in
5 your hand? Does it have a high atomic weight? What do they
6 mean by heavy? They don't ever say. So that it's a
7 meaningless term. Just as a toxic metal, it's a meaningless
8 term because all metals can be toxic under the right
9 circumstances or the wrong circumstances.

10 Q Okay. So, when you visit with your toxicologist about
11 the toxicity of a material, what you want to know is what?
12 How much of it it takes to have an effect?

13 A Yes. And what effect we are talking about. And we
14 talk about LD 50's, the lethal dose in 50 percent of the
15 animals. We talk about LC 50's, for a certain exposure that
16 was a lethal concentration that would kill 50 percent of the
17 animals in so many hours. We talk about LD 0's and LD 99's
18 and LD 1's and so forth.

19 These are quantitative expressions of toxicity, and
20 each is useful in its own right. And we can use this kind
21 of information, "we" being industrial hygienists, to help us
22 decide how we are going to control this stuff, whatever it
23 may be.

24 For instance, we can use data developed on oral
25 exposure, whether it's acute exposure or chronic exposure,

1 of materials that are solids to predict the toxicity of that
2 material from inhalation because if the stuff is big enough
3 to see and you inhale it, it winds up in your stomach just
4 as if you had chewed it. So, the oral route with the
5 animals tells us quite a lot about the inhalation route of
6 some kinds of materials for people.

7 And I heard on the radio as I was coming down here
8 today that a couple of governmental agencies have decided
9 they are no longer going to go to animal experiments, which
10 I think is the most ridiculous thing in the world. There
11 are things that animals can tell us that you can't develop
12 with a computer program, which is what they are talking
13 about using instead.

14 Q Animal rights, huh?

15 A Yeah. That's right.

16 Q Okay. Now --

17 A I told you I was a toxicologist. You tapped the wrong
18 drum.

19 Q I guess so. So, in assessing the likelihood of injury
20 from an exposure, what do you do with the toxicity
21 information?

22 A Well, suppose that the exposure we are talking about is
23 an exposure to aniline. We measure the exposure that people
24 have, and we compare that to the exposure that will cause
25 injury. And if the exposure is greater than that that we

1 know can cause injury to animals, we say, "Hey, these people
2 might be injured, too." And we do our best to control
3 exposures to well below those that can cause injury.

4 The complication in this whole thing is when we talk
5 about acute and subacute and chronic exposures; and it is
6 far more difficult to evaluate chronic exposures and the
7 concentrations that cause injury upon chronic exposure than
8 it is for acute exposures, meaning short term or single
9 dose.

10 Q Okay. All that sounds good in principle. Now, how do
11 we relate that to the problem we are here on today?

12 A Well, the fact of the matter is that our first
13 information about the ability of asbestos to cause injury,
14 the first quantitative information we have was developed in
15 animal experiments. So that we could use that kind of
16 information to help tell us that this stuff can do this sort
17 of thing.

18 The epidemiology, as exemplified by the Dreessen
19 report, "Epidemiology and Industrial Hygiene," told us what
20 kind of exposures can cause that kind of injury. I mean,
21 theoretically, that's the way one can do it.

22 Of course, we knew that overexposure to asbestos can
23 cause asbestosis well before the Dreessen study was done;
24 but animal work could have done exactly the same thing
25 without exposing people at all. So, that's the ideal way to

1 do it. Do the animal work first and then know what you are
2 trying to control.

3 Q Well, isn't that what Owens Illinois was having done
4 with Kaylo up at Saranac?

5 A Yes, sir.

6 Q Was the animal work to try and determine the potential
7 for harm in a living organism?

8 A Yes, sir, it was.

9 Q And I gather you are acquainted now with some of that
10 work?

11 A Oh, sure. Sure.

12 Q While we are talking about Kaylo, one of my favorite
13 subjects, --

14 A I'm sure.

15 Q -- do you -- well, I know you didn't do any Kaylo
16 surveys at Dow, did you?

17 A No.

18 Q Have you seen papers indicating that such was done up
19 there?

20 A After I left Dow, yes.

21 Q Okay. Now, the approach that you used in -- in
22 assessing a hazard from asbestos exposure was to use a TLV
23 of 5 million particles per cubic foot of asbestos?

24 A Well, that was the TLV.

25 Q All right.

1 A Well, what I -- any time you sample for particulate
2 material in the air, you sample all particles. You can't
3 sample just fibers or just asbestos or just cotton or just
4 sand. You sample everything that's there. And then, if
5 your exposure, the concentration that people are exposed to
6 is in excess of, say, 5 million particles per cubic foot,
7 then you start worrying about what fraction of that is
8 asbestos and whether or not the asbestos TLV has been
9 exceeded; but if the exposures are below 5, you know very
10 well the asbestos TLV can't possibly have been exceeded.
11 So, you don't have to go to all the work of analyzing
12 particularly for asbestos or even finding out what fraction
13 of the sample is asbestos if you are well below 5 million
14 particles per cubic foot.

15 Q Well, okay. I heard that. Now, at Dow, when the
16 hygienist would go out and do a survey and report on it and
17 report a certain concentration level, was he using this
18 approach that you say was the rule, that is, to say that
19 I've sampled and I have got 4 million particles per cubic
20 foot of asbestos?

21 A No.

22 Q He is just reporting on total dust measured?

23 A Total dust, that's right.

24 Q Well, then, how does he ever get to the point of
25 knowing what he has got in the way of asbestos?

1 A He doesn't. He doesn't have to.

2 Q What if he is over 5 million parts? Then what?

3 A Oh, then -- then, he has to go to the work of finding
4 what fraction of it is asbestos.

5 Q And how does he go about doing that?

6 A There is only one way to do it under circumstances
7 similar to those that I did the asbestos sampling at Dow;
8 and that is to set up a high volume sampler, sample enough
9 air so that I can find out what the fraction of asbestos is
10 in the particles that are collected with my high volume
11 sample, and say that the chances are that that fraction
12 would apply to the breathing zone sample I took of the
13 gentleman in question.

14 Q So, you've got a chance to go -- once you've got a
15 sample taken consistent with the TLV standards and it's at
16 the limit or it's beyond the limit, then you would go and
17 try somehow to figure out how much of it was asbestos?

18 A Yes, sir.

19 Q And you do this with, what, electronic microscopes; or,
20 I mean, how in the 1950's would you do this analysis?

21 A Oh, that's -- that's easy, even in the '50s. With this
22 high volume sampler, we can get enough sample so that we can
23 take it to an x-ray diffraction lab and say, "Tell me: How
24 much of this is asbestos and what kind of asbestos is it?"
25 And we had x-ray diffraction going at Dow when I was there

1 and well before I was there. You can actually do it with
2 wet chemical methods, too; but it's a very long, laborious
3 procedure.

4 The fact of the matter is that asbestos is resistant to
5 just about every technique we use. We can try and burn the
6 stuff and it would burn away all the organic and you are
7 left with asbestos.

8 Q Well, now, when Mr. Dreessen did his report, this
9 epistudy you have referred to, that was, what, 1936?

10 A It was published in '38.

11 Q Okay. And done in --

12 A Some preceding time.

13 Q All right. Published in 1938. He didn't have this
14 x-ray spectrometry available to sort out the asbestos
15 fibers, did he?

16 A No. In the first place, he wasn't looking for fibers.
17 He was looking for particles, all particles, including
18 fibers.

19 In the second place, yes, he did have a high volume
20 sampler there. In fact, there is a picture of it in one of
21 the first pages of the report.

22 Q Yeah.

23 A And what he did with those samples was to burn them,
24 and the idea being that the dust in that kind of a plant
25 consisted either of asbestos or cotton. The cotton would

1 burn. The asbestos wouldn't.

2 So, when I burned it or when he burned it, he not only
3 wound up with ash; but he knew that he was getting rid of
4 the two molecules of water that are coincident with
5 chrysotile asbestosis so that he could sit down and
6 calculate, if he wished, the concentration of asbestos in
7 the air. And it turns out that the average for his samples,
8 excluding the one that's got a lot of oil in it, is about 90
9 percent asbestos.

10 Q This is what he reports in his paper?

11 A He doesn't report the 90 percent, but he reports the
12 data from which one can calculate the 90 percent. It's in
13 Table 3 or something like that or 12. I don't remember.

14 MR. TAYLOR: I can probably find it for you.

15 A But he didn't use x-ray diffraction. Instead, he
16 simply did the easy thing and burned the samples, ignited
17 them is what they -- the term that he used.

18 Q (By Mr. Blanks) So, you are saying that the number he
19 comes up with, this 5 million, is net of any other fiber or
20 particle or anything else in there?

21 A No. It's total particles in a plant where 90 percent
22 of the dust is asbestos, and believe me --

23 Q You are taking me in circles now. I mean, he reports 5
24 million total -- 5 million particles of total dust.

25 A In air where the particles are 90 percent asbestos

1 particles.

2 Q Well, how do you get to that last step?

3 A By means of the ignition samples that he has. You can
4 calculate. He must or DallaValle, his industrial hygienist,
5 must have done the calculation because they, in essence,
6 said, "Look, what we are sampling is, in essence, pure
7 asbestos, even though we know there is around 10 percent
8 cotton." He knew there was 10 percent cotton not only from
9 the input to the plant where they use the cotton fiber as a
10 basis to make the fabric, the textile, the asbestos textile,
11 but also because of his high volume air samples that were
12 ignited. And they show that there was 90 percent asbestos
13 in the air, as well.

14 And the slop we have in industrial hygiene is far
15 greater than plus or minus 10 percent in any samples we
16 take. So that this is saying, if we say it's 100 percent
17 asbestos, we aren't going to be far away.

18 Why don't you hand it to me. I'll find it.

19 Q Yes.

20 A It's near the front of the paper. There is a picture
21 of his high volume sampler.

22 Q Vacuum cleaner bag arrangement for collecting suspended
23 dust samples.

24 A Yes. And this is why it was used. It wasn't used to
25 determine concentration people were breathing. It was used

1 to get enough of the stuff in the vacuum cleaner bag so they
2 could weigh it and ignite it and reweigh it.

3 Q And you are satisfied this vacuum bag here captured the
4 small asbestos particles? They didn't just go blowing on
5 through it like you know they do?

6 A No. In fact, it probably did a better job than the
7 impingers did on collecting the asbestos particles. A
8 filter bag - chemical engineers learned this; and I'm,
9 basically, a chemical engineer who went wrong - becomes a
10 better and better filter. That is, it's more and more
11 efficient as you collect more and more dust because the dust
12 itself becomes a filter for further dust. So that a bag
13 filter can approach 100 percent efficiency.

14 Yes. Here are the tables. They are on Page 20 where
15 they talk about loss on ignition and so forth.

16 Q And so, from this you get your 90 percent somewhere?

17 A Yes. That's right.

18 Q I sure don't see it in there.

19 A No. No. You don't see it. It was never calculated
20 and presented in the paper. This was standard industrial
21 hygiene techniques. It's like you don't learn how to spell
22 words when you become a lawyer. You are expected to know
23 this. Industrial hygienists were expected to know this kind
24 of thing, too. It's just one of those things that was part
25 of industrial hygiene. Nowhere --

1 Q Okay.

2 A Nowhere in the paper is that high volume sampler

3 discussed, nowhere, and how it's used.

4 Q Well, then, how do you know about it?

5 A It's right here. Because this is a standard

6 technique. This is the way industrial hygienists did

7 things.

8 And he also talked about collecting samples from

9 horizontal surfaces, rafter samples. This is also a

10 standard industrial hygiene technique to find out what was

11 in the air.

12 Q Well, let's see. Table 2 has got chemical analyses of

13 settled dust samples.

14 A That's the rafter samples that I'm talking about.

15 Q And then, Table 3 is chemical analysis of suspended

16 dust samples.

17 A Right. Those are the ones taken by the high volume

18 technique, that vacuum cleaner.

19 Q Now, how -- and then you have got these numbers. These

20 are the -- this is what is left after you have --

21 A After you have ignited it.

22 Q -- ignited?

23 A That's right.

24 Q So much ash?

25 A That's the operative thing is the ash because that

1 contains all the rest of the stuff.

2 Q Silicon dioxide?

3 A Yes.

4 Q Where does that -- where does that come from? Where

5 does the silicon dioxide come from?

6 A Asbestos -- chrysotile asbestos is a hydrated magnesium

7 silicate. When you burn it, you wind up with silicon, which

8 is expressed in tables such as this as SiO_2 . Magnesium is

9 expressed as MgO and so forth. Aluminum is expressed as

10 Al_2O_3 .

11 Q So, what, are these five columns of compounds --

12 A Those don't count.

13 Q -- or what?

14 A Yes. They are -- they are simply showing that it's

15 asbestos, that this is -- has its source of asbestos. What

16 really counts is the total ash from which all these other

17 things come. So, you look at the ash; and you find that the

18 ash is, what, around 87 percent, 85 percent, something on

19 this order. I've forgotten the exact numbers.

20 The weight of the water that was driven off as a

21 function of the water crystallization of the magnesium

22 silicate to form asbestos is something like -- oh, I've

23 forgotten these numbers. At any rate, you add that in to

24 the ash; and you wind up with 80 percent or 90 percent for

25 most of the samples. There is one that is contaminated with

1 oil that you have to throw out.

2 Q Well, he talks about a 30 percent loss on ignition.

3 A Uh-huh. Let me see the table, please. I -- it's been

4 a long time since I have gone through this calculation.

5 What I did was to average the percentages of ash, leaving

6 out that one sample that was taken in the area where there

7 was a lot of oil because they were trying to suppress dust

8 formation with oil. And you add these things up; and they

9 come out around 75 percent, something like this, 75 or 77

10 percent. And the loss on ignition of water vapor is 13

11 percent. So, you add that to the 76 percent; and you get 89

12 or 90 percent is the loss on ignition, which means --

13 Q So what -- yeah.

14 A -- which means that's the asbestos content of these

15 samples, on the average.

16 Q Well, how --

17 A Honest.

18 MR. ALMQUIST: I think, Mr. Blanks, that you may

19 want to think about that a little bit longer. We've now

20 reached the 5:00 hour here, and so I think --

21 MR. BLANKS: Okay. Do you want to take a little

22 break?

23 MR. ALMQUIST: No. I think we are through for the

24 day.

25 MR. BLANKS: Well, we want to go on a little bit.

1 We can get done here.

2 MR. ALMQUIST: No. We're through for the day.

3 MR. BLANKS: Well, no --

4 MR. ALMQUIST: I'm not going to subject him to --

5 Joe, we stopped last time for you at 3:45.

6 MR. BLANKS: Well, now, wait a minute. Wait a

7 minute. Let's talk to Dr. Peterson here.

8 Can you carry on a little bit so we can get done, sir?

9 MR. ALMQUIST: Joe, the Texas Supreme Court is on

10 the verge of adopting a six-hour total deposition.

11 MR. BLANKS: Well, they haven't yet.

12 MR. ALMQUIST: We have been going six hours

13 today. I'm not going to subject the witness to more than

14 six hours. Now, we went -- last time, we had six hours of

15 testimony; and we've actually been here since 9:30 this

16 morning. It's now -- well, it started at 9:00. We had to

17 move rooms. The deposition actually began at 9:30. It's

18 now 5:00, and that is --

19 MR. BLANKS: Well --

20 MR. ALMQUIST: I'm sorry; but I think that, you

21 know, is imposing upon a witness.

22 MR. BLANKS: Well, you are talking. But, I mean,

23 the witness is the one to say. If he is willing to stay

24 another 20 or 30 minutes so we can get done and I won't have

25 to come back and bother him again, then I think we ought to

1 do that.

2 MR. ALMQUIST: There are other attorneys who have
3 questions of this witness. Are you then going to have to go
4 back and reevaluate 20, 30 minutes after you think you are
5 going to be through, whether they have questions, however
6 long that lasts?

7 MR. BLANKS: Well --

8 MR. ALMQUIST: I am sorry, but that is not fair to
9 the witness and is not the way I operate. You have known
10 this before in other depositions. I'm not going to drag
11 somebody on all day.

12 MR. BLANKS: Well, you are not dragging anybody.
13 Dr. Peterson, I drug him here and I appreciate your thoughts
14 but you are just consuming our time. And if he is willing
15 to stay a little longer in the hopes of getting done, then I
16 think he'd probably want to do that.

17 THE WITNESS: Mr. Blanks, I have done this for
18 plaintiff attorneys several times in the past who have
19 promised 20 or 30 minutes; and it's always wound up to be an
20 hour and a half or two hours. I can't do that.

21 MR. BLANKS: Well, I'm not going to do you an hour
22 and a half. I promise you that.

23 MR. TAYLOR: There is your answer. I mean, I
24 think he has declined to proceed and --

25 MR. BLANKS: Well, I -- now, you all be quiet a

1 minute now. I am going to ask you to stay so we can get
2 done. Otherwise, we are going to have to adjourn and come
3 back and I don't want to do that and I don't know whether
4 you want to or not but you probably don't. I'm really sorry
5 we got into this long digression on Dreessen here, but I'd
6 invite you to give us a chance to wrap up and --

7 MR. ALMQUIST: I have been through those --

8 MR. BLANKS: Let him answer me instead of your
9 speech and Tom's speech because, I mean, that's -- that's
10 where we are going to go. If we don't get done --

11 THE WITNESS: I'm disinclined to go further. I'm
12 tired. I've been fighting a cold for a couple of weeks.
13 I'm getting over it, but I would rather not push myself any
14 harder than I have been pushed already.

15 MR. BLANKS: Would you be willing to give these
16 other people a chance to just ask you any questions they
17 might have? While we are talking, as you can see, I am
18 flipping through my stuff and making sure that we have
19 pretty well covered everything that I need to cover. And,
20 indeed, we have. Though, we haven't talked about your books
21 that you brought; but I want to cover that. And then, I'll
22 pass the witness and let everybody have a chance at you.
23 And I'll bet you they don't take much of it. Would you be
24 willing to give that a try?

25 MR. TAYLOR: I'm sorry. I'm not understanding.

1 Are you passing or not right now? Are you done?

2 MR. BLANKS: I want to ask to ask -- I want to ask
3 -- if the doctor will stay with us and let us finish, I
4 want to ask us a couple of questions about the papers he
5 brought; and then, I'm passing. That's all I've got. So,
6 I've got -- first, I've got a question to you. Would you be
7 willing to give that a try in hopes we can get done in truly
8 within the 30 minutes or 20 minutes?

9 THE WITNESS: Where do we watch the guillotine
10 drop or guillotine?

11 MR. BLANKS: You're -- well, I guess, you know, I
12 don't have a gun; and I'm not going to scream at you. I
13 mean, I guess you can get up and walk out.

14 THE WITNESS: Well, I know I could do that. I
15 don't want to be obstreperous. I really don't have anything
16 to say about these papers. They are published.

17 MR. BLANKS: Well --

18 THE WITNESS: I don't know, Joe. I -- as I said,
19 I am tired. My voice is tired. My throat is tired.
20 Although, it's not sore; and it was sore when I got here
21 this morning. It's been sore for the last week. I am
22 getting better, but I'm not over it. One can hear that in
23 my voice. I just -- I would rather not. I'm sorry. I
24 really would rather not.

25 MR. BLANKS: Well, I'll pass the witness and give

1 you all an opportunity to cross-examine.

2 MR. ALMQUIST: Well, again, with the

3 cross-examination --

4 MR. BLANKS: Is there any cross-examination?

5 MR. ALMQUIST: Yeah. There are some questions I

6 will have to ask.

7 MR. JONES: I don't have anything.

8 MR. BLANKS: Is there anything from anybody else

9 present? I hear nothing. I hear nothing from anyone but

10 Mr. Dow.

11 MR. ALMQUIST: I have some questions I'm going to

12 ask this witness. If I'm going to ask him questions, it's

13 going to take me a while to ask questions.

14 MR. BLANKS: Well, okay.

15 MR. TAYLOR: Well, then, it sounds like it's the

16 same rule for everyone and --

17 MR. BLANKS: And then --

18 MR. TAYLOR: -- I would say we are coming back, it

19 sounds like, because if, you know, he is not going to go

20 past 5:00 for you, he is certainly not going to go past 5:00

21 for Dow. He is not going to go past 5:00 for us. I don't

22 blame him. So, I think we are done for the day; and we will

23 come back another time.

24 MR. BLANKS: All right. No. The situation now

25 is: I pass the witness. Dow wants to ask you a few

1 questions. You probably know what they are. There are
2 probably not many. Do you prefer to stay and be done with
3 us here? I don't -- I can't speak for Mr. Almquist.

4 THE WITNESS: I would -- what I would prefer is
5 being able to answer all of your questions.

6 MR. BLANKS: I'm done. You have done me a good
7 job and --

8 THE WITNESS: If you know you are done --

9 MR. BLANKS: Well, I'm done. Now, if he does
10 something on his redirect, well, then, we may have to come
11 back. You know that. But, I mean, I want to be done as
12 well as you do, as much as I love your city; and I enjoy
13 your company. So -- but we've been talking now for about 15
14 minutes to no avail. So, if --

15 MR. ALMQUIST: I think I need a minute break. I
16 want to talk to some of the other attorneys and see if they
17 anticipate any questions and stuff.

18 MR. BLANKS: Well, the only other --

19 MR. TAYLOR: Off the record.

20 MR. ALMQUIST: Off the record.

21 MR. BLANKS: All right.

22 (After the break, the proceedings continued as
23 follows:)

24 MR. ALMQUIST: None of our attorneys have any
25 questions, and none of the other attorneys have any

1 questions. So, the depo -- that's it.

2 MR. BLANKS: Can we put on the record before you
3 pack up what you brought with you today, and then -- I'm not
4 going to take them but --

5 THE WITNESS: Do you want me to copy anything for
6 you?

7 MR. BLANKS: You know, I probably have most of
8 this anyway.

9 THE WITNESS: You probably do.

10 MR. BLANKS: So, probably not.

11 THE WITNESS: Yeah. Okay.

12 MR. BLANKS: But I appreciate the offer. Just
13 wrapping up for the record, Dr. Peterson was kind enough to
14 bring today some of his personal library, including, in
15 particular, bound copies of the "American Industrial Hygiene
16 Association Journal," Volumes 17 through 18, years 1956
17 through 1957, and Volumes 19 through 20 for years '58 and
18 '59; the second revised edition of Patty's "Industrial
19 Hygiene and Toxicology" from years 1950 -- from the year
20 1958, and that's in multiple volumes, I believe; and some
21 AIHA Journals from '62, '63, Volumes 23 and 24, '64 and --
22 1964 and '65, Volumes 25 and 26. All of them filched, by
23 the way from -- no doubt withdrawn from circulation of some
24 college library.

25 THE WITNESS: No. They were my volumes that were

1 put in our library.

2 MR. BLANKS: I see. And Stern on air pollution.

3 THE WITNESS: Three volumes there.

4 MR. BLANKS: Oh, I thought it was three copies of
5 the same book.

6 THE WITNESS: No. Three volumes. Volumes 1, 2,
7 and 3.

8 MR. BLANKS: Three volumes from 1968, the AIHA
9 Journal, Volumes 21 through 22; 1960 through '61; and did
10 you get Dr. Peterson's comment that the AIHA Journals, at
11 least, were bound copies of his personal AIHA Journals from
12 those early years, which I gather you had put in the library
13 at the college library?

14 THE WITNESS: In market.

15 MR. BLANKS: Market, yes, for our use, which they
16 gave you when you departed for your own keepsake?

17 THE WITNESS: They did.

18 MR. BLANKS: Okay. Thank you, sir.

19 THE WITNESS: My pleasure.

20 (Proceedings concluded.)

21

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25

1 WITNESS CERTIFICATE

2 STATE OF *

3 COUNTY OF *

4 I, JACK E. PETERSON, P.E., Ph.D., do hereby certify
 5 that I have read the foregoing transcript of my videotaped
 6 testimony given in the foregoing numbered and styled cause
 and that same is true and correct to the best of my
 7 knowledge and belief with the exception of the following
 corrections by page and line number:

8 PAGE/LINE _____ CORRECTION _____
 9 REASON FOR CORRECTION _____
 10 PAGE/LINE _____ CORRECTION _____
 11 REASON FOR CORRECTION _____
 12 PAGE/LINE _____ CORRECTION _____
 13 REASON FOR CORRECTION _____
 14 PAGE/LINE _____ CORRECTION _____
 15 REASON FOR CORRECTION _____
 16 PAGE/LINE _____ CORRECTION _____
 17 REASON FOR CORRECTION _____
 18 PAGE/LINE _____ CORRECTION _____
 19 REASON FOR CORRECTION _____
 20 PAGE/LINE _____ CORRECTION _____
 21 REASON FOR CORRECTION _____

22 _____
 23 JACK E. PETERSON, P.E., Ph.D.

24 Sworn to and subscribed before me on this _____ day
 of _____, 1996.

25 _____
 Notary Public for the State of _____

1 STATE OF TEXAS:

2 COUNTY OF ANGELINA:

3

4 I, Laura Dee Bates, a Certified Shorthand Reporter and

5 Notary Public in and for the State of Texas, do hereby

6 certify that the above and foregoing transcript contains a

7 true and correct transcription of my shorthand notes taken

8 during the videotaped deposition of JACK E. PETERSON, P.E.,

9 Ph.D., after having been first duly sworn, on September

10 27th, 1996.

11

12 CERTIFIED TO on this the 21st day of October, 1996.

13

14

15

16

17

18 Laura Dee Bates, CSR, RMR

19 3200 Old Union Road

20 Lufkin, Texas 75904

21 (409) 634-1879

22 My commission expires: 12-31-96

23 Certification No. 1371

24

25

1 FILING CERTIFICATE
 2 CONSOLIDATED
 3 CAUSE NO. A-135,876
 4 KEITH F. GIBLIN, ET AL * IN THE DISTRICT COURT OF
 5 VS. * JEFFERSON COUNTY, TEXAS
 6 A.C.& S., INC., ET AL * 58TH JUDICIAL DISTRICT
 7 CAUSE NO. A-140,498
 8 JOYCE A. BORNE, ET AL * IN THE DISTRICT COURT OF
 9 VS. * JEFFERSON COUNTY, TEXAS
 10 ALLIED SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT
 11 CAUSE NO. E-141,216
 12 JOSEPH E. BARNARD, ET UX * IN THE DISTRICT COURT OF
 13 VS. * JEFFERSON COUNTY, TEXAS
 14 ALLIED-SIGNAL, INC., ET AL * 58TH JUDICIAL DISTRICT
 15 CAUSE NO. B-141,242
 16 ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
 17 VS. * JEFFERSON COUNTY, TEXAS
 18 AMERICAN OPTICAL CORPORATION, *
 19 ET AL * 60TH JUDICIAL DISTRICT
 20 CONSOLIDATED
 21 CAUSE NO. A-134,614
 22 FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
 23 VS. * JEFFERSON COUNTY, TEXAS
 24 BETHLEHEM STEEL CORP., ET AL * 58TH JUDICIAL DISTRICT
 25 CAUSE NO. B-126,986
 26 RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
 27 VS. * JEFFERSON COUNTY, TEXAS
 28 AMERICAN PETROFINA, INC., ET AL * 60TH JUDICIAL DISTRICT
 29 CONSOLIDATED
 30 CAUSE NO. A-144,426
 31 GLADYS FORRESTIER, ET AL * IN THE DISTRICT COURT OF
 32 VS. * JEFFERSON COUNTY, TEXAS
 33 AC&S, INC., ET AL * 58TH JUDICIAL DISTRICT
 34
 35 VIDEOTAPED DEPOSITION OF JACK E. PETERSON, P.E., Ph.D.
 36
 37 TAKEN ON SEPTEMBER 27, 1996
 38
 39 I, Laura Dee Bates, Certified Shorthand Reporter in and
 40 for the State of Texas, hereby certify pursuant to the Rules
 41 and/or agreement of the parties present to the following:
 42 That this deposition transcript is a true record of the
 43 testimony given by said witness, JACK E. PETERSON, P.E.,
 44 Ph.D., after having been first duly sworn by me.

1 That \$709.00 is the charge for the preparation of the
2 completed deposition transcript and any copies of exhibits
3 charged to Counsel for the Plaintiffs, Hon. Joseph C.
4 Blanks, SBN 02456700.

5 That the deposition transcript was submitted the
6 21st day of October, to JACK E. PETERSON, P.E., Ph.D.,
7 through his attorney, Hon. Arthur Almquist, for examination
8 and signature and returned to Laura Dee Bates, CSR, RMR, the
9 _____ day of _____, 1996. The attached witness
10 certificate sheet contains any changes and the reasons
11 therefor made by the witness.

12 That the deposition transcript ^ was ^ was not returned
13 to the deposition officer by the witness and/or counsel.

14 That the original deposition transcript, or a copy
15 thereof, together with copies of all exhibits, was delivered
16 on the _____ day of _____, 1996, to the attorney
17 or party who asked the first question appearing in the
18 transcript.

19 That pursuant to information made a part of the record
20 at the time said testimony was taken, the following includes
21 all parties of record:

22 (See Attachment "A".)

23 That a copy of this certificate was served on all
24 parties shown.

25

1 GIVEN under my hand and seal of office on this the
2 _____ day of _____, 1996.

3

4

5 Laura Dee Bates, CSR, RMR
6 3200 Old Union Road
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9 My commission expires: 12-31-96
10 Certification No. 1371

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1 B-126,986
 2 RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
 3 VS. * JEFFERSON COUNTY, TEXAS
 4 AMERICAN PETROFINA, ET AL * 60TH JUDICIAL DISTRICT

5 A-134,614
 6 FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
 7 VS. * JEFFERSON COUNTY, TEXAS
 8 BETHLEHEM STEEL CORP., *
 9 ET AL * 58TH JUDICIAL DISTRICT

10 B-141,242
 11 ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
 12 VS. * JEFFERSON COUNTY, TEXAS
 13 AMERICAN OPTICAL CORP., *
 14 ET AL * 60TH JUDICIAL DISTRICT

15 A-138,633
 16 MARGARET FAULKNER, ET AL * IN THE DISTRICT COURT OF
 17 VS. * JEFFERSON COUNTY, TEXAS
 18 AKRON CHEMICAL CO., ET AL * 58TH JUDICIAL DISTRICT

19 A-136,143
 20 KEITH GIBLIN, ET AL * IN THE DISTRICT COURT OF
 21 VS. * JEFFERSON COUNTY, TEXAS
 22 MOBIL OIL CORPORATION, *
 23 ET AL * 58TH JUDICIAL DISTRICT

24 VOLUME II
 VIDEO DEPOSITION OF VERALD K. ROWE

23 deposition was held at the Arizona Biltmore Resort
24 Hotel, 24th Street and Missouri Avenue, Phoenix,
25 Arizona, pursuant to Stipulation of Counsel.

351

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2 respective client or clients in the cause of action or
3 causes of action in which he/she has filed an answer,
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1 I N D E X

2 VOLUME II

3 DEPOSITION OF VERALD K. ROWE

4 May 11, 1993, and May 12, 1993

5 MAY 11, 1993 PAGE

6 EXAMINATION BY MR. BLANKS (Cont'd) 363 - 517

7 MAY 12, 1993

8 EXAMINATION BY MR. BLANKS (Cont'd) 517 - 645

RE-EXAMINATION BY MR. HOBSON 645 - 673

9

10 E X H I B I T S

11

PLAINTIFFS'

12 EXHIBIT NO. DESCRIPTION PAGE

13 * (Exhibit Vol. IV)

14 710105 WCH Document Entitled, "Public
Health Hazards from

15 Environmental Chemical
16 Carcinogens, Mutagens and
Teratogens," by W. C. Hueper
(Bates Nos. 1053 - 1071) 609

17

ROWE 9 Xerox Copy of Handwritten
18 Speech Notes of V. K. Rowe,
Bearing the Penciled Notation
19 "from loose papers at top of
stack" in Upper Left-Hand
20 Corner, Relating to Broad
Concept of Toxicology and
21 Safety and Kinds of Tests
Conducted, Educational
22 Lecture
(Bates Nos. 1072 - 1091) 613

23

* Plaintiffs' Exhibits Bearing Bates Nos. 0001 through
24 1052 will be found in Exhibit Vols. I through III

Attendant to Vol. I of the Deposition of V. K. Rowe
25 Taken on October 1, 1992, and October 2, 1992.

1	ROWE 10	Xerox Copy of Handwritten	
2		Speech Notes of V. K. Rowe	
		(Bates Nos. 1092 - 1101)	614
3	ROWE 11	Xerox Copy of Handwritten	
4		Speech Notes of V. K. Rowe	
		(Bates Nos. 1102 - 1111)	614
5	ROWE 12	Xerox Copy of Handwritten	
6		Notes of V. K. Rowe	
		(Bates Nos. 1112 - 1113)	614
7	ROWE 13	Xerox Copy of Handwritten	
8		Notes of V. K. Rowe	
		(Bates Nos. 1114- 1158)	614
9	ROWE 14	Xerox Copy of Handwritten	
10		Draft of Speech of V. K. Rowe	
		(Bates Nos. 1159 - 1171)	614
11	ROWE 15	Xerox Copy of Handwritten	
12		Notes of V. K. Rowe	
		(Bates Nos. 1172 - 1186)	614
13	ROWE 16	Xerox Copy of Handwritten	
14		File Cards of V. K. Rowe	
		(Bates Nos. 1187 - 1236)	617
15	ROWE 17	Collection of Colored Slides	
16		or Charts Regarding Incidence	
17		of Various Types of Cancer in	
		Population (Re: Smoking)	
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19		(Exhibit Vols. V through XVIII)	
20	ROWE 18	Collection of Documents from	
21		Personal File of V. K. Rowe	
22		Relating to Various Aspects	
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		Carcinogenesis	
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24			
25			

1 S T I P U L A T I O N

2

3 IT IS STIPULATED AND AGREED BY COUNSEL FOR
4 THE PARTIES HERETO:

5 That the deposition of the Witness named
6 herein is taken pursuant to the Texas Rules of Civil
7 Procedure;

8 That the Witness may sign the deposition
9 before any duly authorized and acting Notary Public
10 for the appropriate area in which signature is
11 obtained;

12 That this deposition, or any part thereof,
13 when so taken may be used upon the trial of this cause
14 with the same force and effect as if the Witness were
15 present in court and testifying in person;

16 That all objections, other than those that
17 relate to the form of the question and responsiveness
18 of the answer, are hereby preserved and may be made at
19 the time any testimony herein is sought to be offered
20 upon the trial of this cause, despite no objection
21 having been made at the time the testimony was
22 taken;

23 That an objection made by one Defendant

24 shall serve as an objection by all Defendants for
25 purposes of this deposition;

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1 That the deposition is to be videotaped by
2 Gary Brewton of Project Video;
3 That Sandra S. Sullivan, a Certified
4 Shorthand Reporter in and for the State of Texas, may
5 act as a Certified Shorthand Reporter in and for the
6 State of Arizona for the purposes of swearing the
7 Witness in this deposition;

8 That the original transcript of the
9 deposition, pursuant to Rule 206 of the Texas Rules of
10 Civil Procedure, will be given to Joseph C. Blanks for
11 safekeeping and use at trial. In the event the
12 original deposition is unavailable at the time of
13 trial, an unsigned copy of the transcript may be
14 utilized in lieu thereof.

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1 (REPORTER'S NOTE: PRIOR TO THE
2 VIDEOTAPED PORTION OF THE DEPOSITION,
3 THE FOLLOWING PROCEEDINGS WERE HAD:)

4 THE REPORTER: Same stipulations?

5 MR. PIERCE: Yes. And the witness
6 will read and sign.

7 MR. PAPPAS: An objection made by
8 one is an objection by all?

9 MR. BLANKS: Oh, yes.

10 (AT THIS TIME THERE WAS A BRIEF
11 OFF-THE-RECORD DISCUSSION AND THE
12 WITNESS WAS RESWORN BY THE REPORTER.
13 AT 9:16 A.M. THE VIDEOTAPED PORTION OF
14 THE PROCEEDINGS THEN BEGAN AS FOLLOWS:)

15 MR. PIERCE: Just a statement for
16 the record and for the room: As you
17 may recall, Dr. Rowe has a severe
18 hearing problem. He wears a hearing

19 aid in each ear. Minor rustling of
20 papers and whispering causes him great
21 discomfort and inability to hear the
22 questions. So, we'd appreciate it if
23 you could be very careful about the
24 amount of background noise here. Thank
25 you.

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1 VERALD K. ROWE,
2 having been duly resworn, testified as follows,
3 to-wit:
4 RESUMPTION OF EXAMINATION BY MR. BLANKS:
5 Q. Good morning, Dr. Rowe.
6 A. Good morning.
7 Q. How are you today, sir?
8 A. Fine.
9 Q. Thank you for joining us. Was it the case,
10 Dr. Rowe, that you were not served with a subpoena for
11 this deposition?
12 A. I was not.
13 Q. All right, sir. Well, we appreciate your
14 being here this morning. And could you just tell us
15 who's here representing you today so we know from the
16 start? Is Mr. Almquist here for you?

17 MR. ALMQUIST: I'm here for Dow
18 Chemical.
19 MR. POFF: Could the witness speak
20 up, please?
21 A. Dr. Pierce is representing me.
22 Q. Okay. Dr. Rowe, when we adjourned
23 previously, we were midway into talking about asbestos
24 matters and your knowledge and some history from Dow
25 Chemical and those years that you worked there.

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1 It was not clear to me in rereading the
2 deposition nor in looking at your resume or your C.V.
3 what years you actually worked in or had any
4 supervision over people doing industrial hygiene at
5 Dow. And I would appreciate it if you could make that
6 clear for me.
7 I note that your C.V. says from '70 to '73
8 you were the Director of Toxicology and Industrial
9 Hygiene in Chemical Biology Research. The period
10 before that, '64 to '70, you show yourself as
11 Assistant Director of Biochemical Research
12 Laboratory.
13 Was any of that period, '64 to '70, time

14 where you had any kind of administrative or
15 supervisory responsibility for Dow industrial
16 hygienists anywhere?

17 A. I don't believe I had any administrative
18 responsibility during those years.

19 Q. During those years of '64 to '70, could you
20 tell us who would have had the administrative
21 responsibility or would have been in charge of the Dow
22 industrial hygienists?

23 MR. PIERCE: Objection to the
24 form; compound question.

25 A. Would you repeat, please.

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1 Q. Yes, sir. During the years '64 to '70 who
2 at Dow was in charge of the industrial hygienists?

3 A. Mr. Hoyle was head of the industrial hygiene
4 section.

5 Q. To whom did Mr. Hoyle report during that
6 period, '64 to '70?

7 A. I believe he reported to Dr. Adams.

8 Q. And Dr. Adams would have been in the
9 biochemical research laboratory?

10 A. Yes.

11 Q. Were you, yourself, reporting to Dr. Adams

12 during any of those years of '64 to '70?

13 A. Yes.

14 Q. And would you remind me, then? What was
15 Dr. Adams' title during that time, if you recall, or
16 his effective job description?

17 A. He -- As I recall, assistant director of the
18 laboratory.

19 Q. Of the biochemical research laboratory, --

20 A. Yes.

21 Q. -- is it? And you're confusing me. And I'm
22 not meaning to confuse you; but you, yourself, were
23 assistant director of the biochemical research
24 laboratory in '64 to '70. So, does that mean there
25 were two assistant directors or more?

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1 A. Yes.

2 Q. Okay. And then in the years before '64,
3 going back to the - when Mr. Hoyle was hired, do you
4 recall to whom or to what office he would have been
5 reporting during those prior years?

6 A. He reported to Dr. Adams.

7 Q. So, your recollection would be that on back
8 to into the Forties, whenever Mr. Hoyle joined the

9 company, Dr. Adams would have been the man that was in
10 charge of the industrial hygienists and then --

11 A. That is my recollection.

12 Q. Okay. But there was a time in those years
13 between '37 and '70 when you, yourself, did have some
14 role in the industrial hygiene program at Dow, wasn't
15 there?

16 A. Yes.

17 Q. Could you just briefly summarize that for
18 us?

19 A. In the early years I worked - assisted
20 Dr. Adams in pursuit - occasionally in the industrial
21 hygiene area. But I - my responsibility was not
22 within industrial hygiene.

23 Q. Your work was essentially toxicology in the
24 laboratory?

25 A. That's right.

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1 Q. And to the extent the toxicology work was
2 helpful to the industrial hygienists, you had some
3 role in the industrial hygiene program, I suppose.

4 A. Oh, yes. All of us are aware of these
5 situations, but you asked me about responsibility.

6 Q. Yes, sir. Okay. And up to the time that

7 you retired from Dow in 1979, did industrial hygiene
8 remain a subdepartment of the biochemical research
9 laboratory?

10 A. The biochemical research laboratory name
11 changed earlier like - but industrial hygiene remained
12 as a section in the -- Industrial hygiene in
13 toxicology was more or less separated and made a unit
14 in about 1970.

15 Q. Okay. If I'm understanding you, then: In
16 the early years industrial hygiene and toxicology were
17 two, like, parallel groups or offices; but both were
18 in the biochemical research lab, or whatever it was
19 called, during the different years. Is that the shape
20 of it?

21 A. I will ask you to repeat that one.

22 Q. From an organizational standpoint, the
23 toxicology department was part of the biochemical
24 research lab.

25 A. Yes.

1 Q. During all the years you were at Dow.

2 A. No.

3 Q. No? Changed around 1970?

4 A. Yes.

5 Q. Okay. And from the beginning of the
6 industrial hygiene program at Dow, up until around
7 1970, industrial hygiene was also part of the
8 biochemical research lab.

9 A. That's right.

10 Q. And the industrial hygiene staff and the
11 toxicology staff worked together from time to time but
12 not in the same department from an organization
13 standpoint.

14 A. In what time frame?

15 Q. Up until about 1970.

16 A. Yes. They worked -- They were pretty
17 independent groups.

18 Q. And then in 1970 there was some
19 reorganization, and toxicology and industrial hygiene
20 were merged together. And that's when you were
21 director.

22 A. Yes.

23 Q. Okay. And so far as you know, toxicology
24 and industrial hygiene remained in one group up until
25 the time you retired in 1979.

1 A. I don't remember.

2 Q. But the medical department during none of
3 the 42 years you were with the company was in charge
4 of industrial hygiene, was it?

5 A. No.

6 Q. And I think you told us that the reason that
7 the toxicology department was created at Dow was
8 because of Dr. Willard Dow's concern for the health
9 and safety of people working in the Dow plants.

10 A. Yes.

11 Q. And that this concern was triggered or the
12 catalyst for creating the department with some
13 unfortunate incident where some workers were injured
14 by some chemical exposure in a plant. Do you recall
15 that?

16 A. Yes.

17 Q. And wasn't it the case, then, that the
18 toxicology lab really had a charter to know about the
19 toxicity of the materials that workers in the Dow
20 plants would encounter in doing their work in the
21 plants?

22 A. Our charge really was to learn as much as we
23 could about the toxicological effects of materials,
24 yes.

25 Q. And one of the ways you did that was to test

1 all the materials that were used at Dow for which you
2 couldn't find toxicological information already
3 existing in the literature?

4 A. That was our purpose; but, of course, that
5 took over a number of years to accomplish that.

6 Q. All right, sir. But basically where the
7 toxicity of a material used in the Dow plant was
8 unknown, that - that material would have been on your
9 list of materials to investigate?

10 A. As much as was humanly possible with the
11 staff we had at that time.

12 Q. All right, sir. But if a material that was
13 used in Dow plants was already written up in the
14 literature, discussed in the literature, was it the
15 case, then, that you relied on what was in the medical
16 and scientific literature about the material and did
17 not test those materials?

18 MR. PIERCE: Objection to the form
19 of the question. It's ambiguous and
20 essentially, even though it does not
21 use the word "or," contains the
22 elements of a compound question.

23 A. I guess I'll have to have you rephrase it.

24 Q. If a material used in Dow plants during
25 those years that you worked for the company was

1 reported in the medical and scientific literature from
2 a toxicological standpoint, would you still go ahead
3 and test that material for toxicity or would you
4 alternatively just rely on what was in the literature?

5 MR. PIERCE: Continue the
6 objection.

7 A. I don't believe there was any set program.
8 We tried to take advantage of any published
9 information and not to repeat any particular work, if
10 we felt that it was all right, in our judgment.

11 Q. All right, sir. So, given the resources
12 that you had, you had to set priorities, I suppose, on
13 what you were going to do tox. testing on. True?

14 A. Always.

15 Q. But one of the resources that you had
16 available would have been the medical and scientific
17 literature that existed in any given year. True?

18 A. Well, certainly parts of it.

19 Q. How do you mean -- What do you mean "parts
20 of it"?

21 A. Well, I'm sure we didn't have a library that
22 had every journal in the world or article in it.

23 Q. Well, I think you told us that if there was
24 anything that you needed or wanted, your librarian at
25 the Dow - the main plant could always get it for you.

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1 Wasn't that so?

2 A. They made an effort if it was requested,
3 yes.

4 Q. Okay. Well, what I was wondering, though,
5 was that if, in fact, a material was reported in the
6 medical literature to where you had toxicological
7 information available to you on it, then that would
8 have been a material that you wouldn't ordinarily test
9 for toxicity.

10 A. Yes.

11 Q. And it was the case, wasn't it, that Dow
12 didn't do any toxicological testing of asbestos?
13 Isn't that so?

14 MR. PIERCE: Do we have a time
15 frame here? Ever? I mean...

16 MR. BLANKS: Well, I think the
17 implied time frame would be during
18 Dr. Rowe's employment there. So, let
19 me --

20 (By Mr. Blanks)

21 Q. Prior to your retiring, sir, did Dow, to
22 your knowledge, do any toxicity testing of asbestos?

23 A. I don't remember that we did.

24 Q. Have you thought about that, given that
25 we've visited over the course of days and knowing you

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1 were expecting to depose further on the topic?

2 A. The problem, as I understood it, with
3 asbestos was primarily inhalation. And, to my
4 knowledge, we did not do any inhalation work on
5 asbestos.

6 Q. All right. Was it the case, Dr. Rowe, that
7 while you were at Dow that Dow did not do any analysis
8 of thermal insulation products for asbestos content?

9 A. I don't know.

10 Q. Wasn't it a fact that the Dow engineering
11 department or its equivalent did, in fact, write
12 specifications for thermal insulation to be used in
13 Dow plants?

14 A. I don't know.

15 Q. Do you recall being - being asked to do any
16 toxicology testing of any kind of materials that Dow
17 purchased over the years? Would this have been part

18 of the normal procedure?

19 A. I don't remember. It certainly wasn't
20 routine.

21 Q. It was not routine?

22 A. No.

23 Q. Could you briefly explain to me what the
24 routine was, then, in those - the first decade or so
25 that you were doing toxicology work? - the routine in

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1 terms of deciding what would be tested in your labs or
2 sent for testing in outside labs.

3 A. There were a number of factors that would
4 have been considered. One, what the ultimate end of a
5 product was. Was it something that we were going to
6 take to Food and Drug? We would -- It may not have
7 been tested in any way outside in that - because this
8 was a new application. Then we would have certainly
9 been involved. That type of thing.

10 Q. So, during some of these years you were with
11 Dow, the company was in the drug business, the
12 pharmacology business?

13 A. What time frame?

14 Q. I don't know. Perhaps you could tell me.

15 A. I can't remember the dates when Dow engaged

16 first with LePetite and then created Dow
17 Pharmaceutical, but we had little to do with that in
18 the early - early part of it. There was a time when
19 some of the pharmacologists from the Dow
20 Pharmaceutical laboratory in Indianapolis were
21 transferred to Midland as a part of our reorganized
22 laboratory. But otherwise I had nothing to do with
23 the pharmaceutical side.

24 Q. Okay. So, Dow Pharmaceutical was, I'm
25 inferring, a subsidiary of Dow?

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1 A. Yes.

2 Q. And it was based in Indianapolis?

3 A. (Nodding affirmatively)

4 Q. And they had their own laboratory there?

5 A. Yes.

6 Q. And it's just that some of those scientists
7 from that laboratory were later transferred to your
8 lab in Midland?

9 A. For a period of short time. I can't
10 remember just the reason why.

11 Q. But as a general rule, then, your toxicology
12 lab in Midland did not specifically do studies of new

13 drug formulations.

14 A. That is true.

15 Q. Okay. So, the routine for your lab in

16 Midland would have been to investigate new products

17 being formulated by Dow, for one thing?

18 A. Or synthesized or formulated for some

19 particular purpose.

20 Q. Okay. And would it also have included as

21 part of the routine to investigate materials that Dow

22 was purchasing to use in the making of its products?

23 A. To some extent, anyway.

24 Q. All right. And to what extent did the

25 routine of the toxicology lab in any of these years

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1 involve testing, then, materials that were present in

2 the workplace in the Dow plants other than those in

3 the products you were making or the raw materials you

4 were buying?

5 A. The -- From the standpoint of occupational

6 exposure?

7 Q. Yes, sir.

8 A. This was our prime charge at the very

9 beginning.

10 Q. Was to consider any of the potential -

11 potentially harmful occupational exposures that could
12 occur in the plant at Dow?

13 A. We tried to identify them, yes.

14 Q. All right, sir. You said that Dow had not
15 done any inhalation tests on asbestos at least by the
16 time you left the company.

17 A. I do not recollect any.

18 Q. All right, sir. Would you say that asbestos
19 as it might be encountered in Dow's plants was a
20 potential - potentially harmful occupational exposure
21 that the toxicology department did identify?

22 MR. PIERCE: Objection to the form
23 of the question; assumed facts not in
24 evidence.

25 MR. ALMQUIST: I also object on

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1 grounds it's ambiguous. It doesn't
2 contain enough information for an
3 answer.

4 A. Insofar as asbestos was concerned, again it
5 is my recollection that we - whatever was done in the
6 industrial hygiene area was done as a result of the -
7 whatever was in the literature and the A.C.G.I.H.

8 recommendations.

9 MR. DAVIS: Can you ask the

10 witness to speak up some?

11 MR. ALMQUIST: Doctor --

12 MR. PIERCE: V. K., try to speak a

13 little bit louder, if you can; okay?

14 THE WITNESS: Oh. Sorry.

15 Q. So, you say the industrial hygiene response

16 at Dow to any potential asbestos exposures was based

17 on what was existing in the literature during the

18 particular years that --

19 A. That's my understanding.

20 Q. Okay. And, in fact, there was published

21 literature regarding asbestos toxicity and its hazards

22 from inhalation that did exist in the literature

23 during all the years you worked for Dow, wasn't there?

24 MR. PIERCE: Wait. When you say

25 "all the years," you mean starting in

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1 1937?

2 MR. BLANKS: Yes, sir.

3 A. I'm not familiar with the dates of the

4 publications on asbestos.

5 (By Mr. Blanks)

6 Q. All right, sir. Are you -- You are aware,
7 though, that there are articles in the medical and
8 scientific and industrial hygiene literature going
9 back even to the late Thirties that do address
10 asbestos as an occupational exposure hazard, aren't
11 you?

12 A. That's my understanding.

13 Q. Dr. Rowe, did Dow at any time that you were
14 there rely on manufacturers like Johns-Manville or
15 Owens-Illinois or Owens-Corning Fiberglas for
16 information about the health effects of asbestos
17 inhalation?

18 A. I can't be specific. That was common
19 practice, but that was not my bailiwick.

20 Q. Okay. Well, I don't mean to belabor this
21 point, although Mr. Pierce will probably tell me I
22 certainly must mean to belabor the point.

23 MR. PIERCE: Of course.

24 Q. Let me start over. But -- I mean, I think
25 you've told us that Dow didn't do tox. testing on

1 asbestos and it didn't do inhalation studies for
2 asbestos dust and there was literature available

3 during those different years that you were doing tox.

4 work that Dow would have relied on in setting up its

5 industrial hygiene program and carrying it on.

6 I'm just wondering if any effort was made in

7 the toxicology department to get information from

8 those companies that were manufacturing and selling

9 asbestos insulation and other asbestos products to

10 Dow.

11 MR. PIERCE: Objection to the

12 characterization of his previous

13 testimony.

14 But go ahead.

15 A. I don't know.

16 Q. Is it the case, you think, that you never

17 asked for any information from an asbestos insulation

18 manufacturer about its products and the asbestos

19 hazard that they might pose to workers?

20 MR. PIERCE: By "you," you mean

21 V. K. Rowe?

22 MR. BLANKS: Yeah.

23 A. I do not remember doing any such thing.

24 However, I would add that that would have been normal

25 practice in the industrial hygiene area for literature

1 on materials that were being purchased and used in the
2 plant. But I don't have any personal knowledge of
3 that.

4 (By Mr. Blanks)

5 Q. All right, sir. If such information were
6 requested from a manufacturer of asbestos insulation -
7 information about "What do we need to know about the
8 health effects of this product?," is that something
9 that would have been put in a file at Dow in the tox.
10 department or the industrial hygiene department, in
11 your experience?

12 A. I don't know. I would expect so.

13 Q. Were there ever times when you, yourself,
14 requested of a manufacturer information on the
15 toxicity of products that Dow was buying from them?

16 A. I must have, but I don't recollect any
17 specifics.

18 Q. Okay. Do you recollect, sir, that what
19 information you got as a matter of routine you would
20 have put in a file on that material or that irritant
21 or whatever it was?

22 A. Oh, yes.

23 MR. PIERCE: Objection to the
24 form.

25 Q. Dr. Rowe, if Owens-Corning Fiberglas or

1 Owens-Illinois had represented to Dow that their Kaylo
2 insulation was nontoxic, is that something that you
3 would have relied on?

4 A. Not with - without parameters of exposure
5 being delineated.

6 Q. Can you tell us, Dr. Rowe, when Dow began to
7 enforce rules to protect workers potentially exposed
8 to asbestos from breathing asbestos dust and fiber?

9 MR. PIERCE: Objection to the form
10 of the question; assumes facts not in
11 evidence and it's ambiguous.

12 A. I don't know.

13 Q. Do you believe, sir, that during any years
14 Dow had on its premises workers who were potentially
15 exposed to asbestos in their work?

16 A. Would you repeat, please.

17 Q. Yes, sir. I was wondering if you believed
18 that at any time you worked for Dow that there were on
19 Dow premises workers potentially exposed to asbestos
20 on the premises.

21 A. Oh, yes.

22 Q. Do you recall, sir, any steps Dow made
23 between 1970 and 1973 when you were the director of
24 toxicology and industrial hygiene to set out rules to

25 protect workers potentially exposed to asbestos on Dow

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1 premises?

2 A. I don't -- I don't remember.

3 Q. Can you recollect any from any prior time?

4 A. No.

5 Q. Was it your belief in the early 1960's,

6 Dr. Rowe, that breathing asbestos dust would not cause

7 disease under any circumstances?

8 MR. PIERCE: In any quantity, any

9 amount? You're not quantizing

10 this at all. Are you quanti --

11 MR. BLANKS: Well, no. I meant --

12 MR. PIERCE: Any amount?

13 MR. BLANKS: My question was --

14 MR. PIERCE: I think it's very

15 ambiguous as stated.

16 But go ahead. Sorry.

17 (By Mr. Blanks)

18 Q. I was asking - Let's try again - your belief

19 in the early 1960's whether or not breathing asbestos

20 dust in an occupational setting could - could or

21 wouldn't cause disease.

22 MR. PIERCE: Continue the
23 objection.
24 A. That goes back to the fundamental philosophy
25 that there is no such thing as a nontoxic material.

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1 It's all a matter of how much and under what
2 conditions. If an exposure is too great, you'll have
3 adverse effects. If it's below what is ordinarily
4 thought to be or considered to be a safe level, the
5 odds are very poor of an adverse effect. All depends
6 on how much and under what conditions.

7 Q. All right, sir. So, with that in mind, was
8 it your belief in the early Sixties, then, that there
9 was some level of asbestos dust exposure that one
10 could have that would cause disease?

11 A. That would cause?

12 Q. Yes, sir.

13 A. My recollection of the literature is that
14 there were documented cases years ago.

15 Q. And "years ago" would take us back at least
16 to the early Sixties?

17 A. I don't know the time frame when these
18 articles were published.

19 Q. We'd just have to look to the articles,

20 themselves, to see the dates for them?

21 A. Yes.

22 Q. But it would have been the case, then, that
23 Dow's biomedical research laboratory staff, including
24 its toxicology department and the other professionals
25 working there, at least would have had many, if not

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1 most or all, of this medical literature available to
2 it. True?

3 MR. PIERCE: Objection to the form
4 of the question. It's unanswerable as
5 asked, requires speculation as to the
6 mind and activities of others.

7 But answer it to the best of your
8 ability.

9 A. Well, certainly there were - there was some
10 literature that was available to people at that time.

11 Q. And it would also, as we mentioned before,
12 have been available in the decade of the Fifties and
13 the Forties, as well, documented cases of asbestosis
14 from occupational exposures. True?

15 A. That's my understanding.

16 Q. All right, sir. Dr. Rowe, had you known

17 from the suppliers or the manufacturers of asbestos
18 insulation that Dow used that these manufacturers' own
19 field installers of insulation had developed
20 asbestosis in, say, the Forties or the Fifties, would
21 you have urged Dow to do more to protect people
22 working in its plants from asbestos exposures?
23 MR. PIERCE: Once again, are you
24 going to leave the question that vague
25 with no numbers and no idea of

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1 exposure but just that general
2 question? - because I think it's
3 unanswerable as asked.
4 But try.
5 A. Our efforts in a situation like that would
6 have been to recognize the recommended levels of
7 exposure which were considered by the Government
8 agencies and so forth to be without particular
9 hazard.
10 Q. So, are you saying, then, that if a
11 Government agency said that a particular exposure
12 level was free of hazard that would have been all you
13 needed to know and it would not have been instructive
14 to you to know that people using the products, putting

15 the products in - the insulation in - were, in fact,
16 getting sick?

17 MR. PIERCE: Objection to the
18 form; compound question and ambiguous
19 and unintelligible in parts.

20 A. That's impossible to judge without knowing
21 what concentrations of exposure they received.

22 Q. So, had you been told that, let's say,
23 insulators working for Johns-Manville or some other
24 company were developing asbestosis, you would have
25 wanted to know about the actual exposure levels these

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1 men were encountering in doing their work.
2 A. I don't know that anything other than -- And
3 I don't really know what is in the literature, except
4 the literature and the experience was the basis of my
5 understanding of the acceptable levels as promulgated
6 by the A.C.G.I.H. and U. S. Public Health Service.
7 And we tried and I think, for all practical purposes,
8 we did control our exposures to such a level. That
9 was our -- That was our basic premise. We had
10 guidelines. We tried to follow them to the best of
11 our ability.

12 Q. Do you recall ever doing any testing to see
13 whether these guidelines were, in fact, adequate to
14 protect the workers exposed at or below the guideline
15 levels?

16 MR. PIERCE: Is that for any
17 compound at all, or are we speaking
18 about asbestos?

19 Objection to the question as
20 completely ambiguous.

21 Go ahead.

22 A. Are you speaking of asbestos?

23 Q. Well, I phrase it generally; and then I
24 follow up with a question on asbestos.

25 A. Well, please restate.

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1 Q. Okay. The first question was, was it the
2 case, then, that Dow relied on whatever guidelines
3 were existing at a particular time to decide whether
4 or not to protect workers from exposures. You relied
5 on the guidelines from the A.C.G.I.H.?

6 A. Yes, we did. But we also had one or two
7 occasions where we did not believe that the guidelines
8 were adequate and we revised and made our own.

9 Q. And I take it you made yours stricter than

10 what the A.C.G.I.H. guidelines were.

11 A. That's right.

12 Q. What led Dow to do that? What made you
13 suspicious of the guideline level?

14 MR. PIERCE: Compound question;
15 objection to the form.

16 A. Okay. Please come back with your question
17 again so I can put it...

18 Q. All right, sir. What was it in those couple
19 of instances that caused Dow to be suspicious of the
20 guideline for whatever the material was?

21 A. People were complaining and reporting to the
22 medical department not feeling well. And this caused
23 us to examine the exposures that were being received
24 in their operation - analyzing the operation. And if
25 those exposures when documented resulted in adverse

1 effects, we would conclude and did conclude in several
2 instances that the exposure levels were
3 inappropriate. And, so, we set about to find out what
4 an appropriate level was.

5 Q. So, if I understand you, the medical
6 department alerted you to some problems or complaints

7 among workers who were being exposed to particular
8 materials. Correct?

9 A. Yes.

10 Q. And then the response to that was for the
11 industrial hygienists to go out and actually measure
12 the exposure levels those workers were encountering.
13 True?

14 A. Yes.

15 Q. Did you find that the exposure levels were
16 at or below the guideline levels for the material?

17 A. I don't remember specific data.

18 Q. Well, I mean as opposed to finding that the
19 exposures were excessive.

20 A. The -- Using the guidelines did not explain
21 what was happening.

22 Q. Okay. So, it was apparent from the medical
23 information you had that the guidelines weren't
24 adequate.

25 A. That's right.

1 Q. But you surely must have made sure that the
2 exposures were within the guidelines in order to reach
3 the conclusions the guidelines weren't working, right?

4 A. I presume that's - that's an accepted fact.

5 Q. Yeah. It would seem the first thing that
6 you'd do would be to go out there and, let's say, find
7 out what their - what are the exposure levels. And if
8 the exposure levels were above the guideline, you'd
9 say, "Well, that's the problem. Let's get it down to
10 the guidelines," right?

11 MR. PIERCE: Objection to the
12 form; asked and answered several
13 times.

14 A. That's true. You had to study in some cases
15 the individual's work habits, why he was getting
16 excessive exposure, and why other people doing the
17 same job didn't. That's part of industrial hygiene.

18 Q. Yes, sir. Because individuals have both
19 different habits and, also, they vary in their
20 susceptibility to occupational disease, don't they,
21 given the same exposure levels?

22 A. Well, no two individuals are the same.

23 Q. Okay. Do you recall what any of those
24 materials were for which Dow wrote stricter exposure
25 standards for its own plants?

1 A. As I recollect, the first one was carbon

2 tetrachloride.

3 Q. Yes, sir. Can you recall any of the others?

4 A. I'm not sure about the - the stimulus for
5 the work we did on most of the aliphatic chlorinated
6 hydrocarbons. I don't recollect that that came
7 through the medical department, but it could have.

8 Q. Well, does that mean that you did at Dow
9 tighten up the guidelines or the standards for the
10 aliphatic chlorinated hydrocarbons for some reason or
11 other?

12 A. Yes. I can remember one other -- One
13 specific one was vinyl chloride.

14 Q. How far back in time or what period can you
15 place these actions in where you tightened up the
16 guidelines below what was generally considered
17 acceptable?

18 A. I can't give you the time frame. If you'll
19 look at our publications, they'll tell you.

20 Q. Oh, okay. Very good, sir. You said a few
21 minutes ago that - when I asked you about whether
22 information concerning asbestos disease in insulators
23 working for the manufacturers like Johns-Manville or
24 Armstrong or others would have been helpful to you
25 that you actually did control exposures to the

1 guideline levels at Dow. Correct?

2 MR. PIERCE: Objection to the

3 characterization of previous

4 testimony.

5 A. I -- I can't answer that question

6 positively. I don't know.

7 Q. Well, would you have found useful to you

8 information from asbestos insulation installer

9 companies about the occurrence of disease in their

10 employees? Is that information that would have been

11 useful to you at Dow?

12 A. If it was predicated on with quantitative

13 analyses.

14 Q. Would not the mere fact of reports of

15 asbestosis in insulators have caused you to at least

16 go out and confirm the exposure levels you were facing

17 having in your plants, if any?

18 A. It's my understanding that's what was done.

19 Q. Can you recall when that came to be done and

20 what - approximately when?

21 A. No.

22 Q. Can you recall for us, Dr. Rowe, what it was

23 that was done at Dow in, let's say, the Forties to

24 control exposures to airborne asbestos dust?

25 A. I don't know.

1 Q. Sir?

2 A. I do not know.

3 Q. Would you have any idea what was done to
4 control exposures to airborne asbestos dust in the
5 Fifties?

6 A. No. I don't know.

7 Q. Or in the Sixties?

8 A. I don't know.

9 Q. How about in the Seventies when you were the
10 director of toxicology and industrial hygiene, '70 to
11 '73?

12 A. I don't know.

13 Q. Can you point us to any evidence that the
14 exposures to airborne asbestos dust that did occur in
15 Dow plants were, in fact, below the guideline levels
16 for any particular year prior to your retirement?

17 A. I don't know.

18 Q. Did Dow ever request that there be
19 monitoring for exposures of workers potentially
20 exposed to asbestos during your years with the
21 company?

22 MR. PIERCE: Objection to the
23 form.

24 You're asking not if he requested
25 it but if anybody anyplace at Dow

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1 requested it; is that correct?

2 A. I don't know.

3 Q. Let me start over, then. Did you ever
4 request there be monitoring of workers potentially
5 exposed to asbestos in Dow plants?

6 A. Not to my knowledge.

7 Q. Are you aware, sir, of Dr. Adams or
8 Mr. Hoyle or any of the others working in your group
9 or in the I. H. group requesting that workers
10 potentially exposed to asbestos be monitored for their
11 exposures?

12 A. I know there was monitoring done. And
13 Mr. Hoyle would be the person that would be
14 responsible for that knowledge.

15 Q. Okay. In answers to interrogatories I think
16 the company, Dow, has said that in the Texas plants
17 that monitoring began in 1968. Do you have any
18 knowledge of that?

19 A. No.

20 Q. Do you have any recollection of when

21 monitoring of workers potentially exposed to asbestos

22 would have begun up in the Midland plants?

23 A. I don't recall.

24 Q. Do you recall, sir, if there was ever any

25 effort to try and identify who were the workers

394

1 potentially exposed to asbestos in Dow plants?

2 A. I don't know.

3 Q. Could you tell us when your group at Dow

4 learned of the hazardous properties of airborne

5 asbestos and its potential to cause, say, lung cancer?

6 A. I don't remember.

7 MR. PIERCE: Objection to the

8 form.

9 A. I do not remember.

10 Q. Would you recollect, sir, that that was not

11 until the late 1960's that Dow learned of the

12 hazardous properties of airborne asbestos?

13 A. I don't -- I don't know.

14 Q. So, you have no recollection either for

15 yourself or for what was - what was being done in the

16 toxicology or industrial hygiene group and its

17 awareness of the hazards of airborne asbestos?

18 MR. PIERCE: Objection to the

19 compound nature of the question.

20 A. Well, I was certainly aware that there was a
21 hazard due to asbestos. The control of that was the
22 responsibility of the industrial hygiene people. And
23 I knew they were -- I knew they made measurements, but
24 I do not know any of the detail. I don't recall,
25 anyway, if I saw them or not.

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1 Q. Okay. And you can't place that in a time
2 frame for us?

3 A. No.

4 Q. Is it your understanding that the medical
5 and toxicology professionals at Dow learned of the
6 hazardous properties of airborne asbestos prior to
7 articles being published in the medical and scientific
8 literature?

9 A. I have no such knowledge.

10 Q. Would your awareness of the hazardous
11 properties of airborne asbestos have actually come
12 from the published medical and scientific literature
13 as opposed to some independent work that was being
14 done at Dow?

15 A. Any information that we had came from either

16 published literature or word of mouth from someone.

17 Q. But you have no --

18 A. I don't -- I don't recall.

19 Q. All right, sir. Can you tell us when, if

20 ever, the Dow industrial hygiene department banned the

21 purchase of asbestos-containing insulation for use on

22 Dow premises?

23 A. No.

24 Q. How about asbestos-containing gaskets?

25 A. Beg your pardon.

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1 Q. Asbestos gaskets.

2 A. I don't know.

3 Q. What about asbestos cements?

4 A. I don't know.

5 Q. Was there ever a time that your

6 responsibilities with Dow included any dealings with

7 the Texas Dow plants?

8 MR. PIERCE: Objection to the form

9 based on vagueness of the terminology.

10 A. Yes. We had relations with the Texas plant.

11 Q. How far back would that go, from its being

12 constructed?

13 A. I can't give you dates, but a long time

14 ago.

15 Q. Yes, sir.

16 A. After -- Shortly after they were in
17 operation, I know that their - our reports were
18 available to them. If they had questions, they came
19 back to us.

20 Q. I'm thinking you told us that in the
21 beginning the Texas plants didn't have their own
22 toxicology lab or staff or even industrial hygienists
23 and they relied on the Midland group for those
24 services. Would that be correct?

25 MR. PIERCE: Objection to the

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1 form; mischaracterization of the
2 testimony he gave last time.

3 But go ahead.

4 A. Well, in the early days they did not, to my
5 knowledge, have - I know they did not have any
6 toxicology facilities. The -- I don't know when the
7 industrial hygiene work began down there but -- They
8 did have industrial hygiene early on, but I don't know
9 when.

10 Q. And wasn't it the case that somewhere along

11 the way that the Freeport plant actually got its own

12 toxicologist? Do you remember that?

13 A. I don't remember the dates.

14 Q. Do you remember that it happened, though?

15 A. Oh, yes.

16 Q. Okay. So, though we're not clear on the

17 dates - and I appreciate you don't remember them - for

18 some period of time at least the Freeport plant got

19 its industrial hygiene and toxicology services from

20 the Midland Dow employees?

21 MR. PIERCE: Objection to the

22 form. Once again, a

23 mischaracterization. Mischaracterizing

24 the exact same testimony

25 mischaracterized earlier and, also,

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1 compound nature of the question.

2 A. Let's try again.

3 Q. In the beginning years the Freeport plant

4 was supported by Midland for any industrial hygiene

5 consultation and toxicology consultation. True?

6 MR. PIERCE: Continue the

7 objection.

8 A. That's -- That's my recollection.

9 Q. Okay. And then eventually they had their
10 own folks doing I. H. work and tox. work at Freeport?

11 A. Yes. The tox. lab early in the formative
12 stages was designed for primarily just the first
13 stages of evaluation, not any comprehensive studies.

14 Q. Just a Class I --

15 A. Class I. That is correct.

16 Q. Okay. Even after Freeport had its own
17 toxicologists and its own industrial hygienists, did
18 it still have available the services of the Midland
19 tox. lab and industrial hygiene department?

20 A. Yes.

21 Q. Do you recollect, Dr. Rowe, that the
22 industrial hygiene and toxicology staff in Freeport,
23 Texas, was reporting up to the Midland group; or were
24 they autonomous from an organizational standpoint?

25 A. They were -- They reported to the medical

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1 department in the Texas division.

2 Q. Do you have any explanation for why they
3 were organized under the medical department in Texas
4 versus the different organization in Midland?

5 MR. PIERCE: Are you asking that

6 he speculate or does he have knowledge

7 or...

8 MR. BLANKS: Just whatever his

9 understanding was. If you or I were

10 answering, we'd probably be

11 speculating; but Dr. Rowe might be able

12 to tell us.

13 A. The -- This type of work -- The medical

14 director - the first medical director - at the Texas

15 division, as I recollect, had - or had worked in the

16 medical department at Midland and was quite familiar

17 with this type of work. He'd been exposed to it over

18 a period of time. So, when he went down there, he was

19 the only logical person to develop and head up this

20 type of work. There was no other person down there at

21 that time that was in toxicology or -- And industrial

22 hygiene was in the medical department, which is not

23 dissimilar to many, many corporations.

24 (By Mr. Blanks)

25 Q. Yes, sir. I understand. We found it to be

1 common to be organized under the medical department.

2 Do you recall who this doctor was that first

3 went down there to Freeport?

4 A. As I recollect, it was Dr. Kilian.

5 Q. Do you know his first name?

6 A. Jack.

7 Q. And correct me if I'm wrong; but I'm

8 understanding from you that Dr. Kilian, who began with

9 Dow in Midland at the medical department in the plant,

10 acquired from his dealings with your group some

11 appreciation for toxicology and for industrial hygiene

12 to where he was not, let's say, totally ignorant about

13 those matters and had some appreciation for the

14 potential problems to deal with in the plant.

15 A. Yes.

16 Q. Dr. Rowe, do you believe that it was not

17 until the late 1960's that Dow's doctors knew that

18 workers exposed to sufficient levels of airborne

19 asbestos dust over a long enough period could contract

20 an asbestos-related disease?

21 A. I don't know.

22 Q. You have no belief on that one way or the

23 other?

24 A. I didn't know they had.

25 Q. That they had known?

1 A. I don't -- I have no knowledge that - or at
2 least I don't recollect any - any cases of asbestosis
3 at - at the Dow plant, that - that I know of.

4 Q. I'm sorry. I didn't mean to say that it was
5 by the late 1960's that Dow had cases of asbestosis or
6 at any time. I don't -- That wasn't part of the
7 question.

8 A. Oh.

9 Q. Let me try again, please, sir. I was asking
10 you if you believe that it was not until the late
11 Sixties that Dow's doctors knew or appreciated that
12 workers exposed to sufficient levels of asbestos dust
13 over a long enough time period could get an
14 asbestos-related disease.

15 MR. PIERCE: I'm going to object
16 to the form of the question. It calls
17 for speculation and knowing the minds
18 and state of knowledge of each
19 physician or other kind of doctor
20 within The Dow Chemical Company.

21 But go ahead and answer.

22 A. I don't know.

23 Q. Do you know of any Dow doctors who gave you
24 any reason to think before the late 1960's that they
25 had an appreciation for that possibility of

1 asbestos-related disease?

2 A. I don't remember.

3 Q. How about Dow industrial hygienists, do you

4 believe that it wasn't until the late 1960's that

5 Dow's industrial hygienists had an awareness that

6 workers exposed to sufficient levels of airborne

7 asbestos dust over a long enough time period could

8 contract an asbestos-related disease?

9 MR. ALMQUIST: Same objection. It

10 calls for speculation as to what

11 someone else knew.

12 A. I don't know.

13 Q. Is there any point in the time when you were

14 with Dow that you can say with any confidence that it

15 was your understanding that the industrial hygiene

16 department appreciated the possibility for

17 asbestos-related disease under certain exposure

18 conditions?

19 A. I know the industrial hygiene people that

20 were involved with monitoring asbestos were aware of

21 the - of the hazards of the material, yes; but I can't

22 put a time frame on it.

23 Q. Okay. And I think you've already told us

24 you can't really put a time frame on when you became

25 aware of this potential for asbestos-related disease

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1 in workers sufficiently exposed. True?

2 A. I don't believe I said that, because early -
3 early on there were articles and lectures at the
4 meetings and so forth about asbestos and so forth that
5 I do not have any specific data or time frame that -
6 when I first knew of this. These things occurred over
7 a number of years and, really, I really had no
8 particular interest in asbestos as such because we
9 didn't - hadn't done any work on it, didn't know
10 anything about it.

11 Q. All right, sir.

12 MR. ALMQUIST: Okay. Is this --
13 We've been going for about an hour
14 now. Can we take a break?

15 MR. BLANKS: Sure.

16 Are you ready for a break, sir?

17 THE WITNESS: Thanks.

18 (AT THIS TIME A BRIEF RECESS WAS
19 TAKEN, AND THE PROCEEDINGS THEREAFTER
20 RESUMED AS FOLLOWS:)

21 (By Mr. Blanks)

22 Q. Dr. Rowe, had you learned in 1960 that cases

23 of mesothelioma had been reported in petrochemical
24 plant workers, would you have recommended better
25 industrial hygiene controls for workers potentially

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1 exposed to asbestos in Dow plants, sir?

2 MR. PIERCE: Objection to form;
3 improper hypothetical.

4 But go ahead.

5 A. I don't know.

6 Q. You don't have an opinion about how you
7 would have responded to such information in 1960?

8 A. Well, it would have depended upon the
9 quantitative aspects of the situation.

10 Q. You mean how many cases of mesothelioma were
11 reported in a particular article or what?

12 A. What kind of exposure had occurred to have
13 caused that effect. And then I would certainly be
14 interested in that in comparison with what our
15 industrial hygienists had found in our own plants.

16 Q. So, at the very least, then, if you had
17 learned of such case reports in 1960, would you have
18 felt the need to inquire further about the exposure
19 levels that the - that the victims had reported?

20 MR. PIERCE: Objection to form;
21 asked and answered, essentially
22 argumentative.

23 A. Well, it was my impression that this
24 particular manifestation was known before that -
25 before that time. And, as far as I know, it was

405

1 associated with rather severe exposures. But I don't
2 know what the quantitative aspects are.

3 Q. Had you known, Dr. Rowe, in 1950 that
4 insulators in refineries were potentially exposed to
5 asbestos in hazardous amounts, would that information
6 have been useful to you in your work at Dow?

7 A. Not necessarily.

8 Q. Would that be because you were already then
9 aware of the potential for asbestos disease in
10 insulators in 1950 under some levels of exposure?

11 MR. PIERCE: Objection to the
12 form; leading.

13 A. The problem I have with your question is the
14 lack of quantitation. I certainly do not deny the
15 fact that heavy exposures can produce mesothelioma and
16 whatever; but, again, unless I have information
17 relative to the intensity of exposure, it doesn't mean

18 too much when I know excessive exposure is likely to
19 do this - heavy exposure.

20 Q. Okay, sir. If I'm understanding you, then,
21 you would have appreciated in 1950 that intensive or
22 heavy exposures could in some cases cause
23 asbestos-related disease. True?

24 MR. PIERCE: Objection to the
25 vagueness of the question.

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1 A. Well, I think it was fairly well understood
2 that heavy exposure was capable of causing this type
3 disease.

4 Q. Okay. And the significant thing to you,
5 then, would not be the reports of asbestos in
6 connection with a particular disease but rather how
7 much exposure did it take to get there: is that what
8 you're telling me?

9 A. That's -- That's right.

10 Q. Because you keep coming back to
11 quantification as being a significant fact to you.

12 A. To me, it's very important.

13 Q. So, in response to any case report of an
14 asbestos-related disease that might appear in the

15 literature, you would first want to know what were the
16 exposure levels, how long was the man exposed over his
17 work before - before the report would have any
18 significance to you. Is that true?

19 A. That's true.

20 Q. And what was done at Dow during your years
21 in the toxicology department and with the industrial
22 hygiene department to actually investigate the
23 exposure levels that went with these disease reports?

24 MR. PIERCE: Is that exposure
25 levels to anything or exposure levels

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1 to asbestos?

2 MR. BLANKS: Well, we're talking
3 about these case reports of
4 asbestos-related disease. And I -- I
5 mean, I'm understanding Dr. Rowe to say
6 quantification is the critical point.

7 (By Mr. Blanks)

8 Q. So, what steps did you take at Dow to try to
9 find out about the exposure levels that went with
10 these reports of mesothelioma or lung cancer or
11 asbestosis in insulators?

12 A. I don't know.

13 Q. Do you know that any --
14 A. No. I did --
15 Q. -- any investigation was made, sir?
16 A. I did not make any.
17 Q. Are you aware of any that was made by anyone
18 at Dow?
19 A. I just don't know.
20 Q. So, if I may come back to the earlier
21 question, then, would it have been news to you in 1950
22 that insulators working in refineries had a potential
23 for injurious exposure to asbestos?
24 A. Would you please repeat that.
25 Q. Yes, sir. I'm speaking of refineries and

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1 not chemical plants.
2 A. Speaking of what?
3 Q. First of all, I was speaking about
4 refineries as opposed to chemical plants, --
5 A. Oh, okay. Okay.
6 Q. -- so that's clear. But would it have been
7 news to you in 1950 that insulators working in
8 refineries could potentially have disease-causing
9 exposures to asbestos at work?

10 A. I know nothing about the exposures that
11 occurred in refineries; so, I don't know. I tried to
12 say earlier that there is no such thing as a nontoxic
13 material. If you have an excessive exposure, you're
14 apt to have trouble. If you have a so-called safe
15 exposure, the potential for it is very small; but
16 there's always potential.

17 Q. And because there's always potential, it's
18 important to measure the levels of exposure?

19 A. Certainly.

20 Q. And to try and validate whether those
21 exposure levels are safe or, alternatively, have the
22 possibility of causing disease, correct?

23 MR. PIERCE: Objection to the
24 form; vague and compound, confusing.

25 A. I have to keep coming back to the

1 quantitative aspects and the association of those
2 exposure levels - exposure intensities, duration,
3 concentration, and of the effect. And if you don't
4 have that, it's awfully difficult to know how much
5 significance to place upon a -- You have people
6 working with materials for years and years and no
7 problems, you assume that that's a pretty safe level.

8 On the other hand, if you have people working in a
9 high concentration and they become ill or - in one way
10 or another, you do your best to reduce exposures as
11 far as you reasonably can and certainly to the
12 guidelines that are present knowledge or knowledge of
13 the times suggests.

14 Q. Okay. So, you're saying that the data - the
15 facts - are important to the toxicologist, as well as
16 to the industrial hygienist.

17 A. Certainly.

18 Q. The exposure levels; the durations of
19 exposure; and, as well, the medical effects of
20 exposures.

21 A. Yes.

22 Q. And absent that data, it's not really
23 possible to properly formulate an effective industrial
24 hygiene program, is it?

25 MR. PIERCE: Objection to the

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1 form.

2 A. I -- I guess I don't quite understand your
3 question. Can you try it again?

4 Q. Well, I guess what I was getting at is that

5 as a scientist it's important to you to know, if
6 you're concerned about occupational health, just what
7 the levels of exposure to any particular toxic
8 material are that your workers are facing, correct?

9 A. That's right.

10 Q. And the only way to know that is to go out
11 and take samples and monitor it and gather the data;
12 isn't that true?

13 A. That's one part of it.

14 Q. And another part of occupational health - of
15 an occupational health program is being aware of the
16 duration of the exposures that the men face to the
17 toxic materials. True?

18 A. Yes.

19 Q. And the only way to know that, again, is to
20 go out and gather the data, observe, record the time
21 they spend doing these things in conjunction with the
22 measurements, correct?

23 MR. PIERCE: Objection to form of
24 the question. It's compound and
25 limiting the possible answer.

1 A. I think the answer is "yes."

2 Q. And the final -- The final part of the data

3 that provides you some confidence in your program is

4 the medical data, correct?

5 A. Very important.

6 Q. And with a disease that has a long latency

7 period, this involves - would require long-term

8 medical surveillance of the workers potentially

9 exposed to the material. True?

10 A. Yes.

11 Q. Dr. Rowe, had you known in 1948 that

12 asbestos was thought to be a probable carcinogen,

13 would you have recommended that it be handled

14 differently at Dow than it was in 1948?

15 MR. PIERCE: Objection to the form

16 for vagueness and, also, improper

17 hypothetical.

18 A. I don't know.

19 Q. Do you think, based on your experience in

20 1948, after 11 years with the company, that

21 information about asbestos as a possible or probable

22 carcinogen would have been useful information to you

23 in the toxicology department?

24 MR. PIERCE: Objection to the

25 form; vague and compound.

1 A. Scientific information of this nature was
2 always of interest to us.

3 Q. Dr. Rowe, can you help me in any way to
4 understand the relationships between Dow and its
5 subsidiaries like Dowell Company?

6 A. The Dow - Dowell was a wholly owned
7 subsidiary.

8 Q. And it was involved in what, some
9 oil-related business?

10 A. Oil well treatments, as far as I know.

11 Q. Did your group ever provide toxicology or
12 industrial hygiene services to Dowell?

13 A. Yes.

14 Q. Can you recall any sort of specific
15 instances?

16 A. The -- I can't -- I can't recollect the
17 materials but the -- The materials that we worked with
18 for Dowell, as I recollect, were corrosion
19 inhibitors. They were used in the acid for oil
20 treatment.

21 Q. Did Dowell make any drilling muds any time
22 that you know of?

23 A. Beg your pardon.

24 Q. Did Dowell make or sell any drilling muds?

25 A. I don't know anything about Dowell's

1 business except that they were in the oil business -
2 the oil production business.

3 Q. Okay. How far back in time can you recall,
4 approximately, doing any kind of toxicology work for
5 Dowell? Back into the Forties, perhaps?

6 A. I just don't remember. It would have been
7 early. It wasn't late.

8 Q. Were they based in Tulsa?

9 A. I believe so.

10 Q. Did they have, to your knowledge, any
11 industrial hygienists or toxicologists at any time
12 that you were with the company?

13 A. Yes.

14 Q. Would that have been in the later years of
15 your Dow employment?

16 A. Again I can't put that in a time frame.

17 Q. I suppose you had some dealings with their
18 toxicologists or industrial hygienists somewhere along
19 the way. Would that be so?

20 A. At Dowell?

21 Q. Yes, sir.

22 A. To my knowledge, they did not have any
23 toxicologists. They had a -- They had an industrial

24 hygienist. At least one. I don't know. Maybe more.

25 Q. Do you recall that Dowell also had a medical

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1 professional attached to the company, a doctor?

2 A. I don't remember.

3 Q. Were services that your group did for Dowell

4 charged back to Dowell?

5 A. I don't know.

6 Q. What about Dow Corning, was that also a Dow

7 subsidiary?

8 A. No.

9 Q. What was its relation to Dow, if any?

10 A. Dow Corning is a separate corporation owned

11 50 percent by Corning glass and 50 percent by Dow

12 Chemical.

13 Q. Did your -- Excuse me. Let me start again.

14 Did your group do any kind of tox. work or industrial

15 hygiene work for Dow Corning over the years?

16 A. Yes.

17 MR. PIERCE: Objection; asked and

18 answered at the last session.

19 A. Yes.

20 Q. Did they have an industrial hygienist, Dow

21 Corning?

22 MR. PIERCE: Do you have a point
23 in time or just any time?
24 A. It depends. They didn't early in the game,
25 but they did later.

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1 Q. Do you recall who that person was?
2 A. One person who - who was there - Whether or
3 not it was the first one or what, I don't remember -
4 was Larry Silverstein.
5 Q. He had begun his industrial hygiene work at
6 Dow, had he not?
7 A. Yes.
8 Q. And then perhaps transferred over to Dow
9 Corning later?
10 A. Yes.
11 Q. Is Mr. Silverstein a person that worked with
12 you or under you at any time at Dow?
13 A. He was one of our industrial hygienists.
14 Q. Working for Mr. Hoyle?
15 A. Yes.
16 Q. Can you recall, Dr. Rowe, any other Dow
17 subsidiaries or related companies, using that term
18 loosely, for which your group ever did any toxicology

19 work or industrial hygiene work?

20 MR. PIERCE: Objection to the

21 form. It's compound. The use of the

22 term "related company" is vague and

23 ambiguous.

24 But go ahead.

25 A. There were a few instances in which we did

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1 some toxicological work for the pharmaceutical

2 division, only when their toxicology labs were

3 overwhelmed by the amount of the work they were doing.

4 And they just didn't have the capacity and we had the

5 capacity at the time and that was it. But we did not

6 do it on a routine basis, --

7 Q. Yes, sir.

8 A. -- only on special occasions. And, of

9 course, we did work for the various Dow divisions,

10 which is the Texas division and the western division

11 and eastern division, central division, and that sort

12 of thing.

13 Q. All of those being divisions of Dow Chemical

14 Company?

15 A. Yes.

16 Q. Okay. Can you think of any other companies

17 for whom your group ever did any tox. work or
18 industrial hygiene work, sir?

19 A. I don't recall any.

20 Q. Dr. Rowe, do you recall, sir, if anyone,
21 that you know of, ever requested that medical
22 surveillance be conducted at Dow of workers
23 potentially exposed to asbestos?

24 A. I don't know.

25 Q. Do you recall, Dr. Rowe, that it was ever

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1 the case at Dow during your years with the company
2 that medical surveillance of workers potentially
3 exposed to asbestos did take place?

4 A. I have no specific information, but I have
5 to say that the workers were continuously under
6 medical surveillance. And what they did in that
7 particular area I don't know.

8 Q. You're saying that all of the Dow workers
9 were under medical surveillance to some extent?

10 A. To some extent, yes.

11 Q. And was that the case from the beginning of
12 your employment in 1937, that there was a medical
13 surveillance program?

14 A. No. There was not a corporate medical
15 department at that time.

16 Q. Would you remind me again when the corporate
17 medical department came into being, approximately?

18 A. I don't remember.

19 Q. By the Forties, wasn't it?

20 A. Yes.

21 Q. Were you, yourself, under a medical
22 surveillance program from the Forties on?

23 A. I would think so. We had our annual
24 physicals and that sort of thing.

25 Q. So, you actually had a hands-on physical by

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1 the Dow medical department each year?

2 A. In the early days, yes. I don't know how
3 widespread it was, that program; but it was a general
4 program. And that was under the medical department's
5 operation; so, I do not know how it was set up.

6 Q. Do you know, sir, if there were any special
7 medical monitoring programs for any particular trade
8 or employee group at Dow that went beyond just this
9 general medical surveillance for all employees?

10 A. I don't know.

11 Q. Do you recall that any particular group of

12 Dow employees who might just be working with some
13 particular chemicals actually had biological
14 monitoring during any years?

15 A. I remember that we have had biological
16 monitoring but on quite a limited basis. The people
17 working in the chlorinated hydrocarbon area were
18 probably as a group observed as much as anyone or more
19 because of the potential, like, for carbon
20 tetrachloride and liver involvement because we knew
21 the consequences of excessive exposure and you
22 couldn't always be sure until medical surveillance
23 was -- Where we had a spot like that, more attention
24 was paid to it.

25 Q. Okay. When you said "because you couldn't

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1 always be sure," what did you mean? Be sure of what?

2 A. You'd know what exposures always were with
3 individuals.

4 Q. I see. So that even though Dow had an
5 industrial hygiene program to control the exposures of
6 individuals working in the chlorinated hydrocarbon
7 department, it was a concern that some people might
8 have excessive exposures in spite of the controls.

9 A. That's true.

10 Q. And, therefore, the medical monitoring was a
11 good way to - to detect those excesses, if any
12 occurred.

13 MR. PIERCE: Objection to the
14 form --

15 A. Medical --

16 MR. PIERCE: -- of the question.

17 A. -- monitoring in those days was in its
18 infancy primarily because of the lack of analytical
19 facilities or - I shouldn't say "facilities" -
20 capabilities to do analyses that were meaningful.

21 Q. And "in those days," what are we talking
22 about - the Forties, Fifties? When?

23 A. Yes. And beyond. Even today you can't use
24 medical monitoring for - because you don't have the
25 information that's necessary to do it.

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1 Q. I'm sorry. Could you explain? I didn't...

2 A. Well, for instance, if you know with the
3 metabolites and how they're excreted and that sort of
4 thing, you can analyze for them. If you don't know,
5 you can't do it. You don't have enough method
6 available.

7 Q. Okay.

8 A. So, it's a -- It's a -- Personnel and

9 medical monitoring are very useful techniques if the

10 the capability for doing so is available.

11 Q. And they go together, if I'm understanding

12 you, personnel monitoring as well as medical

13 monitoring.

14 MR. PIERCE: Objection to the form

15 of the question; ambiguous and vague.

16 Q. The two complementary --

17 A. They complement each other.

18 Q. As part of an occupational health program in

19 the prevention of occupational disease. True?

20 A. I guess, yes.

21 Q. Okay. Was it Dow's policy in any year you

22 worked there to not protect workers from breathing

23 toxic chemicals or dust?

24 MR. PIERCE: I'm going to object

25 to the form of the question --

1 A. Please repeat that.

2 Q. Yes, sir. Was it Dow's policy -- In any of

3 the years that you worked there, was it a policy to

4 not protect workers from breathing toxic chemicals or
5 dust in the workplace?

6 MR. PIERCE: The question is
7 leading and is essentially
8 argumentative.

9 A. Again we go back to the quantitative aspects
10 of the industrial hygiene/toxicology pro - medical
11 problem. It's essentially impossible in any operation
12 to prevent all exposure. You try to keep the exposure
13 level to acceptable levels. Certainly if we knew
14 there was an excessive exposure, we would do our best
15 to do something about it.

16 Q. Then was it the policy at Dow in any years
17 you worked there to only provide protection for
18 workers when the exposures were above the guideline
19 levels?

20 MR. PIERCE: Objection to the
21 form. Objection to questions relating
22 to the policy of Dow.

23 A. Well, I don't - I don't believe that was a
24 policy but -- Would you restate your question and...

25 Q. Yes, sir. Focusing back on the quantitative

1 aspects, as you say, was it the Dow policy in any of

2 your years there to provide protection for workers
3 only where the exposures to toxic dust were in excess
4 of the guideline levels?

5 MR. PIERCE: Continue the
6 objection in respect to Dow policy and
7 some ambiguity within the question.

8 A. If the particular operation was one in which
9 there could be peaks that would not be normally found
10 in industrial hygiene and there was a particular
11 known - particularly acute problem, why, we would wear
12 respiratory protection or whatever, whether it was
13 protective clothing or what was used.

14 Q. So --

15 A. It was just a matter of common sense, I
16 think.

17 Q. Okay. So, protection would be used, then,
18 when exposures were above the guideline levels: is
19 that what you're saying?

20 MR. PIERCE: Asked and answered.

21 A. Either protection would be urged, suggested
22 if changes in procedure or operation could not be
23 effectively instituted.

24 Q. And was it the policy in your years with Dow
25 only to use the industrial hygiene controls in

1 circumstances where the exposure levels were above the
2 guidelines?

3 A. I don't know.

4 MR. PIERCE: Continue the
5 objection to the use of Dow's policy
6 and the ambiguity within that
7 question.

8 A. I guess I don't know.

9 Q. Well, you continue to emphasize the
10 quantitative aspects. And I think that relates back
11 to the guidelines, if I'm understanding you right.
12 And I'm trying to understand at what point when we're
13 talking about levels of exposure that Dow's rules or
14 regulations required that controls be put in place to
15 limit exposures. That's what I'm asking you about.
16 And was it only after you had exceeded the
17 guidelines that industrial hygiene controls were
18 required?

19 MR. PIERCE: I'm going to object
20 to the question based on the premise
21 that there weren't industrial hygiene
22 controls at all times. And it's just
23 an assumption of a fact that's part of
24 the question which is not so.

25 But go ahead and answer it to the

1 best of your ability, sir.

2 A. The policy, as I would - as I recollect it,
3 was that we did not have anybody exposed to
4 concentrations of materials that were presumed to be
5 hazardous to health. So, our control -- The last --
6 The last alternative to a situation which hopefully
7 would be temporary or short-term, was to engineer
8 controls and handling procedures into an operation so
9 that you didn't have that situation.

10 Now, in an emergency situation, short-term
11 where you just didn't have time to get this sort of
12 thing done, we used respiratory protection, whatever
13 protection was required. It was not the routine to
14 work - anybody - with respiratory or other
15 protection. The thrust was to maintain the
16 environmental and occupational exposures to acceptable
17 levels or below - as far below as could be reasonably
18 achieved.

19 Q. Okay. And in cases where the exposures
20 could exceed the guidelines, then you'd use
21 respiratory protection as appropriate or as set out on
22 your safety data sheets?

23 A. If this was appropriate.

24 Q. Okay. Dr. Rowe, was it Dow's policy during
25 your years with the company to deny protection to

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1 workers from particular materials until Dow had
2 evaluated scientifically documented conclusive
3 findings for relevance to the specific premises or
4 situations at Dow?

5 MR. PIERCE: Objection to the form
6 of the question for the following
7 reasons: One, objection to use of the
8 term of "Dow policy"; objection to the
9 compound nature of the question;
10 objection to the ambiguity of terms
11 used, including "conclusive" and
12 others.

13 But go ahead and answer, if you
14 can.

15 A. I don't know the answer to that.

16 Q. As a long-time employee of Dow, an executive
17 with Dow --

18 MR. BLANKS: Objection to the use
19 of the word "executive."

20 MR. PIERCE: Thank you.

21 (By Mr. Blanks)

22 Q. As a long-time Dow employee in the
23 biochemical research department and ultimately as the
24 assistant director and then director of different
25 parts of that organization, you have some familiarity

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1 with Dow's policies regarding occupational health, do
2 you not?

3 A. Yes.

4 Q. Dow did have some policies about
5 occupational health matters, did it not?

6 A. Yes.

7 Q. Could you generally restate for us what the
8 scope of that policy was, as you appreciated it?

9 A. I thought I had just explained that. The
10 policy was that we did not - that we tried to control
11 exposures - exposure levels - to acceptable levels by
12 engineering control and not by personnel protection.
13 Personnel protection was an emergency situation or a
14 very short-life situation pending correction of this,
15 that, or the other thing that was causing the problem.
16 Q. Well, was it the approach of your department
17 at Dow to not make recommendations for improved

18 procedures or for monitoring, things of that sort,
19 until Dow had evaluated the scientifically documented
20 conclusive findings for relevance to the particular
21 situations in the Dow plants?

22 MR. PIERCE: Objection to the
23 form. It's compound. It's wordy and
24 ambiguous, difficult, and
25 unintelligible.

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1 MR. RICE: That means you in
2 general terms (directed to
3 Mr. Blanks).

4 A. I guess I'd like to have you break it up
5 into pieces rather than so much at one time.

6 Q. All right, sir. Once you had scientifically
7 documented conclusive findings about a particular
8 toxic material like, say, asbestos, would you at that
9 point at Dow make recommendations for medical
10 monitoring or industrial hygiene controls?

11 MR. PIERCE: Objection to the
12 form; compound, ambiguous.

13 A. Oh, we would certainly recommend that -
14 recommend that the occupational exposure did not
15 exceed the so-called acceptable levels.

16 Q. Did you ever look beyond the so-called
17 acceptable levels to see if they really were
18 acceptable relative to the experience in your own work
19 force?

20 MR. PIERCE: Objection to the
21 form; completely ambiguous.

22 A. I think our previous discussion of the
23 carbon tetrachloride situation is an example of this.
24 And, as I said, there were perhaps others.
25 I remember vinyl chloride as another example

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1 that - where certain people were having a lot of
2 trouble with exposure to vinyl chloride and - but
3 their exposure levels were quite high and ours -- We
4 had lots of it, and we had had no such problem. And
5 we tried to check our analyses and so forth. And we
6 did some work with vinyl chloride to verify the
7 situation because of the severity of the reported
8 responses.

9 And it was never our policy to do as little
10 as possible to meet a particular standard or
11 acceptable-level standard, however you want to call
12 it. We did the best we could as well as we could.

13 Sometimes it was very difficult and seemingly
14 unnecessary to the extent -- You cannot eliminate
15 exposure. So, somewhere in there there has to be a
16 trade-off.

17 Q. Okay. What is one trading off, Dr. Rowe?

18 A. You have to trade off to some level that's
19 acceptable or better than acceptable and - otherwise,
20 you'll go out out of business. You don't do
21 anything. You can't make materials and handle
22 materials without some escape. So, you're going to
23 have some exposure. That has to be recognized. And,
24 so, if you want to go the ultimate, no exposure, why,
25 you'd probably just say, well, let somebody else do

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1 it.

2 Q. For instance, subcontract out that sort of
3 maintenance work that might involve exposures?

4 MR. PIERCE: Objection to the form
5 of the question.

6 I'm sorry. Could you repeat that
7 question?

8 Q. And one way to have somebody else do it, for
9 example, would be perhaps to subcontract out
10 maintenance work that would involve excessive

11 exposures?

12 MR. PIERCE: Objection to the

13 form. I think that's a complete

14 misinterpretation of what his previous

15 answer was in his previous testimony.

16 A. No.

17 Q. Then I guess I didn't understand you, then.

18 And that would be a way of --

19 A. I'm saying if you're going to manufacture a

20 material and you can't control it and you have to

21 control it to such and such a level, your technology

22 may not be adequate to do that. So, you just don't

23 make it. If somebody else wants to make it, then

24 that's their business.

25 Q. Were there any products that Dow considered

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1 which it decided not to make because of these

2 occupational health concerns?

3 A. Not to my knowledge.

4 Q. But there were some materials you made where

5 you knew that you were going to have some exposures in

6 spite of your control measures; is that true?

7 A. You always have some exposure.

8 Q. And the trade-off was one of either not
9 making it and not having exposures or going ahead and
10 making the product and having exposures in the work
11 force: is that what you meant by "trade-off"?

12 MR. PIERCE: Asked and answered.

13 A. Well, if you can't make a product
14 economically, you better not bother making it. If the
15 sales price is -- There's no point in making it if you
16 can't sell it. And if the expense and cost of - of
17 containment is excessive, it doesn't warrant research,
18 development, or whatever.

19 Q. It does cost some money to control and limit
20 exposures in the workplace, does it not?

21 A. It costs a lot of money. And that level is
22 very - curve is very, very steep - or with the amount
23 of control, costs lots of money.

24 Q. And I suppose in the handling of asbestos
25 insulation in a chemical plant or a refinery you'd

1 agree that it's also inevitable that you're going to
2 have some exposures to airborne dust in its handling;
3 isn't that true?

4 MR. RICE: Objection; vague.

5 MR. PIERCE: Objection to the

6 form.

7 A. Well, I don't know of anything that we can
8 handle that we don't have some potential for exposure.

9 Q. And that would be true both in the
10 fabricating of it, the installing of it, the removal
11 of it. The potential for exposure exists. True?

12 MR. PIERCE: Objection to the
13 compound nature of the question. And
14 this has been asked and answered
15 several times.

16 A. I don't -- To my knowledge, I don't know how
17 it would be done if it didn't have some.

18 Q. In fact, it's more than just a potential for
19 exposure, isn't it, Dr. Rowe? I mean, it's inevitable
20 that the man actually sawing and handling the asbestos
21 insulation is going to have some exposure to the
22 airborne asbestos dust in the doing of the work, isn't
23 it, sir?

24 MR. PIERCE: Are you asking him to
25 speculate or from his own personal

1 knowledge and studies?

2 MR. BLANKS: Well, I'm asking

3 Dr. Rowe as the former director of the
4 toxicology and industrial hygiene
5 section of the chemical biological
6 research lab at Dow Chemical Company.

7 MR. PIERCE: Who has testified he
8 had nothing to do with asbestos.

9 But okay. Answer the question.

10 A. To answer your question: If you were doing
11 this and you were doing it in a glove box, you would
12 be pretty close or you could do it probably pretty
13 close to zero exposure. But once you got it out of
14 there, you'd probably have some exposure. But it's
15 just a matter of proportions one way or another.

16 Q. All right, sir. But, actually, in reality
17 in the field, in the plant - in the handling of
18 asbestos insulation in Dow plants - some exposures to
19 the people working with it were inevitable and did, in
20 fact, occur, didn't they?

21 MR. PIERCE: Objection to the
22 form; asked and answered on numerous
23 occasions, redundant, argumentative.

24 A. You'd have to say there's some - you'd
25 expect to have some exposure.

1 Q. All right, sir. Dr. Rowe, on those several
2 occasions when your toxicology department decided that
3 the guidelines for specific materials were inadequate
4 to protect the workers, were those decisions made at
5 Dow only after you'd had scientifically documented
6 conclusive evidence to go on or did you respond to
7 something else, something short of that?

8 MR. PIERCE: Objection to the
9 form; compound in several ways and use
10 of ambiguous terminology.

11 Go ahead.

12 A. Well, the one example of the carbon
13 tetrachloride situation was one example. Almost the
14 opposite example was the one with vinyl chloride where
15 we had had no problems similar to those which had been
16 reported in the literature.

17 Q. But was your response to these perceived
18 problems delayed until you had conclusive findings?

19 MR. PIERCE: Continue the
20 objection as to the ambiguity.

21 A. I don't -- I don't understand the question
22 now, I guess.

23 Q. I mean, sir, did you decide that you needed
24 further study of the tetra - carbon tetrachloride
25 problem until you'd make a decision to tighten up the

1 Dow standards?

2 A. As I said before, we had evidence that the
3 controls to the acceptable level were not adequate.

4 Q. And, therefore, a response was required and
5 was, in fact, made, wasn't it?

6 A. Yes.

7 Q. To tighten up the standards?

8 A. Yes.

9 MR. PIERCE: Has been asked and
10 answered at least on four different
11 occasions this morning and last time,
12 as well.

13 MR. BLANKS: Do you want to stand
14 up a second, sir?

15 THE WITNESS: I'm okay. For the
16 time being, anyway.

17 MR. BLANKS: Okay. All right.

18 (By Mr. Blanks)

19 Q. Dr. Rowe, with respect to asbestos, what,
20 sir, would you regard as scientifically documented
21 conclusive findings that airborne asbestos could cause
22 disease? What would that be?

23 MR. PIERCE: I'd like to object to
24 the ambiguity of the term "conclusive"

25 and "scientifically documented."

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1 But go ahead and answer the
2 question to the best of your ability.

3 A. Well, the occurrence among workers exposed
4 to the material in certain concentrations developed
5 asbestos-type disease.

6 Q. What about suspected carcinogens, how much
7 proof did Dow require about that before it would
8 decide to protect workers in its plants? Can you give
9 us some examples?

10 MR. PIERCE: Objection to the
11 form. It is compound. It is
12 ambiguous. It is vague.

13 A. I guess I'll have to ask you to repeat the
14 question, please.

15 Q. Yes, sir. Thank you. With respect to
16 suspected carcinogens, would it be so that - that --
17 In the Dow plants over the years you worked there,
18 there were some suspected carcinogens being used in
19 the plants, weren't there?

20 A. Yes.

21 Q. Okay. Even some that would be regarded as

22 probable carcinogens. True?

23 A. I'd expect so.

24 Q. Do you think there were any known human

25 carcinogens being used in Dow plants during any of the

436

1 years you worked there?

2 A. Yes.

3 Q. Okay. Now, as to those suspected or

4 possible or probable carcinogens, I'm wondering, sir,

5 how much proof Dow required before it would decide to

6 protect workers against exposures to them.

7 MR. PIERCE: I'd like to object to

8 the form of the question. It is

9 compound. It is vague. Using the term

10 "suspected carcinogen" or even "proven

11 carcinogen" is overly broad and

12 general. Are you including sunlight?

13 I mean, what are you including in this

14 group?

15 But go ahead and do the best you

16 can.

17 A. I think when you have a suspected

18 carcinogen, you probably do - or a known carcinogen -

19 you do the best you can to keep the exposures at the

20 lowest possible level.

21 Q. I have no quarrel with your answer; but I
22 think you've told me what would be proper, at least at
23 Dow, in dealing with a suspected carcinogen. But my
24 question, sir, was how much proof or scientific
25 evidence did Dow require before it would start to

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1 protect workers in its plants from suspected
2 carcinogens as opposed to what would be the response.

3 MR. PIERCE: Objection to the form
4 of the question. It is ambiguous. It
5 presumes Dow didn't protect its workers
6 at a certain period of time. And it's
7 compound.

8 A. I don't know how to answer your question.

9 Q. Well, let's try it this way, then. Would
10 you say that during all your years at Dow that the
11 company did, in fact, protect workers from exposures
12 to suspected carcinogens?

13 A. Certainly.

14 Q. Sir?

15 A. Certainly.

16 Q. And at what point, then, in the gathering of

17 knowledge about a new suspected carcinogen would the
18 Dow protection program for the workers kick in? How
19 much proof did it take to get protection implemented?

20 A. I don't know.

21 MR. BLANKS: We're out of tape.

22 MR. PIERCE: Okay. So, I guess
23 this is a good time for a lunch break.

24 And we'll take care of that other
25 matter over lunch. Okay?

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1 MR. BLANKS: Yes.

2 MR. PIERCE: What time to you want
3 to...

4 MR. BLANKS: I'll leave it up to
5 Dr. Rowe.

6 MR. PIERCE: All right. How's
7 1:00 o'clock? Is 1:00 o'clock okay?

8 (AT 11:32 A.M. THE DEPOSITION WAS
9 RECESSED FOR LUNCH. AT 1:07 P.M.
10 PROCEEDINGS RESUMED AS FOLLOWS:)

11 MR. BLANKS: So, we're back. Did
12 you finish your sandwich?

13 THE WITNESS: No.

14 MR. HOBSON: Should have brought

15 it to him.

16 MR. BLANKS: He didn't finish his,

17 either.

18 MR. PIERCE: Too big for any one

19 person, huh?

20 MR. BLANKS: Yeah.

21 (By Mr. Blanks)

22 Q. Dr. Rowe, do you remember from around the

23 Forties a gentleman named L. J. Richards at Dow?

24 A. Yes. That name is familiar, but I can't

25 right off the bat place him.

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1 Q. Can you place him maybe in the engineering

2 department as perhaps --

3 A. Okay.

4 Q. -- the chief - chief engineer?

5 A. That -- Okay. That's right. He was in the

6 engineering department.

7 Q. Was this a man that you would have had any

8 dealings with doing your job over the years?

9 A. I don't recollect any.

10 Q. And at Dow, engineering was responsible for

11 what, plant design and specification of materials to

12 be used in the plants?

13 A. I don't know.

14 MR. PIERCE: Objection to the form
15 of the question; compound and leading.

16 A. I don't know the extent of their charge.

17 Q. Could you tell us any of the things you
18 understood that engineering did in the Forties?

19 A. Well, they supervised buildings and -
20 building of roads and buildings and equipment, I
21 guess. I don't know. I didn't have anything to do
22 with them.

23 Q. Okay. I'm not saying that you needed to
24 know but I -- Did they also specify materials to use
25 in the plants?

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1 A. I don't know.

2 Q. And I don't mean product materials or raw
3 materials but things such as insulation, for example.

4 A. I have no idea.

5 Q. Do you have any idea whether Mr. Richards is
6 still living?

7 A. No.

8 Q. When --

9 A. I don't know. I don't know.

10 Q. When was the last time that you could
11 recollect having known of him? Would that have been
12 around your retirement time?

13 A. Your question was -- Excuse me.

14 Q. Could you just tell us the last time you can
15 recollect knowing of Mr. Richards?

16 A. No.

17 Q. We were talking before the lunch break about
18 how Dow dealt with carcinogens or suspected
19 carcinogens in the workplace. And you -- I think you
20 gave us some understanding of what Dow would do about
21 them, but I was exploring with you what level of
22 information was needed before Dow would respond to a
23 suspected or probable carcinogen that they learned of
24 being in the plants. Could you help us with that,
25 sir?

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1 MR. PIERCE: And the question was
2 asked and answered several times; and,
3 so, I object on that basis.

4 A. Well, I don't -- I don't know.

5 Carcinogenicity is just is another manifestation of
6 toxicity. And you deal with it as the end result of

7 that just as though you - just the same as you would
8 with something that caused liver destruction or some
9 other undesirable effect.

10 Q. Is that to say that at Dow during your years
11 that carcinogens were not treated with more care or
12 respect than toxic materials that didn't cause cancer?

13 MR. PIERCE: Objection to the form
14 of the question; compound and
15 ambiguous.

16 A. I don't know that we can say that - what
17 compounds do cause cancer. Again, it's a matter of
18 quantitation. And if -- If the level that causes
19 cancer is low, okay, you'd apply the monitor and
20 control conditions to meet those limits.

21 Q. Well, I was wondering if you treated
22 potential or probable carcinogens differently than,
23 let's say, something that was only a fibrogen.

24 MR. PIERCE: Objection to the
25 form, objection to your

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1 characterization of something as
2 "only."

3 But go ahead.

4 And the ambiguity in the

5 question.

6 A. Well, we would certainly treat them
7 different than something that might cause an aesthetic
8 effect; but we looked at carcinogens and tried to
9 control those just like we would any other
10 toxicological effect. It's an undesirable effect to
11 be avoided, if at all possible.

12 Q. All right, sir. And if it couldn't be
13 avoided - it wasn't possible to avoid it, this
14 effect - what was the Dow response to those
15 situations?

16 A. If it's impossible to avoid it, you cease to
17 use it.

18 Q. Did Dow have some sort of a scheme or method
19 for categorizing potential carcinogens?

20 A. Not that I recollect.

21 Q. Did you, yourself, have any method for
22 describing or ranking the likelihood that a material
23 could cause cancer in humans?

24 A. I don't think so.

25 Q. So, it was the case, then, at Dow that the

1 toxicology department didn't distinguish between

2 materials that were merely suspected of being
3 carcinogens and those that were regarded as probable
4 carcinogens?

5 MR. PIERCE: Objection to the
6 form. The witness has already answered
7 from his knowledge, and it's just a
8 completely repetitive question.

9 But go ahead.

10 A. Well, the - whether it - whatever the
11 adverse effects of a material are, you do the best you
12 can under the circumstances to either reduce it to
13 acceptable levels or don't use it. Whether it's a
14 carcinogen -- It's just another manifestation of
15 toxicity.

16 Q. Okay. So, learning that asbestos, for
17 example, was believed to be capable of causing lung
18 cancer would not lead to any change in the industrial
19 hygiene program that was already designed to prevent
20 exposures to asbestos that could cause asbestosis:
21 would that be true?

22 MR. PIERCE: Objection to the
23 form. It's leading and ambiguous.

24 A. If you had a material that was a potential
25 to cause any sort of effect and you're close to the

1 margin, you do your best to monitor it more often
2 and - so as to reduce the possibility or the
3 likelihood of excessive exposure.

4 Q. When you say -- Did you say "close to the
5 margin"?

6 A. Well, if your - if your - if your margin
7 is five and you're running four point nine, that's -
8 that's different than if you're running one against a
9 margin of five, as an example.

10 Q. All right, sir. Well, what would be
11 appropriate to do if, in fact, you were running at a
12 margin of four point nine against a five guideline?
13 What...

14 A. Take whatever measures you could to attempt
15 to reduce exposure.

16 Q. Is four point nine too close for comfort, in
17 your mind, when you have a standard of five or a
18 guideline of five?

19 MR. ALMQUIST: Object to the
20 question as vague.

21 A. Any exposure is too much, as far as I'm
22 concerned; but practicality says that you can't have
23 zero exposure if you're going to handle a material.

24 Q. You've told us earlier, I think, that the
25 threshold limit values and their predecessor, the

1 maximum allowable concentrations, were merely
2 guidelines for exposure levels. True?

3 A. That's true.

4 Q. And that as drawn out by the A.C.G.I.H.,
5 these guidelines were expected to provide a level of
6 exposure at which most but not every worker would be
7 free from a harmful effect or a bad health effect,
8 correct?

9 A. That was the general philosophy.

10 Q. But that would also entail, wouldn't it,
11 that some workers - if you expose enough of them over
12 a long enough period of time, that some workers would,
13 in fact, develop the disease from exposures. True?

14 A. I certainly couldn't say that they would
15 because I don't know.

16 Q. Well, speak - not speaking about any
17 particular workers but - but as to a group of workers,
18 if you exposed enough of them for a long enough period
19 of time at exposure levels, let's say, close to the
20 guideline, would you not expect that some would
21 develop disease from exposures, Dr. Rowe?

22 MR. PIERCE: I'm going to object
23 to the form of the question. It really

24 calls for complete speculation. I
25 mean, if you go on forever, someone is

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1 liable to get something. And the
2 question just has no parameters, no
3 beginning and no end.
4 But see if you can handle it.
5 A. Well, statistical analyses of those kind of
6 things is very difficult. And that's the reason why
7 you say that there's no absolute guarantee. But lung
8 cancer and other diseases occur from - occur
9 naturally. And they may occur from different
10 materials that are rather unknown. So, it's hard
11 to -- You can't make - cast something like that in
12 bronze.

13 Q. How about if we speak in terms of asbestosis
14 instead of asbestos-related cancer, would you agree
15 that exposures of enough people over a long enough
16 period of time near but below the guideline level will
17 predictably result in asbestos - in asbestosis in some
18 of those people?

19 MR. PIERCE: Object to the form.
20 It's ambiguous and vague.

21 A. You can't say that anything is impossible.

22 And it's possible.

23 Q. Well, isn't it actually statistically

24 probable, Dr. Rowe? I mean, wasn't that --

25 A. I would -- I would think that it would be -

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1 statistics would be influenced by the dosage and the

2 period of exposure time and such factors.

3 Q. And wouldn't you expect, based on your

4 experience and your knowledge, that exposures at

5 levels of, say, 4.7 million particles per cubic foot

6 or 4.9 over a long enough period of time would, in

7 fact, lead to asbestosis in some individuals?

8 MR. PIERCE: Objection to the form

9 of the question. It's compound; it's

10 argumentative; it's repetitive; and

11 it's, in certain proportion,

12 unanswerable.

13 MR. PAPPAS: And speculative.

14 THE REPORTER: Excuse me.

15 MR. PAPPAS: And speculative.

16 MR. RICE: I also object to it on

17 the basis it's not referenced by time.

18 A. I don't know.

19 Q. When you were applying the guidelines at
20 Dow, was it your understanding that some people
21 exposed below the guideline would, in all probability,
22 develop the occupational disease that the T.L.V. was
23 designed to protect against even though the majority
24 of the workers might be protected at the guideline
25 level?

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1 MR. PIERCE: I'd like to
2 object to the question as
3 unintelligible as asked.

4 A. I don't like to speculate on - on things
5 like that because anything is possible.

6 Q. Well, I really didn't mean to put you in a
7 posture of speculating; but I'm really asking more
8 about your understanding and your application of the
9 T.L.V. guidelines and other guidelines back in the
10 Forties and the Fifties and Sixties when you were
11 doing toxicology work for Dow and then later as the
12 man in charge of the industrial hygiene section.
13 You understood that the guidelines were
14 intended to protect most of the workers if their
15 exposures were limited - kept below those levels. You

16 agree with that, don't you, sir?

17 MR. PIERCE: I'm going to -- I'm

18 going to object to this question. I

19 think Dr. Rowe has explained already

20 what he meant by that, and this is just

21 going over the same area once again.

22 But go ahead.

23 A. That, I think, was the general philosophy.

24 Q. And at the same time you did not expect that

25 keeping exposures at or just below the guideline level

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1 would, in fact, protect every worker exposed at those

2 levels. True?

3 MR. PIERCE: And I'm going to

4 object to this. Asked and answered

5 more than once.

6 A. The probability of anything happening is

7 always increased with the dosage.

8 Q. So that the higher the dosage was to the

9 guideline, the greater the probability that some

10 person or persons would get the occupational disease.

11 True?

12 MR. PIERCE: Objection to the

13 form. It's vague.

14 And what do you mean
15 "exposure to the guideline"?
16 But go ahead, if you can.
17 Q. As exposures approach the guideline levels,
18 the probability of the occupational disease in some of
19 the workers would increase, wouldn't it?
20 MR. RICE: Object to the
21 speculation.
22 MR. PIERCE: Object to the form.
23 You're asking for speculation. And
24 Dr. Rowe has already given you an
25 answer as to his entire thinking in

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1 respect to exposure levels.
2 But go ahead.
3 A. I don't think that anyone can say that if
4 you increase exposure levels that you are - you have
5 to -- Excuse me. Let me back up. As you increase the
6 intensity of exposure, you're going to increase the
7 probability however small or however it may be before.
8 Q. And would the opposite also be true,
9 Dr. Rowe, that as you decrease the intensity of
10 exposure you would decrease the probability of

11 occupational disease?

12 A. I would think that would naturally follow.

13 Q. And that was, in fact, your experience as a

14 scientist at Dow, wasn't it, that the lower you kept

15 the exposures the less probability you had of

16 occupational disease? The less occupational disease

17 you had, as well. True?

18 MR. PAPPAS: Object --

19 MR. PIERCE: Object to the

20 compound nature of the question.

21 A. I would agree.

22 Q. Which is precisely the reason that you - or

23 that the Dow people, for instance, lowered their

24 standards on the vinyl chlorides and the aliphatic

25 chlorinated hydrocarbons and carbon tetrachloride,

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1 among other things, right?

2 A. Right.

3 Q. Dr. Rowe, do you recall that Dow passed on

4 to the A.C.G.I.H. its experience with these different

5 materials we just mentioned, the ones where Dow

6 actually lowered the guideline below the T.L.V. that

7 the A.C.G.I.H. had proposed?

8 A. Yes, sir.

9 Q. Do you recall, sir, what the response of the
10 American Conference of Governmental Industrial
11 Hygienists was to this important information from Dow?

12 A. Well, the A.C.G.I.H., I think, respected
13 very highly the results that were given them and moved
14 their threshold limit values accordingly.

15 Q. They did, in fact, lower their --

16 A. Oh, yes.

17 Q. -- T.L.V. down to the ones that Dow had set
18 internally?

19 A. Well, I'm not going to say specifically
20 because I don't remember; but I know they were reduced
21 in most of those situations.

22 Q. I see. Is it your view, Dr. Rowe, that the
23 state of knowledge about, let's say, the
24 carcinogenicity of a material like asbestos is one
25 that increased with time and with more studies, say,

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1 from 1935 up to 1965?

2 A. I think that's true of every person - every
3 material I know.

4 Q. Well, I didn't ask you about every material
5 because somebody would have objected it wasn't

6 specific.

7 A. As more knowledge becomes available, it's
8 put into use.

9 Q. All right, sir. Would you say that with
10 more knowledge you - as a scientist, you have an
11 increasing level of confidence or certainty about the
12 suspected carcinogenicity of the particular material?
13 Is that the way it works?

14 A. Well, the more knowledge you have, certainly
15 the better perspective you have for drawing
16 conclusions.

17 Q. Could you give us some feel for that point
18 on the spectrum of increasing knowledge or increasing
19 certainty where at Dow it was felt proper to begin to
20 take steps to protect the workers from exposures to
21 the material?

22 MR. PIERCE: Objection to the form
23 of the question. It's compound, and
24 it's very vague and very difficult to
25 understand.

1 A. I guess I would ask you if you would repeat,
2 please.

3 Q. Yes, sir. I was just wondering if you could

4 describe to us at what point on that spectrum of
5 increasing knowledge and certainty about the
6 carcinogenicity of asbestos that Dow thought it proper
7 to take steps to protect the workers from exposures to
8 asbestos.

9 MR. PIERCE: I'm going to continue
10 the objection based on the assumption
11 that there was a point in time where
12 they did not protect the workers at Dow
13 and other ambiguities within the
14 question.

15 But go ahead.

16 MR. ALMQUIST: I'm going to object
17 to the question.

18 A. I don't know.

19 Q. Would you know, sir, or could you explain to
20 us relative to this level of increasing knowledge and
21 certainty about carcinogenicity if - where Dow would
22 respond on carcinogens generally? Not asbestos, but
23 anything.

24 MR. PIERCE: I'd like to ask you
25 to clarify that question as to -- What

1 does that mean, "respond to"? So, I'm
2 going to object to the form of the
3 question as being vague.

4 A. I guess I don't understand it, either.

5 Q. Okay. Well, I'm trying to get a feel for
6 what point you felt like you knew enough to justify
7 telling the people working with this material that was
8 suspected of being a cancer-causing material that you
9 did have those suspicions.

10 A. I don't know. That would be just simply a
11 matter of judgment.

12 Q. Well, what factors went into exercising that
13 judgment during your years at Dow?

14 A. Experience, I guess.

15 Q. Experience with cases of cancer in the work
16 force?

17 A. No. But maybe in some work forces in the
18 literature, whatever was available. You have to
19 evaluate the situation in light of the current state
20 of the art, so to speak.

21 Q. So, at any given time you'd be looking to
22 and relying on the current state of the art; that is,
23 what's been published in the pertinent medical and
24 scientific literature on the subject, correct?

25 A. Yes.

1 Q. Well, would you wait, Dr. Rowe, until there
2 was a unanimous agreement among physicians and
3 toxicologists that a material caused cancer before you
4 would begin to tell your workers that there was
5 concern about it?

6 MR. PIERCE: Objection to form of
7 the question; requires complete
8 speculation, no specifics within.

9 A. I don't believe we would do that for - we'd
10 do that for anything that we felt that the situation
11 was hazardous.

12 Q. That you'd tell the workers?

13 A. That was their policy.

14 Q. Would you do this as soon as you had some
15 information from your own experience or the literature
16 that the material in issue could be a harmful
17 material, one that could cause health effects?

18 MR. PIERCE: Objection to the
19 form; compound.

20 A. Well, we tried to keep our people informed
21 of the present state of knowledge.

22 Q. Did Dow have any special rules for the
23 workers who were handling cancer-causing materials?

24 A. I don't believe so.

25 Q. Did those workers get any kind of special

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1 training, those men that were handling cancer-causing
2 materials?

3 A. They may have.

4 Q. Can you recall any instances where that
5 would have been the case?

6 A. Not offhand.

7 Q. Do you recall, Dr. Rowe, that workers
8 handling cancer-causing materials were given any kind
9 of special protection or industrial hygiene controls?

10 MR. PIERCE: I'm going to object
11 again in terms of the vagueness of the
12 question. Once again not dealing with
13 any exposure levels or - and implying
14 within that they did reach a level at
15 which there was some danger.

16 But go ahead and answer it to the
17 best of your ability.

18 A. We gave all the handling precautions that we
19 knew how to give with respect to any material being
20 handled that we thought might pose a significant
21 toxicological problem under the circumstances.
22 Certainly if a material was going to be absorbed

23 through the skin, why, we would caution people about
24 getting it on the skin and getting it off quickly and
25 all the rest of these things. It's just normal

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1 industrial hygiene - and medical, I guess, too -
2 treatment or instructions that - commonly in use.

3 Q. Do you recall sir, what Dow did in the
4 1930's, for example, to safeguard workers handling
5 asbestos as a carcinogen?

6 A. I don't know.

7 MR. ALMQUIST: I'm going to object
8 to that question, as well, because,
9 Mr. Blanks, we've been over that, I
10 think, on many, many occasions through
11 the day and on the dates preceding
12 this.

13 Q. In the 1940's do you recall that Dow caused
14 the people working with or around asbestos to do
15 anything special to handle it as a carcinogen?

16 A. I don't know.

17 Q. How about in the Fifties, sir?

18 A. I don't know.

19 Q. Would you have any knowledge of what Dow was

20 doing in the Sixties to handle asbestos as a

21 carcinogen and protect the workers?

22 A. I don't know.

23 Q. What about the warnings about its

24 carcinogenicity in those periods, do you have any

25 knowledge of that?

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1 A. No.

2 Q. Was it the policy at Dow to wait until there

3 had been a statistically significant number of workers

4 perish from toxic exposure to a material before the

5 men at Dow would be protected from that material?

6 MR. PIERCE: Objection to the form

7 of the question. It's argumentative,

8 it's speechmaking, and it's completely

9 inappropriate.

10 A. No.

11 MR. PIERCE: And has been

12 asked.

13 Q. So, the Dow response would come earlier than

14 the point at which you had a statistically significant

15 number of deaths reported. True?

16 MR. PIERCE: I'm sorry. Could we

17 have that question read back?

18 THE REPORTER: "QUESTION: So, the
19 Dow - the Dow response would come
20 earlier than the point at which you had
21 a statistically significant number of
22 deaths reported. --"
23 MR. PIERCE: I'd like just to --
24 THE REPORTER: Wait.
25 MR. PIERCE: I'm sorry.

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1 THE REPORTER: Go ahead.
2 MR. PIERCE: I'd like to continue
3 the objection to that question in that
4 it's been asked and answered and is
5 vague in portions.
6 Q. Did you have an answer, Dr. Rowe?
7 A. No.
8 Q. Is "no" the answer?
9 A. What? Yes.
10 Q. Okay.
11 A. "No" is my answer.
12 Q. Thank you. Okay. I thought I'd heard that,
13 but I lost the trail there during the lawyer's
14 comments - objection.

15 MR. PIERCE: Wait. Wait one
16 second, please. The delay in the
17 answer, for the record, had nothing to
18 do with this lawyer's comments but your
19 conversation with Mr. Hobson. And
20 just let's make that clear on the
21 record.

22 MR. BLANKS: Are you speculating
23 about my state of mind and my reason
24 for forgetting, Mr. Pierce?

25 MR. PIERCE: I like that.

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1 MR. PAPPAS: There's a lot of
2 speculation about that, Joe.
3 (By Mr. Blanks)
4 Q. As a practicing toxicologist and then later
5 as the chief of industrial hygiene, Dr. Rowe, did you
6 feel like individual case reports of cancer deaths
7 deserved attention?

8 MR. PIERCE: I'd like to object.
9 This has been asked and answered. I
10 think it's -- Exactly that question was
11 asked and answered this morning and
12 maybe last time.

13 Go ahead.

14 A. Would you restate it, please.

15 Q. Yes, sir. I was wondering whether you would
16 regard case reports - individual case reports - as
17 being information that would - that you would rely on
18 in deciding whether or not to protect workers from
19 exposures to the material that was suspected of
20 causing the death.

21 MR. PIERCE: Continue the
22 objection.

23 MR. PAPPAS: I'm going to object.
24 This question has been asked and
25 answered. Mr. Blanks, I was here this

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1 morning; and I remember this same
2 gentleman saying that it was
3 dose-related and it had to do with
4 exposure and concentrations of
5 exposure. And on that basis I would
6 object.

7 A. Well, certainly case reports are important.
8 It's also important to know the basis for those
9 reports and to learn what the circumstances were

10 that - that may be extraneous to that particular...
11 To state that just a little differently: One needs to
12 know what else was along with a case report because
13 case reports are very brief usually and they do not
14 have data behind them except they report a particular
15 occurrence. And the background for that occurrence
16 needs to be evaluated before they're given
17 credibility.

18 Q. All right, sir. Did you find that case
19 reports would pique your interest when you would read
20 them?

21 A. I guess so.

22 Q. Now, how about articles in peer review
23 journals that reported multiple cases, would those
24 arouse a somewhat higher level of interest when you
25 read them?

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1 A. Yes.

2 Q. Did you think during your work at Dow that
3 an international symposia of recognized experts
4 deserved even further attention?

5 MR. PIERCE: I'd like to object to
6 the ambiguity.

7 But go ahead.

8 A. Depends on those so-called experts.

9 Q. You mean who they were?

10 A. And their reputation.

11 Q. Was it your view while you were at Dow that
12 national presentations by Government scientists
13 discussing, say, environmental cancers deserved your
14 attention as a toxicologist?

15 A. Yes.

16 Q. How about reports from individual doctors or
17 toxicologists whom you knew to be competent and
18 regarded well, would that deserve your attention in
19 your work at Dow?

20 A. Any reports deserve attention.

21 Q. Just how much attention depending on who was
22 the author? Was that the way it was?

23 A. And the data behind them.

24 Q. Okay. Would you regard reports from trade
25 association, medical, and industrial hygiene

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1 committees made up of your peers or contemporaries
2 worthy of attention when they were reporting on
3 occupational health problems?

4 A. Yes.

5 MR. PIERCE: Objection to the
6 form; compound.

7 Q. Can you give us any understanding of the
8 reports or series of reports from which Dow finally
9 did learn that asbestos was a carcinogen, Dr. Rowe?

10 MR. PIERCE: Objection to the form
11 There's an assumption within there.
12 It's facts not in evidence.

13 But go ahead.

14 A. No.

15 Q. Do you think that Dow never did learn that
16 asbestos was a human carcinogen, Dr. Rowe?

17 A. Would you please repeat that.

18 Q. Well, yes, sir. Mr. Pierce, one of Dow's
19 lawyers, objected that there was an assumption --

20 MR. PIERCE: No. Excuse me,
21 Mr. Blanks. I am V. K. Rowe's
22 attorney.

23 MR. BLANKS: Oh, I'm sorry. I
24 thought you had enrolled in this case
25 as co-counsel for Dow Chemical Company.

1 MR. ALMQUIST: He's here as
2 counsel for V. K. Rowe.

3 MR. BLANKS: Whatever you say.

4 MR. RICE: Kind of like you and

5 Herschel.

6 MR. HOBSON: We don't represent

7 Mr. Rowe.

8 (By Mr. Blanks)

9 Q. There was an objection to some assumed fact,

10 and I suppose it was that Dow finally did learn that

11 asbestos was a carcinogen.

12 Do you think that Dow did finally become

13 aware of that before you left the company?

14 A. Well, I don't know that I can speak for the

15 company.

16 Q. Well, how about your group within the

17 company?

18 A. Well, personally my opinion is that - that

19 asbestos in sufficient dosage is a carcinogen.

20 Q. Can you give us any notion for what reports

21 it was or articles or experiences that led you to that

22 conviction, sir?

23 A. I don't recollect.

24 Q. Could you help us to understand, Dr. Rowe,

25 what would be the best information available about the

1 known and suspected health hazards of asbestos dust,

2 say, in the late Thirties?

3 A. No.

4 Q. Could you just describe it --

5 A. I don't know.

6 Q. -- generally for us?

7 A. I don't know.

8 Q. What would they be during the Forties? Now,

9 I'm not asking you to cite specific articles but just

10 the sources for the best information available.

11 MR. PIERCE: With the

12 understanding that Dr. Rowe has already

13 testified that asbestos is not his

14 field of interest or expertise?

15 MR. BLANKS: Well, yeah.

16 (By Mr. Blanks)

17 Q. I'm really not attempting to quiz you on

18 every article that was ever published. That wouldn't

19 be fair under the circumstances. But my question was:

20 Generally speaking, what would you say would be the

21 best information available - the best sources for it -

22 about the known and suspected health hazards of

23 asbestos during those different decades when you

24 worked for Dow?

25 A. Well, I never followed the literature on

1 asbestos; and I really can't tell you.

2 Q. All right, sir.

3 A. I have heard, --

4 Q. Excuse me.

5 A. -- but I don't know.

6 Q. What have you heard?

7 A. Well, you see reports with certain names on
8 them; and, so, "Okay. Well, that's that."

9 Q. As to the materials you did follow, what
10 were the sources for the best information available on
11 those materials, generally speaking?

12 A. Well, this depends on the type of material
13 because some laboratories seemed to concentrate on
14 certain categories of chemicals, substances that they
15 were concerned with and whereas others had little
16 information or a little experience with others. So,
17 you had to select and choose the information on the
18 basis of the particular group that was doing the
19 work.

20 Q. So, for example, Dr. Smyth at the Mellon
21 Institute might have had a specialized area of
22 interest. And if you were dealing with that kind of
23 material, you might consider him to be a good source

24 of information, I suppose.

25 A. Yes.

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1 Q. Or on the other hand, for dust inhalation
2 topics and lung fibrosis, Saranac Laboratories in New
3 York would have been a highly regarded source of
4 information in the Thirties and Forties and Fifties?

5 A. I think so.

6 Q. Well, during all the years that you worked
7 at Dow, would sources for the best information
8 available about known and suspected health hazards of
9 a material like asbestos include the industrial
10 hygiene and medical literature in the journals?

11 A. I'm not sure I understood your question.
12 Whether there was a double negative in that or not, I
13 don't know.

14 Q. Okay. Let me try again.

15 A. Okay.

16 Q. We're speaking again generally about the
17 sources for the best information available about known
18 and suspected health hazards of a material like
19 asbestos.

20 Would you say for that period of the
21 Thirties, Forties, Fifties, even on into the Sixties,

22 that those sources would include the industrial
23 hygiene and medical literature published in the
24 journals?

25 A. Yes.

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1 Q. Would it include things like the proceedings
2 of the National Safety Council dealing with - with
3 such materials?

4 MR. PIERCE: I'm going to object
5 because I don't think it's clear that
6 the National Safety Council had
7 literature going back into the
8 Thirties. It's not anything I was
9 aware of, so -- It may be; but I think
10 without going through the time periods
11 there may be a problem in answering
12 that question. And I'm just trying to
13 avoid that problem.

14 A. It really doesn't matter too much what
15 organization you speak to. It depends on the people
16 who are doing the speaking. And the National Safety
17 Council was very strong in terms of mechanical
18 safety. And I don't think -- I did not ever consider

19 them to be strong in the area of organic toxicology.

20 Q. All right, sir. How about in the area of
21 mineral dust hazards such as silicosis or asbestosis
22 and such as that?

23 A. I don't know.

24 MR. PIERCE: I'm going to object
25 to the form of the question, if there

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1 is a proper question before us.

2 A. I don't know.

3 Q. Okay. You would regard people like Philip
4 Drinker and Ted Hatch and Leroy Gardner as persons
5 with knowledge to impart even back in the Thirties and
6 Forties about asbestosis and silicosis, wouldn't you,
7 sir?

8 MR. PIERCE: All three or any one
9 of them?

10 I object to the form of the
11 question as compound.

12 A. I think I would respect all - the opinions
13 of all of those particular individuals.

14 Q. Okay. And if they'd been speaking and
15 presenting papers at the National Safety Council
16 Congresses even back in the Thirties, that would at

17 least be a source of good information about known and
18 suspected health hazards. Would you agree?

19 A. It would certainly be information that one
20 would have to - to respect unless there were some
21 mitigating circumstances that would tend to depreciate
22 it.

23 Q. Would you also agree that during this time
24 period of the late Thirties and the Forties, Fifties
25 that the industrial hygiene foundation would have been

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1 a source for some of the best information available
2 about the known and suspected health hazards of
3 asbestos dust and fiber?

4 A. Yes.

5 Q. Including through their publication the
6 industrial hygiene foundation digest. True?

7 A. Yes.

8 Q. Would you include the United States Public
9 Health Service and its publications on occupational
10 diseases to be one of the sources for some of the best
11 information available during those decades, as well?

12 A. The U. S. Public Health Service did good
13 work, generally. They had a few bad ones, but I can't

14 tell you what they were.

15 Q. Okay. Would you regard textbooks by
16 physicians and toxicologists and industrial hygienists
17 to also be a source for the best information available
18 about the known and suspected health hazards of
19 asbestos during your decades of work with Dow?

20 MR. PIERCE: Objection to the
21 form; overly broad and general.

22 A. Yes. I'd consider them sources of
23 information.

24 Q. Would you consider the American Public
25 Health Association proceedings to be yet another good

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1 source for some of the best information available on
2 these health hazards we're discussing?

3 A. I think U. S. Public Health Service was
4 generally quite reputable.

5 Q. I'm sorry. I meant to ask you about the
6 American Public Health Association and their
7 proceedings.

8 A. I'm not too many familiar with the
9 proceedings.

10 Q. Okay. Or their publications?

11 A. There was a journal of the U.S. Public

12 Health Service. I don't remember the exact title.
13 Q. Okay. How about your insurance companies
14 that had industrial hygiene departments and medical
15 departments, such as Metropolitan or Travelers or
16 Liberty Mutual or Aetna or any others, would that have
17 been a source of information for the known and
18 suspected health hazards of asbestos dust and fiber in
19 the Thirties or the Forties or the Fifties, Dr. Rowe?

20 MR. PIERCE: Unfortunately I must
21 object because it assumes facts not in
22 evidence.

23 But go ahead.

24 MR. RICE: Also assumes that he
25 had such knowledge. Calls for

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1 speculation.

2 A. I was not familiar with the insurance
3 company work in this area. I knew some good insurance
4 people, but I don't know just exactly what their best
5 work was.

6 Q. Would you regard Government bulletins and
7 reports on occupational disease to be good sources,
8 ones that would include some of the best information

9 available about the known and suspected health hazards
10 of asbestos during your years working for Dow?

11 A. That was -- What journal was that?

12 Q. I'm just speaking of Government bulletins
13 and reports generally that would deal with
14 occupational disease hazards such as asbestos.

15 A. I don't know whether I would or not. All
16 depends on who was involved in that particular
17 article.

18 Q. If -- If the author were a person like
19 Anthony Lanza from Metropolitan, would you give
20 credence to his work?

21 A. I didn't know Lanza very well.

22 Q. Did you know of his reputation?

23 A. My personal contacts, as I said, were very
24 limited. I know he had a good reputation, but I have
25 no way of judging it.

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1 Q. Okay. Well, did you, like, withhold
2 judgment until you could actually become acquainted
3 personally with the authors of the different
4 scientific articles and medical articles that you
5 would encounter in your profession and before you'd
6 give credence to their work?

7 A. I don't know. It seemed that that was the
8 case and very frequently.

9 Q. Dr. Rowe, do you recall ever finding in Dow
10 files any kind of information or publications from
11 Metropolitan Life Insurance Company concerning
12 occupational disease and occupational health hazards?

13 A. I don't recollect.

14 Q. You recollect that Metropolitan, at least
15 for some period of time, provided insurance coverage
16 in the form of disability coverage for Dow employees?

17 A. I don't know.

18 Q. Would you regard persons like Alice Hamilton
19 as a credible source of information on occupational
20 diseases?

21 A. Yes.

22 Q. How about Dr. Harriet Hardy, would you
23 regard Dr. Hardy well, also?

24 A. She had a good reputation.

25 Q. Is that a "yes"?

1 A. Qualified.

2 Q. All right, sir. Was it the practice at Dow
3 during any of the years you worked there to monitor

4 for any of the materials that showed up on the
5 A.C.G.I.H. T.L.V. list that were used or present in
6 the plants?

7 MR. PIERCE: Asked and answered.

8 But go ahead.

9 A. Again I'd ask -- Please repeat.

10 Q. Would your industrial hygienists at Dow
11 automatically monitor for any of the materials or for
12 all of the materials on the A.C.G.I.H. threshold limit
13 value list that were known to be present in the Dow
14 plants?

15 A. I don't know.

16 Q. You don't know?

17 A. I don't know. "All" is a very inclusive
18 word.

19 Q. Well, most?

20 A. So, I don't know.

21 Q. Was it the rule that if the material was
22 listed on the A.C.G.I.H. table that the hygienists
23 were expected to monitor for it if it was present in
24 the Dow plant?

25 A. That was the usual case, yes.

1 Q. And that was the case going back to the - to

2 the beginning of the A.C.G.I.H. standards in the late

3 Forties, as you recall?

4 A. Probably not.

5 Q. Do you think the extent of the monitoring

6 increased after that time?

7 A. Well, we simply did not have the capacity to

8 do that. We did not even have an industrial

9 hygienist.

10 Q. Until --

11 A. Until '48.

12 Q. '48? About the same time that the T.L.V.'s

13 were published by the A.C.G.I.H., isn't it?

14 A. I don't remember when they were first

15 published.

16 Q. Dr. Rowe, can you tell us who, if anybody,

17 from Dow attended the New York Academy of Science

18 presentations on asbestos disease hazards in 1964?

19 A. I don't remember.

20 Q. Do you recall that anyone went to this --

21 A. I don't recall.

22 Q. Do you recall learning of this symposium,

23 yourself, at some point, the one at Mount Sinai in

24 connection with Dr. Selikoff and his doctors?

25 A. I don't recall.

1 Q. Did you ever meet Dr. Irving Selikoff?

2 A. Yes.

3 Q. When was that, sir?

4 A. I don't remember.

5 Q. Was it after the mid-Sixties?

6 A. I don't know. I don't remember the --

7 Q. Can you recall any of the circumstances

8 surrounding this meeting?

9 A. Yes.

10 Q. Could you recount those for us, sir?

11 A. We -- I met with Dr. Selikoff with respect
12 to a major problem with dioxins and Agent Orange,
13 2,4,5-T.

14 Q. Would this not likely, then, have been in
15 maybe the late Seventies, early Eighties?

16 A. No.

17 Q. Earlier than that?

18 A. Oh, yes. It was at the time when this was -
19 I don't even remember what the dates were - that had
20 to do with the Agent Orange problem. And Selikoff was
21 very interested in it. And we, as a laboratory,
22 visited Dr. Selikoff and made - presented him with all
23 the toxicological data we had on these compounds in
24 his conference room, I guess, at his laboratory.

25 Q. Did any work by Selikoff or his doctors

1 follow from that meeting?

2 A. I don't recollect.

3 Q. What was the purpose of Dow going to meet
4 with - Dow scientists meeting with Dr. Selikoff in
5 connection with Agent Orange?

6 A. As I recollect, Dr. Selikoff asked us if we
7 would share the information we had with him. Seems as
8 though they were doing some work, themselves, and
9 didn't wish to - wished to have the benefit of what we
10 already had learned.

11 Q. I see. Can you recall any other occasions
12 when Dr. Selikoff called on Dow for information or
13 provided any --

14 A. I don't recall.

15 Q. -- any information to Dow?

16 A. I don't recall.

17 Q. Do you think that you or your colleagues in
18 your department at Dow learned anything about asbestos
19 health hazards from the studies of Dr. Selikoff's
20 doctors that were reported in 1964?

21 A. I don't know.

22 Q. Or later?

23 A. I don't know.

24 Q. Wasn't it largely due to the - the report in

25 1964 at Mount Sinai and the subsequent studies that

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1 Dow finally began to monitor routinely for asbestos in

2 its Texas plants in 1968, Dr. Rowe?

3 A. I --

4 MR. PIERCE: Object to the form;

5 leading. And it's asked and answered.

6 A. I don't know.

7 Q. Can you give us any understanding why in

8 1968 Dow did begin monitoring for asbestos exposures

9 in the Texas plants?

10 A. I don't know.

11 MR. PIERCE: Objection to the

12 form. It assumes matters not in

13 evidence.

14 A. I don't know.

15 Q. Was Dow a maker of Agent Orange or any of

16 its components?

17 A. Yes.

18 Q. Was it your belief at the time that Agent

19 Orange was a safe material?

20 A. Yes.

21 Q. Still your belief?

22 A. Yes.

23 Q. In...

24 MR. ALMQUIST: We've been going

25 for another hour here. Are you getting

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1 ready to switch gears?

2 MR. BLANKS: Oh, okay. Sure.

3 MR. PIERCE: Let's take a

4 short...

5 THE WITNESS: It's time to

6 stretch.

7 MR. PIERCE: How's your pain

8 (directed to the witness)?

9 (AT THIS TIME A BRIEF RECESS WAS

10 TAKEN, AND THE PROCEEDINGS THEREAFTER

11 RESUMED AS FOLLOWS:)

12 (By Mr. Blanks)

13 Q. Dr. Rowe, you said a few minutes ago that

14 you regarded Agent Orange as a safety material. I

15 wonder if you believe that asbestos insulation, as it

16 was used at Dow plants in the Forties through the

17 Sixties, was a safe material.

18 A. As far as I know.
19 Q. You said --
20 A. Depends on how it's used and the dosage.
21 Q. I sort of spoke over you there. You said it
22 depends on how it's used and the dosage?
23 A. That's right.
24 Q. Okay. So, in some uses and in some dosages
25 it wouldn't be a safe material?

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1 A. If you have excessive doses, there's nothing
2 that's safe.
3 Q. Well, do you believe, sir, that, as it was
4 used at Dow in the Forties through the Sixties, that
5 asbestos insulation was, in fact, a safe material as
6 used?
7 A. As far as I know.
8 Q. Now, you said back in one of your talks in
9 1974 that "safe" implies absolute safety or no risk.
10 Do you still use the word "safe" that way?
11 MR. PIERCE: Objection to the
12 form.
13 If you're reading from something,
14 please let us know what it is.
15 A. Well, the only safe exposure is no exposure.

16 Q. In some of your speech notes, Dr. Rowe, you
17 refer to Dr. Selikoff of Mount Sinai as "one of our
18 adversaries." Could you explain what you would have
19 meant by that?

20 A. Well, Dr. Selikoff was one of those persons
21 who believed that any exposure was likely to produce -
22 with respect to asbestos, as far as I know, that any
23 exposure was something really serious. And I don't
24 believe that that is true.

25 Q. Would you say that an exposure sufficient to

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1 cause mesothelioma in a worker would be something
2 really serious?

3 A. Would be what?

4 Q. Something really serious.

5 MR. PIERCE: Objection to the
6 form; argumentative.

7 A. Certainly that's a serious response.

8 Q. And do you think that at any time you were
9 at Dow that Dow knew - knew what, really, were
10 asbestos exposures that were not serious?

11 MR. PIERCE: I object to the
12 form. It's confusing.

13 MR. BLANKS: You're right. It was

14 a bad question. Thank you.

15 (By Mr. Blanks)

16 Q. Would you say, Dr. Rowe, that there was a

17 time when you were with Dow that Dow did know to a

18 certainty what amount of asbestos exposure would not

19 be something really serious?

20 A. To the best of my knowledge, exposures

21 controlled to recommended levels were considered to be

22 acceptable.

23 Q. Yes, sir. But the question was did Dow know

24 what levels of exposure would not, in fact, cause any

25 kind of occupational disease.

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1 MR. PIERCE: Asked and answered.

2 A. I don't know.

3 Q. Do you think that you knew before you left

4 Dow what level of asbestos exposure was certain not to

5 cause disease in any person exposed to it at work?

6 A. I don't know except to say that I - that I

7 don't believe that I have ever seen information which

8 indicated or proved that exposures which were below

9 the accepted level had caused asbestos-type disease.

10 Q. Dr. Rowe, would you expect that one would

11 have cases of asbestosis in workers who had been using
12 asbestos in a safe way, as you've used the term?

13 A. I would -- I guess I'll have you ask that
14 again.

15 Q. Would you expect that you would have cases
16 of asbestosis in workers who had used the material in
17 a way - in a safe way, as you've used the term?

18 A. I have no reason to believe that they would.

19 Q. And, therefore, if you did find cases of
20 asbestosis in workers who had been exposed in a safe
21 way, as you say, that really wouldn't have been a safe
22 use. It would have been unsafe, wouldn't it?

23 MR. PIERCE: Objection to the form
24 of the question. It implies that the
25 only place anyone could have an

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1 asbestos exposure was from an
2 occupational setting and that the
3 individual involved could not have had
4 exposure at other places.

5 But given that objection and the
6 ambiguous nature of the question, go
7 ahead.

8 MR. PAPPAS: Objection;

9 argumentative.

10 A. My -- My own opinion is that - that, again,

11 it's exposure intensity that is a controlling factor.

12 And I know of nothing, as I said before, where

13 documented exposures could show that the exposure had

14 never exceeded those levels.

15 Q. So, if you found cases of asbestosis in Dow

16 workers, would that lead you to the conclusion that,

17 in fact, their exposures had been excessive?

18 MR. PIERCE: Objection to the form

19 for the same --

20 A. No. Well...

21 MR. PIERCE: -- reasons as given

22 earlier.

23 MR. PAPPAS: Also, speculation.

24 Q. Sir?

25 A. If we knew for sure all the rest of the

1 exposures that could possibly have occurred. I don't

2 know the history of the people. I'd have to know

3 that.

4 Q. Like if they'd had some hobby that would

5 cause them to have high asbestos exposures? Is that

6 what you're thinking of?

7 A. I don't know where it might be.

8 Q. In your experience, would the occupational
9 exposures of a worker to asbestos almost always be the
10 most intense and those of the longest duration that
11 you'd find in a person?

12 A. I had no way of knowing.

13 Q. Did you suspect during any of the years that
14 you were with Dow that there were significant
15 nonoccupational exposures to asbestos that people
16 working in your plants could have had?

17 A. I don't know.

18 Q. Did you all give preplacement examinations
19 at Dow to look for indications of occupational disease
20 before you'd put somebody on the payroll?

21 A. Again, that's in a time frame. And I can't
22 identify that. I don't believe that was the case in
23 the early days. It was, I think, quite universal with
24 the latter days. I don't know what that means,
25 either. But the last few years that I was around it

1 was...

2 Q. Do you recollect that it was part of the

3 routine in the periodic medical exams during any of
4 the years that the doctor would ask - would ask the
5 employee about his exposures at work or what the
6 employee thought his exposures were to toxic
7 materials?

8 A. I don't know.

9 Q. Did the medical department ever consult with
10 you in toxicology or with your industrial hygienists,
11 that you know of, about what kind of toxic exposures
12 workers could be facing so the doctors would know what
13 kind of disease signs or symptoms to be on the lookout
14 for?

15 A. Did I interpret -- Did the doctors talk to
16 us?

17 Q. Yes, sir.

18 A. Yes.

19 Q. And did they talk to you about "What kind of
20 occupational diseases should we be aware of or on the
21 lookout for?"

22 MR. PIERCE: Objection to the
23 form; leading.

24 A. Well, I'm sure that was the case; but we
25 developed information that we shared first with the

1 medical department on materials that were unknown to
2 anybody else or they were compositions which were new
3 where there was no evidence, that we knew of - I mean
4 no toxicological evidence - anywhere.

5 Q. Yes, sir.

6 A. So, the medical department relied on us to
7 tell them what to expect from, more or less,
8 short-term exposures. And that's as far as we could
9 possibly go.

10 Q. Okay. And for those more mundane materials
11 that had been around for a while such as asbestos or
12 silica, you expected the medical department was just
13 relying on their medical training and the medical
14 literature for --

15 A. That was my under --

16 MR. PIERCE: Objection to the
17 form; compound, ambiguous.

18 A. That was my understanding.

19 Q. Okay. I think in the same talk where you
20 used Dr. Selikoff as an example of one of your
21 adversaries, you referred to him as "an artist of
22 innuendo."

23 A. I beg your pardon.

24 Q. "An artist of innuendo." It sounds like a
25 Spiro Agnew-ism, I know, but...

1 MR. PIERCE: I like it. However,
2 I'm going to object since we have no
3 way of checking the accuracy of that
4 quotation.

5 But in the context of the question
6 go ahead and answer.

7 Q. Could you elaborate on that, sir?

8 A. I don't know what I was referring to at the
9 moment when I said that.

10 Q. This -- This comes from what was marked as
11 Exhibit 6 to your deposition, sir, around page 63
12 through 65. Let me hand you those.

13 MR. BLANKS: Is there more? Did
14 this fall out of it?

15 (By Mr. Blanks)

16 Q. Let me hand you these three (tendering
17 documents). Do you recognize that as your
18 handwriting, Dr. Rowe?

19 A. (Reviewing document) It sure looks like it.

20 Q. It may be missing a page there. This one
21 got stamped sideways. 66, I think, follows 65. And
22 67 -- Is 65 the first page there?

23 MR. PIERCE: No. Sixty -- It runs
24 63 to 66 now.

25 MR. BLANKS: Okay.

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1 MR. PIERCE: Where are you --

2 MR. BLANKS: We're at the point
3 where Dr. Rowe -- I think he said he
4 recognized that as his handwriting.

5 MR. PIERCE: All right.

6 (By Mr. Blanks)

7 Q. And these would appear to be your notes for
8 a talk you gave somewhere in your career? Yes, sir?

9 A. (Reviewing document)

10 MR. BLANKS: Take that off
11 (referring to yellow tab on document).

12 MR. PIERCE: Well, I think now my
13 objection to the quotation is all the
14 more pertinent since on page 65
15 Selikoff is certainly indicated as an
16 artist of innuendo but rather as an
17 example of people who go public and not
18 worry about the correct - correctness
19 or the probability of their
20 statements.

21 So, yeah, I think that was

22 appropriate, indeed, as an objection.
23 MR. BLANKS: You think that was an
24 appropriate objection? What was the
25 objection? Bet you can't even remember

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1 it now.
2 MR. PIERCE: That we did not see
3 the quote.
4 MR. BLANKS: Ah. Well, now we've
5 remedied that.
6 MR. PIERCE: And now your quote
7 was incorrect.
8 (By Mr. Blanks)
9 Q. My God, did you not say "artist of
10 innuendo," Dr. Rowe? You didn't say "may bob of
11 negative-ism," did you?
12 MR. PIERCE: I said that --
13 A. Well, I explained it -- Exactly what I meant
14 is explained right there.
15 Q. Well, our colloquy aside, would you - now
16 that you have the paper in front of you, would you
17 tell us -- This is a copy of notes you made for a talk
18 you gave somewhere. Would that be correct?
19 A. It's my handwriting.

20 Q. All right, sir. And could you explain to us
21 what you meant when you used Dr. Selikoff as an
22 example of an artist of innuendo?

23 MR. ALMQUIST: I'm going to object
24 to the characterization since I'm not
25 sure that's what the document says.

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1 A. Statements such as "may" and -- Pretty soon
2 these sort of things get repeated and they get into
3 the press. And by the time they've got there, they're
4 quoted as fact. And often they're not really
5 supported by factual data (tendering document).

6 Q. And when you said "may," you mean like a
7 statement that asbestos may cause cancer was the type
8 of --

9 A. Does it say asbestos?

10 Q. No, it doesn't. But --

11 A. Okay.

12 Q. -- it wasn't clear when you said a statement
13 such as "may" was an example of innuendo.

14 A. This is -- I'm speaking generally.

15 Q. Your -- Your quote here says "They are
16 articles" -- I'm sorry. Let me start over. You say,

17 "They are artists of innuendo -- Such and such may
18 cause cancer."

19 A. Uh-huh.

20 Q. That's what you meant as an innuendo that
21 could be misleading?

22 A. It was an example of using "may." "This may
23 cause cancer." May cause almost anything that's -
24 that's disagreeable to sway public opinion.

25 Q. Do you think, Dr. Rowe, that it's - that

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1 it's misleading to - for a researcher to say that a
2 material being investigated may cause cancer while
3 he's still gathering data?

4 A. I guess I don't understand your question.

5 Q. Well, I guess -- At what point is it not
6 misleading to say that asbestos may cause cancer?

7 That's what I'm trying to --

8 A. I didn't say that asbestos may cause
9 cancer. I was speaking in -- Dr. Selikoff has spoken
10 on many things other than sil - than asbestos.

11 MR. PIERCE: And, also, are your
12 questions related to the scientific
13 literature, to the use of newspaper and
14 public access as, I believe, is implied

15 in the exhibit? I believe it's
16 Exhibit 6. I mean, I think you have to
17 really limit it to what the talk is
18 about for us to understand where you're
19 going, Mr. Blanks.
20 Q. I think you said here, quoting you,
21 "Contrarywise our adversaries use every opportunity to
22 go public and they worry not about the" -
23 "correctness," perhaps - "or the probability of their
24 statements as we do. Example, Selikoff." And then
25 you go on to say they're artists of innuendo.

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1 This general statement with Dr. Selikoff as
2 an example, is that one that you say doesn't relate to
3 his work on asbestos and asbestos as a cause of
4 cancer?
5 A. I didn't say that.
6 Q. Do you think it does relate to his work on
7 cancer as first came to light in the early Sixties?
8 A. I don't have any question about that -
9 that - the asbestos situation. When he said "may,"
10 well, I wouldn't argue with that; but there are other
11 things that he has spoken to -- And other people have,

12 too. Not only Dr. Selikoff but others have frequently
13 used something that is in prepublication stage and
14 quote it in the press for some purpose to their
15 benefit. And we have seen many examples of this, not
16 only with Dr. Selikoff but with others, some of whom I
17 don't know who they were. They just came out as
18 edicts that this is bad, but there's not the data
19 behind it. Anybody -- I could -- I could postulate
20 that - most anything you want to mention that it may
21 be carcinogenic. And give me five years and I might
22 be able to prove it.

23 MR. PIERCE: And, Mr. Blanks, if I
24 could just bring to your attention --
25 When you read the sentence "Such and

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1 such may cause cancer," you did not
2 read the entire sentence which is
3 completed when it says "when in fact
4 the data weigh heavily in the other
5 direction."

6 Q. What's --

7 MR. PIERCE: That's page 65.

8 Q. Could you tell us, Dr. Rowe, what is the
9 example you give there in that next-to-the-last

10 paragraph? I can't read it.

11 A. Are you referring to the paragraph starting
12 with "They are" or what?

13 Q. No, sir. The one right below it where it
14 says "Example."

15 A. It says "Elsea." And I'm trying to remember
16 what that was. I don't remember. I don't remember
17 what that refers to.

18 Q. I couldn't - couldn't connect it with
19 anything. Would you look at the next page of that,
20 that first full paragraph where you start out "As you
21 can probably tell from the thrust of my remarks," and
22 then go on "I am concerned about our ability to
23 communicate our science effectively to others than
24 the friendly scientific community." Do you see that,
25 sir?

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1 A. Yes.

2 Q. Who did you regard as "the friendly
3 scientific community"?

4 A. Those scientists who are primarily concerned
5 with dealing with facts and not fancy.

6 Q. All right, sir. You include yourself and

7 your colleagues at Dow in that group who deals with

8 facts and not --

9 A. I do.

10 Q. -- fancy? In connection with the

11 Mount Sinai studies on asbestos as a cause of disease

12 and cancer, would you view the Mount Sinai physicians

13 and their epidemiologists as scientists who deal in

14 facts and not fancy?

15 A. When the data is there to support it.

16 Q. Is it your view that the data was there to

17 support their conclusions in 1964 and in their

18 subsequent reports?

19 MR. PIERCE: In respect to what,

20 Mr. Blanks?

21 MR. BLANKS: The conclusions that

22 they set out about asbestos as a cause

23 of lung cancer and other matters.

24 A. I think I have mentioned several times I do

25 not have a problem with the asbestos situation.

1 (By Mr. Blanks)

2 Q. All right, sir. So, as far as --

3 A. Insofar as I am aware - And I'm certainly no

4 expert in asbestos - my impression is that asbestos in

5 appropriate dosages and types of exposure can cause
6 cancer. I don't argue this one bit.

7 Q. Okay. So, you don't view the Selikoff and
8 Mount Sinai work from the Sixties as being bad
9 science, then?

10 MR. PIERCE: Meaning -- The "work
11 from the Sixties" meaning the asbestos
12 and mesothelioma work, not any
13 Selikoff work; is that correct,
14 Mr. Blanks?

15 MR. BLANKS: Yeah.

16 A. I'm referring to that. Yes.

17 (By Mr. Blanks)

18 Q. Yes.

19 A. I agree with that.

20 Q. You wouldn't say that's bad science, would
21 you?

22 A. No. No. I didn't say that.

23 Q. Okay. Well, I just want to make that
24 clear.

25 MR. PIERCE: And we've certainly

1 made it clear often enough.

2 MR. BLANKS: Anything worth doing
3 is worth overdoing, Mr. Pierce.

4 (By Mr. Blanks)

5 Q. Would you agree, then, Dr. Rowe, that if the
6 best information available by 1965 said that asbestos
7 was a cause of lung cancer that --

8 A. I wouldn't argue that point.

9 Q. Okay. Would you agree, then, that cancer
10 should have been reported by Dow as an asbestos health
11 hazard --

12 A. I don't know.

13 Q. -- by 1965?

14 MR. PIERCE: I'm going to object
15 to the ambiguity.

16 A. Again I have to relate it to the intensity
17 of exposure.

18 Q. Yes, sir?

19 A. Well, that's my answer.

20 Q. Well, I mean, how in providing information
21 to your colleagues or your employees would you relate
22 that fact of asbestos-causing cancer to exposure? How
23 would you tell that to a worker?

24 A. Well, you would specify the levels of
25 exposure that the supposed authorities or experts

1 would indicate would be safe. If you have a -- If you
2 have -- If you don't take care of yourself and so
3 forth and you get into a cloud of this stuff all the
4 time -- If that's the case, that's bad news.

5 Q. Well, in terms of relaying this information
6 to people working in your plants, though, I mean was
7 it the approach to just say "Keep your exposures below
8 this level, and you will be okay"?

9 A. I don't know exactly what was said in the
10 plants. I wasn't there.

11 Q. Well, if, as you said, the view was by 1965
12 that asbestos could cause lung cancer, how then would
13 you relay that to a worker? I mean, would you say,
14 "Asbestos can cause cancer. That's one of the health
15 hazards"?

16 MR. PIERCE: I'd like to object to
17 the form. It calls for speculation.

18 He's told you he has no firsthand
19 knowledge of what was said.

20 But go ahead.

21 A. I don't know that it wasn't said. I'm
22 surprised if it wasn't.

23 Q. Can you tell me a little bit about the
24 history of the documents that Dow used to describe
25 material health hazards? Are those things that

1 preceded the Material Safety Data Sheets? Do you know
2 what I'm talking about?

3 A. (No response)

4 Q. Didn't you have a form to report health
5 hazard information on about specific materials?

6 A. Yes.

7 Q. And what did you call that form? Was it
8 something called "Data Sheet of Properties, Health
9 Hazards, and Precautions for Safe Handling of
10 Materials"? Does that ring a bell?

11 A. That rings a bell.

12 Q. Do you recognize the form (tendering
13 document to Mr. Pierce)?

14 MR. PIERCE: Thanks (reviews and
15 tenders document to the witness)

16 A. (Reviewing document) Yes.

17 Q. How far back in time, approximately, do
18 these forms or something equivalent to it at Dow,
19 Dr. Rowe?

20 A. I don't know. It would have been after
21 Mr. Hoyle begun operations. And I can't tell you
22 the -- I just don't know.

23 Q. So, probably after '48?

24 A. I'm sure it was after '48.

25 Q. Were these prepared just as a matter of

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1 routine as the toxicology department and the
2 industrial hygiene department began to explore
3 materials and a bank of them created - a library of
4 them built up?

5 A. I really don't know what you're -- Rephrase
6 it, would you, please?

7 Q. I'm wondering, Dr. Rowe, whether these kind
8 of forms were done on an ad hoc basis when a question
9 would arise, when a problem might be reported or
10 suspected.

11 A. No.

12 Q. Or were they done as part of a routine of
13 trying to set up a safety data sheet for every
14 potential toxic material in the plant that took place
15 over time?

16 A. Well, they were routine after a certain
17 point; but I can't tell you just when that point was.

18 Q. Okay. But they weren't one-shot deals --

19 A. Oh, no.

20 Q. -- in response to a - some fellow reporting

21 a problem with a skin ailment or what have you? Okay.

22 MR. BLANKS: Could I have that

23 back now (indicating document)?

24 MR. PIERCE: Sure.

25 MR. BLANKS: I'll have to hand it

500

1 back to you in a second.

2 (By Mr. Blanks)

3 Q. Would it be surprising to you that in 1965

4 in a biochemical research laboratory report regarding

5 exposures to fine dust encountered by workers cutting

6 various types of pipe material that in discussing

7 asbestos and its health hazards that no mention

8 whatever would be made of asbestos as a carcinogen or

9 even a suspected carcinogen, Dr. Rowe?

10 A. I don't know whether the particular person

11 that prepared that was aware of it or not. I don't

12 know.

13 Q. Would you expect that Mr. Hoyle, had he

14 checked that report, would have been aware of

15 asbestos' propensity to cause cancer in 1965?

16 MR. PIERCE: Are you looking at a

17 particular document? And, if so, bring

18 it to our attention.

19 MR. BLANKS: We're looking at

20 Hoyle Exhibit 7.

21 MR. ALMQUIST: I don't have the

22 quote. If you've got it -- I don't

23 have a copy of that.

24 And I'm also going to object to

25 the question because it asks him to

501

1 speculate as to what Mr. Hoyle

2 would have known in 1965.

3 MR. BLANKS: Well, certainly, I

4 wouldn't expect somebody in the

5 toxicology department to have any

6 notion of what Mr. Hoyle would know

7 about asbestos and cancer in 1965.

8 MR. ALMQUIST: Object to the

9 side-bar comment.

10 (By Mr. Blanks)

11 Q. The question, sir, was: Would you have

12 expected Mr. Hoyle, given his experience and training,

13 by 1965 to have know that cancer was one of the health

14 hazards associated with asbestos dust exposure?

15 MR. ALMQUIST: Same objection.

16 A. I would have expected it, but I don't know.

17 Q. If he had known about it, wouldn't you have
18 expected that he would mention asbestos caused cancer
19 as one of the health hazards of asbestos exposure and
20 to have put it in a report - due to asbestos exposure?

21 MR. PIERCE: A report relating to
22 what?

23 MR. BLANKS: A report relating to
24 exposures to workers cutting various
25 types of pipe covering material,

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1 including asbestos.

2 A. Well, I'd like to read the whole report, if
3 I could, because I don't remember it at all.
4 (By Mr. Blanks)

5 Q. All right, sir. I'm happy to make that
6 available to you. I just wonder if in discussing
7 asbestos health hazards you would have expected
8 Mr. Hoyle, at least by 1965, to mention cancer as one
9 of the potential health hazards.

10 A. I don't know what he was discussing.

11 MR. PIERCE: That -- What's the
12 date of that report?

13 MR. BLANKS: This is a July 21st,

14 1965, report by Mr. E. J. Schneider,

15 checked by H. R. Hoyle.

16 (By Mr. Blanks)

17 Q. Do you recall Mr. Schneider?

18 A. He was an industrial hygienist.

19 Q. I take it that Mr. Hoyle would have been

20 reporting to Dr. Adams in 1965.

21 A. Yes.

22 Q. And not to you.

23 A. I don't -- I don't recollect that that -- I

24 think that's the case. He didn't report to me, I

25 don't believe, until it was in the - '70 or

503

1 thereabouts.

2 Q. All right, sir. I'm happy to pass this over

3 to you (tendering document).

4 A. (Reviewing document)

5 Q. Okay. Do you have anything you want to add

6 to what you covered a few minutes ago about that

7 report, Dr. Rowe?

8 A. Well, it would seem to me that it was a

9 pretty decent report. The word "cancer" is not

10 mentioned but "asbestosis." And that was -- I didn't

11 know when the definitive nature of the carcinogenesis
12 appeared; but asbestosis was the same bag of worms as
13 far as that's concerned. But I think that's a very
14 good report.

15 Q. All right, sir.

16 A. It analyzes the situation and tells them
17 what they should be doing differently.

18 Q. When you say "asbestosis is the same bag of
19 worms as cancer," --

20 A. It's a serious -- It's a serious
21 incapacitating disease in the end. We certainly don't
22 want asbestosis.

23 Q. So, the goal would have been to prevent
24 asbestosis. And if you'd done that, perhaps you would
25 have prevented any cancers that may have gone with

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1 it. True?

2 A. That would be my offhand opinion without
3 being an expert in the area.

4 Q. Okay. And if you had, in fact, been using
5 industrial hygiene controls and medical controls to -
6 sufficient to prevent any cases of asbestosis, you
7 would certainly have increased the probability of
8 preventing cases of asbestos-related cancer in that

9 same work force, correct?

10 A. I think that's a fair statement.

11 Q. But you don't have any explanation for us

12 why in 1965 the authors of this Dow report done for

13 Dow Corning failed to mention that asbestos was a

14 suspected or probable carcinogen --

15 A. I don't know.

16 Q. -- in discussing the health hazards of

17 asbestos?

18 A. I don't know.

19 Q. As to this type of form that we looked at a

20 little earlier, the one that reported on the health

21 hazards of different materials, were those health

22 hazard forms, if I can use that term, kept on file at

23 Dow for the different departments to have access to?

24 A. To my knowledge, yes.

25 Q. Would you have had a collection of those

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1 available in your department?

2 A. I'm sure we would.

3 Q. And updates, if any were made, would come to

4 you to replace the obsolete edition or version of --

5 A. They wouldn't come to me but they would --

6 Routinely, unless something got screwed up, they would
7 be in the - in the file.

8 Q. Okay. Do you -- I got the impression that
9 some of these - And you have one in front of you; so,
10 that may as well do as an example - were prepared
11 around the time of the inquiry that is mentioned on
12 the form. Can you help me to understand that?

13 A. I don't know. These things...

14 MR. PIERCE: I'm sorry. I'd like
15 to pose an objection. Both documents
16 speak for themselves. They're both
17 dated. And whether they're close in
18 time or not is something that certainly
19 you're quite as capable of finding as
20 Dr. Rowe is.

21 MR. BLANKS: Well, if the
22 documents spoke for themselves, I guess
23 we wouldn't have to speak with one
24 another. But I just --

25 MR. PIERCE: Well, if a document

1 is labeled 1958, another one 1965, I
2 think that's pretty clear. Now, what
3 you mean by "close in time," I don't

4 know.

5 MR. BLANKS: Let me borrow the

6 exhibits back.

7 MR. PIERCE: (Tendering documents)

8 (By Mr. Blanks)

9 Q. Dr. Rowe, what I'm wondering is this, sir.

10 And this Exhibit No. 2 is a sufficient example for the
11 question.

12 MR. PIERCE: Is this Exhibit 2

13 from the Hoyle deposition or

14 from Dr. Rowe's deposition?

15 MR. BLANKS: From Mr. Hoyle's

16 deposition.

17 (By Mr. Blanks)

18 Q. There is a report with the same format as

19 the one you looked at on the asbestos matter regarding

20 pipe covers that - in this case the result of a

21 range-finding tox. test on a floor tile formulation -

22 that is done by Ken Olson in April 21st of 1958. And

23 attached to it was the Data Sheet of Properties,

24 Health Hazards, and Precautions for Safe Handling of

25 Materials, discussing the components of the floor tile

1 formulation. And it's dated various dates beginning
2 in mid-March, going through April 7th of '58, just the
3 weeks preceding Mr. Olson's report. And, so, I was --
4 That's why I was asking you, sir, whether or not these
5 safe handling of material sheets that mention health
6 hazards were from time to time prepared to go along
7 with an investigation that was done by industrial
8 hygiene as opposed to being part of a library of such
9 data sheets.

10 A. The -- I can't give you the dates. I don't
11 know. But there were -- There was a time when the
12 value of those was appreciated and we prepared -- The
13 industrial hygienist would take the toxicology reports
14 and prepare that particular form, which was their
15 form, and that would become a part of that report that
16 was distributed.

17 Q. Okay.

18 A. And those sheets then -- There may have been
19 separate ones that would be sent to the particular
20 areas or plant superintendents that - that were
21 involved.

22 Q. Okay. And from time to time such sheets
23 might be sent to customers, as well?

24 A. I don't remember whether those were -- I
25 don't remember -- I don't remember.

1 Q. Dr. Rowe, in one of your rough drafts for a
2 speech of - perhaps given in the late Seventies, you
3 mention - you mentioned some things I'd like to ask
4 you about.

5 MR. BLANKS: It's Rowe
6 Exhibit 7 that we're referring to,
7 Mr. Almquist.

8 (By Mr. Blanks)

9 Q. And it has a title on it, sir, of
10 "Environmental Health," to put it in a little bit of
11 context. But one thing you mention there was -- You
12 said by 1946 that bimonthly conferences were being
13 held between medical, toxicology, industrial hygiene,
14 and safety. Do you recall that that was so?

15 MR. PIERCE: Could you give us a
16 page on that, please?

17 Four? Okay.

18 A. Again, I can't testify to the dates; but
19 that was - that was common practice. We did that
20 quite often. Maybe we might have missed a meeting or
21 two, but it was - generally that was the routine.

22 Q. Okay. Forgive me if we've touched on this
23 in prior visits. I don't recall that we did. But
24 this - this talk says that these conferences between

25 the departments - medical, toxicology, industrial

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1 hygiene, and safety - have continued to the present
2 date. And we surmise that present date in this paper
3 to be somewhere around '76 or after.

4 But would that be your recollection that for
5 that 30-year period - that these kind of bimonthly
6 meetings were taking place?

7 A. As far as I know, they were; but I probably
8 was not involved in those in the later years.

9 Q. Why would that be, sir?

10 A. Because I had a different position.

11 Q. "The later years" meaning just the last few
12 years you were at Dow, from '79 --

13 A. Yes.

14 Q. -- back into '73, that last six years or so?

15 A. Yeah. In that time frame.

16 Q. That would have been the period when you
17 became a director of toxicological affairs and related
18 jobs?

19 A. Yes.

20 Q. Okay. Were notes made, Dr. Rowe, of these
21 bimonthly conferences between the medical, the
22 toxicological, the industrial hygiene, and the safety

23 staffs at Dow?

24 A. I don't remember. I don't think so.

25 Q. Was this called a committee or just didn't

510

1 have any -- Did it have any title?

2 A. We called it the biochem/safety/medical
3 meetings.

4 Q. Okay. Sounds like a descriptive title.

5 Could you share with us sort of the format
6 of these? Were they informal just get-togethers and
7 round-table discussions or were there agendas for
8 these meetings or both?

9 A. They were definitely informal. We -- We met
10 and had lunch at the expense of the medical
11 department.

12 Q. Even better.

13 A. And the agenda was -- Sometimes there were
14 specific items that somebody wanted to discuss, but
15 generally what they amounted to was a place where the
16 medical department might have seen someone and
17 wondered if what was wrong with them could possibly be
18 related to this or that or so on.

19 The industrial hygiene or safety department

20 might come in with a - something that they didn't like
21 the looks of out in the plant and ask medical if they
22 had had any particular problems. Action could be
23 instituted by any of the people there.
24 In other words, if the medical department
25 had seen someone who had a rash, industrial hygienists

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1 would probably be detailed to investigate and see what
2 it was, if it was occupationally caused, or maybe talk
3 to the man and find out what he had been doing at
4 home.
5 Might work the other way. Might be that the
6 safety department had seen something. The safety
7 department was primarily concerned with fire and the
8 mechanical hazards, but they were in the plant and
9 often observed things that they didn't think were
10 right. And they might have wanted industrial
11 hygienists to check on it.
12 Toxicology was there to pass on any new
13 information on materials that perhaps had been -
14 they'd been requested to look at in previous meetings
15 or otherwise. Particularly anything remarkable, would
16 be called.
17 Secondly, if there were materials that

18 suddenly appeared that we didn't have any information
19 on - the medical department didn't have - they would
20 ask us if we would get a sample and run it through the
21 screen to see if there was anything unusual about it.
22 So, it was a communication - informal communication,
23 gathering of people.
24 Now, the physicians, whoever was there,
25 except who was duty - was on duty on the floor during

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1 the noon hour would probably be attending. Sometimes
2 even the nurses, safety department representative -
3 not necessarily the same person each time - and the
4 same for toxicology and industrial hygiene.

5 MR. PIERCE: Joe, if you're not
6 going to finish very shortly, perhaps
7 this is an appropriate time. We can
8 pick it up tomorrow. I think we've had
9 a couple hours now, unless you think
10 you're going to finish early.

11 MR. BLANKS: Well, I'm finished
12 with this little talk here but --

13 MR. BREWTON: You have seven
14 minutes.

15 MR. BLANKS: Oh. Seven minutes?

16 Let's run out the tape.

17 MR. PIERCE: Okay.

18 (By Mr. Blanks)

19 Q. All right, sir. And I guess you found these

20 biochemical/safety/medical meetings to be a good

21 opportunity to exchange ideas and to share new

22 information that you may have read about in the

23 literature or encountered at meetings and so on.

24 A. That's right.

25 Q. Could you tell us just briefly about the

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1 retrieval system that was created in 1954 to document

2 chemical exposures' causes and consequences?

3 MR. PIERCE: Objection to the

4 form; leading. It assumes facts not in

5 evidence. And you're reading from a

6 document that we don't have access to.

7 MR. BLANKS: Page 5.

8 MR. HOBSON: Page 5.

9 MR. BLANKS: Page 5.

10 MR. PIERCE: Of what?

11 MR. HOBSON: The same thing.

12 MR. PIERCE: Oh.

13 MR. BLANKS: I try to lead

14 you from page to page, and still you
15 complain.

16 MR. PIERCE: Well, thank you for
17 bringing this to our attention.

18 MR. HOBSON: First full
19 paragraph.

20 A. Is this supposed to have to do with the
21 question?

22 (By Mr. Blanks)

23 Q. Yes, sir. Well, I don't know. Mr. Pierce
24 always likes to read these things. I figured you'd
25 know from your recollection.

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1 A. Well, I -- The name didn't ring a bell
2 quickly; so, I'm trying to figure out what it was we
3 were talking about.

4 Q. I was just wondering what you remember about
5 the beginnings which, according to this paper, were
6 1954 of a retrieval system to document exposures'
7 causes and consequences.

8 A. Well, I'm blank.

9 Q. This refers to acute chemical exposures.
10 So, perhaps it was just limited to that.

11 A. I don't remember.

12 Q. Okay. Do you remember anything like this
13 that may have evolved into the computer-based system
14 that was being used in the late Seventies, or could
15 you tell us anything about the computer data base of
16 your last decade there that had health hazard
17 information in it?

18 A. The computer laboratory had set up a - the
19 program. And I do not remember... I don't remember
20 what the source of information was that they had. And
21 it just -- I don't remember. That's all there is to
22 it.

23 Q. Okay.

24 A. We had a computer system that was gathering
25 data, but that's as far as I can say.

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1 Q. Do you recall around 1967 that biostatistics
2 and epidemiology were included and made a part of the
3 Dow environmental health program?

4 A. We incorporated that, yes. I don't know the
5 dates.

6 Q. Hired an epidemiologist, did you?

7 A. Yes.

8 Q. Were there epidemiology studies, then, done

9 of Dow employees, looking for occupational disease?

10 A. Yes.

11 Q. These were done, like, in-house by the Dow
12 epidemiologist, as you remember?

13 A. Yes.

14 Q. Can you recall, sir, if there before then
15 had been any studies done by outside folks that would
16 have included Dow workers in the epidemiology study?

17 A. I don't remember... I just don't remember
18 any. Any time the epidemiological work -- If there
19 was any done before the time we got the
20 epidemiologist, it would have been through the medical
21 department.

22 Q. Could you tell us anything, sir, about the
23 corporate ecology council that this paper says was
24 created by the board of directors in '67?

25 A. That was a group of people whose charge it

1 was to - basically to study the possible ecological
2 effects of disposal of materials, containers, and that
3 type of problem that you find in normal distribution
4 systems and to look at new - new materials to see what
5 effect they might have on probably some of the simple

6 systems in the environment.

7 Q. How about the Dow environmental testing

8 advisory board, what role did that have?

9 A. That was another similar group that - with

10 various disciplines in it to plan and - studies that

11 people thought would be appropriate to conduct.

12 Q. Did you have anything to do with either the

13 environmental testing advisory board or the corporate

14 ecology council?

15 MR. PIERCE: Objection to the

16 form; compound. And "having anything

17 to do with" is rather vague and

18 ambiguous.

19 But go ahead.

20 A. Was it -- The question was did I have a part

21 to do?

22 Q. Yes, sir.

23 A. I was -- I was a member of the - of the

24 board.

25 Q. Of the advisory board?

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1 A. Both of them, I think.

2 Q. I'm sorry. Both?

3 A. Both, yes.

4 Q. I see. Okay.

5 MR. BLANKS: We're out of time.

6 Okay. Thanks for the extra --

7 MR. PIERCE: Nine o'clock?

8 MR. BLANKS: -- couple of minutes.

9 9:00 a.m.

10 MR. PIERCE: See you tomorrow.

11 MR. BLANKS: Thank you, Dr. Rowe.

12 Have a good evening, sir.

13 (AT 3:19 P.M., ON MAY 11, 1993,

14 THE DEPOSITION WAS RECESSED. AT

15 9:50 A.M., ON MAY 12, 1993, THE

16 DEPOSITION RESUMED AS FOLLOWS:)

17

18 RESUMPTION OF EXAMINATION BY MR. BLANKS:

19 Q. Good morning again, Dr. Rowe.

20 A. Good morning.

21 Q. I understand you went through your records

22 and found some more papers for us which came this

23 morning. I appreciate your taking the time to make

24 that effort and apologize for the substantial

25 inconvenience it must have caused you.

1 A. Okay.

2 Q. We'll get to those documents later on and
3 see if we can deal with them then; but I appreciate
4 your trouble, sir.

5 I think when we quit yesterday we were
6 talking about epidemiology studies that the medical
7 department may have done and then the fact that Dow
8 had hired a biostatistician and epidemiologist
9 somewhere around '67 or so, as your notes seem to
10 show.

11 Do you recollect, sir, any particular
12 epidemiology studies that were done before you left
13 Dow that would have touched on cancer cases in the Dow
14 work force?

15 A. I'm not familiar with them.

16 Q. Okay. Would those studies have been kept in
17 the medical department or the tox - the biomedical
18 research department?

19 MR. PIERCE: Objection to the
20 form. He indicated he had no knowledge
21 of such studies.

22 A. It might be in either.

23 Q. Do you recall that these type studies would
24 have come to you as a person in a position of
25 responsibility after '67?

1 A. No. I didn't - didn't have anything to do
2 with the epidemiology people.

3 Q. Okay. Dr. Rowe, during that time when you
4 were administratively in charge of industrial
5 hygiene - or earlier, if it's the case - if a Dow
6 industrial hygienist or a Dow safety man had seen
7 visible dust in the workplace in connection with
8 insulation work, for example, what would you have
9 expected your industrial hygienist to do?

10 MR. PIERCE: Objection to the
11 form. It's compound. It mentions two
12 kinds and then asks only about one.
13 Confusing. Ambiguous.
14 Go ahead.

15 A. I would have expected them to investigate
16 the situation and determine whether or not there was a
17 reasonable expectation of a hazardous situation.

18 Q. If the people responsible for health and
19 safety in the Dow plant had seen a turnaround or a
20 shutdown being done where there was dust being
21 generated from asbestos around trades just besides the
22 insulator's, what would you have expected them to do?

23 A. I don't know.

24 Q. Would you not have expected them to

25 investigate the exposure levels for the people working

520

1 in or near that dust cloud that we've postulated?

2 A. I think my answer to your other question
3 covered your -- I don't know any more. I just said I
4 would have expected them to investigate and that...

5 Q. All right, sir. What if your people at Dow
6 responsible for health and safety on the job had seen
7 men handling asbestos insulation and working without
8 respiratory protection, what would the response be
9 that you'd expect to that situation?

10 MR. ALMQUIST: I object to the
11 vagueness of the question. It doesn't
12 have a time period associated with it.

13 A. I would expect them to suggest remedial
14 action.

15 Q. What would you have expected had your health
16 and safety people at Dow seen men working with
17 asbestos insulation and not using wet methods?

18 MR. PIERCE: Do we have a time
19 frame?

20 MR. BLANKS: In any time frame.

21 A. I would expect them to correct the situation
22 as they saw it - as they determined it - whatever it

23 to be.

24 (By Mr. Blanks)

25 Q. Have you, yourself, ever observed a

521

1 turnaround or shutdown in a Dow plant?

2 A. Observed?

3 Q. Well, been there to see any part of that

4 sort of maintenance operation, --

5 A. No.

6 Q. -- a major shutdown. Am I using a term that

7 was familiar to you about a shutdown or a turnaround?

8 A. I'm interpreting it to mean closing the

9 plant.

10 Q. Closing the... You mean like closing the

11 plant for good or...

12 A. Whatever.

13 MR. PIERCE: Why don't you define

14 your term, and then you won't have to

15 go through this.

16 Q. Well, what term was used at Dow to describe

17 the periodic major maintenance work on a unit in a

18 plant where you'd shut down the unit and come in and

19 do extensive preventive maintenance and routine

20 maintenance --

21 A. I don't know what they called it.

22 Q. -- on a periodic basis?

23 A. I don't know what they called it. I don't

24 know that there was a specific name for it. If

25 someone were going to do that, they would have

522

1 described what they were going to do.

2 Q. Do you know that such things were done from

3 time to time on Dow units?

4 MR. PIERCE: Objection to the

5 form; vague, confusing.

6 A. Yes.

7 Q. Okay. Well, that was the type of

8 maintenance operation I was describing when I used the

9 word "turnaround" or "shutdown."

10 A. Oh, I see.

11 Q. So, with that understanding, did you ever

12 observe that kind of maintenance operation going on at

13 a Dow plant?

14 A. I never did.

15 Q. All right, sir. Did you ever personally

16 observe asbestos insulation being handled in any Dow

17 facility whether in a shop or in the field or in a

18 warehouse?

19 A. No.

20 Q. Would it also be true, Dr. Rowe, that

21 personally you've never seen a measured

22 5-million-particle-per-cubic-foot asbestos dust

23 concentration in air?

24 A. I don't recall ever.

25 Q. Okay. Sir, did you use asbestos in your

523

1 laboratories for any purposes?

2 A. I believe we have.

3 Q. Would that have been in things like Gooch

4 filters and --

5 A. As a -- As a filter bed in different types

6 of filters where you're filtering corrosive

7 materials. And asbestos was a common bed that you

8 prepared, yourself.

9 Q. Okay. Would you start with a dry asbestos

10 material and then prepare some sort of a slurry to

11 make the filter? Is that how it was done?

12 A. I don't remember how we did it.

13 Q. Okay. Could you describe for us the kind of

14 precautions that you recall using in the Dow

15 toxicology labs when dealing with materials of
16 suspected or unknown toxicity?

17 MR. PIERCE: Could we have a time
18 frame?

19 MR. BLANKS: Well, I think that we
20 could cover this over the many years
21 that Dr. Rowe did it.

22 A. You mean generally handle - how we handled
23 materials or what? I don't quite understand your...

24 (By Mr. Blanks)

25 Q. All right, sir. Let me make a little

524

1 preface to make it clear. I gather from what you've
2 told us that some of the important work done in your
3 toxicology lab was directed at determining the
4 toxicity of materials that were going to be used at
5 Dow - materials that you at least thought might pose
6 some health hazard to either your own workers or your
7 customers. So, I'm wondering, then, in handling
8 these, let's say, suspect materials what kind of
9 protective measures over the years you and your
10 scientists and technicians would have used in the
11 handling of the suspect materials in the lab.

12 MR. PIERCE: Objection to the

13 form. Objection to characterization of
14 his earlier testimony and to vague
15 terminology, ambiguities within.

16 A. Well, we handled many, many compounds about
17 which there was no knowledge of toxicology type or
18 physiological effects. That was our job to determine
19 what those properties would be. So, when an unknown
20 material was submitted to the laboratory for
21 evaluation, regardless of what we thought, we handled
22 the material so that we did not have exposure or if
23 there was it was trivial. That was our job, to find
24 out what was the significance of various types of
25 exposure. And, to my knowledge, we've handled some

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1 extremely toxic materials. Extremely toxic. We have
2 never in our laboratory had a lost-time injury due to
3 any of our laboratory people working with totally
4 unknown materials.

5 Q. Do you know, sir, whether any of your
6 laboratory people developed any occupational disease
7 as a result of exposures to the materials you examined
8 in the lab?

9 A. Not to my knowledge.

10 Q. Could you give us some specifics by way of
11 example, Dr. Rowe, over the different decades that you
12 were in toxicology of the sort of precautionary
13 measures or protective equipment or means that you
14 used to prevent these possible exposures to the
15 materials you were examining in the lab?

16 MR. PIERCE: Objection to the
17 form; compound question.

18 And this -- Just for
19 clarification: Is this for his entire
20 time at Dow?

21 MR. BLANKS: Well, I think I said
22 over the years.

23 MR. PIERCE: Okay.

24 MR. BLANKS: You know, I ask these
25 compound questions so that we can kill

526

1 two or three birds with one stone.

2 Dr. Rowe hadn't let one slip by yet

3 but...

4 (By Mr. Blanks)

5 Q. I'd just like for the jury to understand the
6 precautionary measures that you used during the
7 different decades to protect your lab workers from any

8 exposure to the materials that you were testing for
9 toxicity.

10 MR. BLANKS: You're just making me
11 better (directed to Mr. Pierce).

12 A. With respect to possible eye contact, our
13 people all were required to wear eye protection. With
14 respect to skin contact, we trained our people not to
15 have skin contact.

16 Now, you can, again, expect that accidents
17 will happen and you'll have a spill or something of
18 this nature. If you do, the first instruction is "Get
19 to the sink and wash now. Don't wait." If it was a
20 material that was volatile and there was a potential
21 for inhalation, we conducted the work in a hood so as
22 to minimize or prevent - at least minimize the
23 possibility of inhalation.

24 Q. And a hood would be like an exhaust hood?

25 A. Just like a laboratory - any laboratory

1 hood.

2 Q. Not having been in a lab in many years and,
3 perhaps, jurors not knowing what you mean by the term,
4 could you just elaborate a little bit on what the hood

5 does and accomplishes?

6 A. Well, a hood is a ventilation system in
7 which - with an open door - enclosed all the way
8 around except for the door. And sometimes you'd use -
9 leave - even leave the door down and look what you're
10 doing and - through the glass. But there's airflow
11 passing through all the time so that the flow is away
12 from the person.

13 Q. Okay. And then any of the vapors that come
14 off of the volatile material are exhausted up through
15 the system --

16 A. Yes.

17 Q. -- safely? Okay. All right, sir. Could
18 you continue with your --

19 A. That was the essence of our procedures. You
20 have to look at the possible types of exposure when
21 you're handling a material and take precautions to
22 avoid or minimize it.

23 Q. And if you were working with something where
24 dust could be an inhalation hazard, I suppose you'd
25 also be using the exhaust ventilation system with the

1 hood.

2 A. That was -- Anything like that would be

3 handled in a hood.

4 Q. Would you allow people to eat in the

5 laboratory?

6 A. No. We did not.

7 Q. And why would that be? Why would you not

8 want that, sir?

9 A. You never know what contamination might have

10 occurred.

11 Q. Something could get on the food and --

12 A. It was just a precautionary measure.

13 Q. Okay. Intended to keep people from

14 ingesting any of the possible toxic materials that

15 might have been in the lab, right?

16 A. Yes.

17 MR. PIERCE: Objection to the

18 form.

19 A. Or if you would happen to have your hands

20 contaminated and you didn't know it, it could

21 contaminate your food.

22 Q. All right, sir. What about protection

23 from - other protection from ingesting any toxic

24 material? That would be another way to get it into

25 the body, I suppose. What would you do for that?

1 A. Well, with respect to industrial chemicals,
2 ingestion is a very rare type of exposure.

3 Q. Okay. Did the people working in the lab
4 wear any kind of special protective clothing or gloves
5 or that sort of thing?

6 A. We did not unless there was something very
7 special because as you -- If you handle an unknown
8 material, you do not know necessarily or you don't
9 know, period, whether it might deteriorate a
10 protective piece of equipment and thereby cause an
11 exposure that people didn't realize that they had.
12 Protective equipment is only for emergency purposes or
13 for very special applications.

14 Q. But your laboratory technicians would at
15 least be wearing some sort of lab coat, wouldn't they?

16 A. We'd wear a lab coat, yes.

17 Q. Okay. And I guess those lab clothes were
18 laundered at the plant and not taken home --

19 A. That's right.

20 Q. -- to clean. Okay. Did you have any kind
21 of respiratory protective equipment that you'd use in
22 the lab when working with these toxic materials or
23 suspected toxic materials?

24 A. I don't recollect using respiratory
25 protection in our lab.

1 Q. You mentioned having had no lost-time
2 injuries in your lab force or staff over the years.
3 What did you mean by "lost-time injury"?

4 A. An injury that prevents someone from coming
5 to work.

6 Q. Okay. I suppose over the years you would
7 have had some injuries and exposures that occurred
8 that didn't require people to take off time from work,
9 though.

10 A. I think we had one or two.

11 Q. So, over all those years you were able to
12 limit the exposures - the unintended exposures - to
13 just one or two?

14 MR. PIERCE: Objection to the
15 form. He did not speak about
16 unintended exposures.

17 Q. Well, would you say the exposures were
18 intended, Dr. Rowe, the one or two? Is that what you
19 meant?

20 A. I'm sorry. I can't hear you.

21 Q. Well, you said you had one or two --

22 MR. PIERCE: It did not deal with
23 exposures.

24 Q. You said you had one or two exposures over
25 the years where people didn't have to take off time

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1 from work.

2 MR. PIERCE: Objection to the
3 form, to the mischaracterization of the
4 earlier testimony.

5 (By Mr. Blanks)

6 Q. Did I misstate what you told us?

7 A. No. I don't think -- I was just trying
8 to -- The only one that was ever serious was a - was a
9 person who was handling a bottle and there was -- It
10 was contaminated around the neck, and he got his
11 fingers in it. And before he got burnt, he had sore
12 fingers.

13 Q. Yes, sir. Okay. And my --

14 A. We had that happen a couple - two or three
15 times but very rarely.

16 Q. So, over a, roughly, 30-year period when you
17 were working with or supervising the laboratory, the
18 toxicology lab at Dow, handling a large number of
19 materials of even extreme toxicity, you were able to
20 control the exposures to these materials to just a few
21 incidents? Is that the case?

22 A. I -- That -- Fair representation.
23 Q. Okay. And what do you attribute that very
24 good rate of exposure or controlling exposures to,
25 Dr. Rowe? How do you account for that outstanding

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1 record of protecting the people working in the lab?
2 A. I'd have to think it was the training that
3 we gave our people and our surveillance of it.
4 Q. And their use of the proper procedures as
5 they were taught to do, correct?
6 A. I guess that would be the answer.
7 Q. Okay. Do you know, sir, approximately how
8 many cases of occupational diseases at Dow that you
9 ever learned of?
10 A. I don't know.
11 Q. Do you recall, Dr. Rowe, that you ever
12 became aware of any cases of occupational disease -
13 diseases among Dow workers?
14 A. Yes.
15 Q. Would that have been in the Sixties or
16 later?
17 A. I don't know the time frame.
18 Q. What kind of occupational diseases did you

19 learn of?

20 A. The only ones I recall were dermatological
21 problems.

22 Q. Would reports of these come to you from the
23 medical department, sir?

24 A. Well, I don't know whether they came
25 initially from the medical department or whether

533

1 somebody was in trouble called up to see what - what
2 was going on, if we knew anything about it.

3 Q. Okay.

4 A. It could have come from any place.

5 Q. Was it the routine or the policy at Dow to
6 inform the industrial hygiene department about
7 instances of occupational disease in the workers or
8 former employees?

9 MR. PIERCE: At any time during
10 Dr. Rowe's career?

11 MR. BLANKS: Any time.

12 A. I'm not aware of any fixed policy, but I
13 would expect it to have been general practice.
14 (By Mr. Blanks)

15 Q. Would you agree that that is an important
16 thing for industrial hygienists to know of, whether or

17 not there have been occupational diseases develop in
18 the work force?

19 A. Well, certainly.

20 Q. Hasn't Dow recognized since the - since the
21 Forties at least that people working in heavy dust
22 concentrations should wear respiratory protection,
23 Dr. Rowe?

24 A. Would you restate that.

25 Q. Yes, sir. I asked you, has not Dow

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1 recognized since the early Forties at least that
2 workers working in heavy dust concentrations should
3 wear respiratory protection?

4 MR. PIERCE: I'd like to object to
5 the form of the question based on the
6 ambiguity of the term "heavy" and not
7 knowing what you consider heavy.

8 A. Well, the use of respiratory protection, as
9 a general practice, was for purposes of emergency
10 situations or those which were temporarily awaiting
11 engineering change or if something was going to be
12 done once or something of this nature where it would
13 not be practical to spend weeks designing something if

14 it were going to be a one short time potential
15 exposure. Otherwise, basically it was as an emergency
16 situation when we used protection.

17 Q. Okay. And a situation that was a long-term
18 or repeat condition that generated heavy dust such
19 that respirators would be mandatory would be a
20 situation that called out for engineering controls or
21 at least the consideration of them to reduce that dust
22 level down, wouldn't it?

23 A. Well, I just tried to say that if this was a
24 long-term effect or problem, our policy generally, as
25 far as I know, was not to use protective devices.

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1 Q. But to solve the problem --

2 A. Solve the problem.

3 Q. Okay. But my original question, Dr. Rowe,
4 was: Don't you agree that even back in the early
5 1940's that Dow recognized that people working where
6 there are heavy fumes or dust should be required to
7 wear respirators to protect them?

8 MR. PIERCE: Asked and answered.

9 A. I don't know.

10 Q. Do you know if there ever came to be a time
11 when Dow recognized that need?

12 A. I don't know.

13 Q. Certainly you would agree that that would be
14 appropriate if one were working where there was heavy
15 fumes or dust that you should wear respiratory
16 protection.

17 MR. PIERCE: I think Dr. Rowe has
18 explained his position on this in great
19 detail.

20 But go ahead.

21 A. I would say it would determine - it would be
22 more likely to be influenced by the nature of the
23 dust.

24 Q. What does -- As a toxicologist, sir, what
25 does "heavy dust" mean to you?

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1 A. I don't know the term.

2 Q. All right. Would the term describing -
3 "heavy fumes or dust" mean anything to you?

4 A. I don't know the term.

5 Q. Makes no sense?

6 A. I don't know.

7 Q. Well, I --

8 A. I don't know what a heavy dust is.

9 Q. Okay. It's just too vague to tell you
10 anything as a toxicologist or a scientist what's being
11 described: is that what you're saying?

12 A. I've never used the term. I don't know what
13 people, if they wrote it, would mean --

14 Q. Okay.

15 A. -- unless they described it in much more
16 detail.

17 Q. All right, sir. During the 1940's could you
18 tell us who at Dow where you worked had authority to
19 decide whether or not there should be testing for
20 toxic dust in the work environment?

21 A. I don't know.

22 Q. How about in the Fifties, do you know who
23 would have had authority to make that decision?

24 A. Well, if an industrial hygienist observed
25 this, he would - he could, well, make that suggestion.

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1 Q. All right, sir. And that would certainly
2 have been true for the industrial hygienist even in
3 the 1960's, that he would have had the authority to go
4 out and do monitoring, if he cared to, for asbestos
5 dust or silica dust or any other kind of dust?

6 A. He would be expected to initiate appropriate

7 action, I think.

8 Q. Does that mean that the industrial hygienist
9 also, say, in the Fifties would have had the authority
10 to require that workers potentially exposed to a
11 pneumoconiosis-causing dust should be
12 protected - should be given respirators, for example?

13 MR. PIERCE: Are we going to have
14 a level here of exposure or just the
15 vague term "exposure"?

16 I object to the form for
17 vagueness.

18 A. I guess I'd like to have you repeat the
19 question, please.

20 Q. Yes, sir. I was wondering if your
21 industrial hygienist, beginning in 1948 when you first
22 had one, would have had the authority to require that
23 workers potentially exposed to
24 pneumoconiosis-producing dust be given respiratory
25 protection.

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1 MR. PIERCE: Continue the
2 objection.

3 A. No.

4 Q. Who would have had that authority?

5 A. The plant manager.

6 Q. Okay. Would the industrial hygienist have
7 had the authority to require that workers potentially
8 exposed to pneumoconiosis-producing dust be given
9 training about the hazards posed by such dust in the
10 1950's?

11 A. No.

12 Q. Would that have been the plant manager's
13 authority --

14 A. Yes.

15 Q. -- again? And who would have had the
16 authority, Dr. Rowe, to require that workers
17 potentially exposed to pneumoconiosis-producing dust
18 like asbestos or silica be put under a medical
19 surveillance or medical monitoring program in the
20 1950's?

21 MR. PIERCE: Objection to the
22 form; compound question.

23 A. Medical department.

24 Q. Okay. Now, would that be the corporate
25 medical department or the medical department at the

1 plant level who would have had that authority?

2 A. Either one, I believe.

3 Q. Dr. Rowe, when you were working as a
4 toxicologist, could you do testing on any material
5 that you wanted to investigate; or did someone above
6 you in management have to approve the testing program?

7 MR. PIERCE: Objection to the
8 form; compound question.

9 A. That would depend upon the magnitude of the
10 program.

11 Q. You mean how much it might likely cost to
12 do?

13 A. And whether or not the facilities could be -
14 should be used for that rather than something else.

15 Q. Who would make those kind of decisions? I
16 mean, where did the responsibility lie?

17 A. It was more or less a joint responsibility.

18 Q. Between the toxicologist and the management?

19 A. Or the person responsible for that
20 particular product or manufacturing process or what...

21 Q. Does that mean, sir, that the group in Dow
22 that had the process in which the material was being
23 used or produced would have to approve the cost of
24 doing the toxicology testing on the material before
25 you could undertake it?

1 A. The answer is really "yes and no."

2 Q. Okay. Could you explain?

3 A. If it were -- If we felt that it was some
4 particular situation that we wished to explore, we had
5 a budget at our discretion that we could use and do
6 that. If it were a major project such as a potential
7 foods additive or major product, the product
8 department was responsible for budgeting that work.

9 And those things would be worked out in joint
10 conversation and put into effect, and that would be
11 undertaken at the time. And at times if there were --
12 It would be dependent upon the capacity of the
13 laboratory to handle it. If it was tied up and it
14 couldn't do it, there'd be another way to do it.

15 Q. Okay. And another way to do it might be to
16 contract it out to an outside lab --

17 A. That's true.

18 Q. Can you recall, sir, being refused authority
19 or a budget to investigate some materials that you
20 toxicologists felt ought to be checked out?

21 A. The very first one that I had anything to do
22 with was a study of methyl bromide.

23 Q. Was that one where you were denied authority
24 or funding to proceed?

25 A. No. It was in the early days when - before

1 we had as big a laboratory as we had and we had - were
2 developing the capacity to do inhalation work. And
3 that was a material that we chose to study.

4 Q. Can you think of any that you proposed to
5 study where you were told, "No, you can't do that,"
6 or, "No, we're not" - "we don't want to pay for that"?

7 A. That was a very rare occasion, if ever. If
8 we felt that there was a serious need where we had no
9 individual authority, we could take our case to higher
10 authority and get authorization to proceed. But I
11 don't know of anything -- I can't think of anything
12 where we were told that we couldn't do it.

13 Q. But you did have access to higher levels of
14 management if you scientists thought that there was a
15 potential problem that ought to be investigated: is
16 that the case?

17 A. That's right.

18 Q. Was that always the case at Dow during your
19 years --

20 A. Always the case.

21 Q. So, there's no question, then, Dr. Rowe,
22 that, as far as the toxicology department was

23 concerned, if there was a serious matter to be
24 investigated you always had or could get the resources
25 to do the investigation or have it done?

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1 A. I do not recall any that that - other
2 than -- I do not recall any situations where that was
3 not possible to do.

4 Q. Okay. Do you believe, Dr. Rowe, that a man
5 has to have a massive severe long-term exposure to
6 asbestos in order to get an asbestos-related disease?

7 A. I don't know.

8 Q. Did you ever have an opinion or an
9 understanding about that?

10 A. I -- I have opinions, but I don't know.

11 Q. What would be your opinion about that?

12 MR. PIERCE: I'd like to just
13 interject at this time, so that we all
14 recall, that the witness is here as a
15 fact witness. He is not here in an
16 expert capacity. He is not here to
17 give opinion testimony.

18 I'm not going to prevent that from
19 happening, but I'd like you just to
20 take note of that so - and to try to

21 move away from areas outside of his

22 purpose here.

23 Q. Well, let me --

24 MR. PIERCE: Go ahead.

25 Q. Let me make that easier. Could you tell us,

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1 sir, what your opinion was about the severity and
2 duration of exposure to asbestos required to cause
3 asbestosis during any of the years you worked for Dow?

4 A. Are you asking again for my opinion?

5 Q. Yes, sir.

6 A. I do not know whether it always takes a long
7 duration exposure or whether a few massive or a single
8 massive exposure to do this. It depends upon the
9 ability of the lungs to clear material. It depends
10 upon a lot of environmental situation -- I do not
11 know. I'm not an expert in toxicology of asbestos.

12 Q. All right, sir. I understand you say you do
13 not know. I was wondering, though, what was your
14 opinion on that during any of the years that you were
15 working for Dow either as a toxicologist or as the man
16 in charge of industrial hygiene.

17 MR. PIERCE: I'd like to once

18 again interpose an objection and remind
19 you that you went over this at quite
20 some length and Dr. Rowe mentioned
21 several times yesterday that that is
22 not a field in which he feels
23 comfortable or has an expertise in.
24 But go ahead.
25 MR. ALMQUIST: And I want to

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1 impose another objection that that
2 question was just asked and answered by
3 the doctor when he said he didn't know.
4 Q. If you have an opinion, sir, or had an
5 opinion back during that time frame, that's what I'd
6 like you to express.
7 A. My opinion with respect to things of that
8 nature was that if they were maintained within
9 Government regulations or Government recommendations
10 that that was an adequate precautionary measure.
11 Q. Okay. Have you changed your view about that
12 over the last 15 years since you've left Dow?
13 A. I have changed my opinion perhaps sometimes
14 on things that I know something about; otherwise, I do
15 not argue the issue.

16 Q. Was that -- Was that a "yes" or a "no"?

17 MR. PIERCE: It was an answer to

18 your question.

19 A. I don't know. I don't know that I can

20 answer your question "yes" or "no."

21 Q. Do you know, Dr. Rowe, that Dow employees

22 have in fact - some of them have developed asbestosis?

23 A. I don't know that.

24 Q. Had you ever been -- Have you ever heard

25 that from anyone at Dow?

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1 A. No. I don't believe I have.

2 Q. Was there someone at Dow, sir, that was more

3 knowledgeable than you on mineral dusts such as

4 asbestos or silica during the years you worked there?

5 A. I don't know.

6 Q. Do you think there was anyone at Dow during

7 the years you worked there who was knowledgeable about

8 the health hazards of mineral dust like silica or

9 asbestos?

10 A. Well, I think we're all somewhat familiar

11 with it from the stand -- But we did not do any

12 research ourselves on this with respect to

13 occupational disease. We -- Through the medical
14 department, my understanding was that they were
15 surveying the people by - with medical procedures.
16 And outside of that, I do not know.

17 Q. Okay. You can't direct us to any person
18 from your - that you worked with at Dow who you
19 believe is still living whom you regarded as having
20 more knowledge about asbestos or silica health hazards
21 than you?

22 A. Well, I - I have said before Harold Hoyle
23 was the person most knowledgeable, that I know of.

24 Q. All right, sir. Can you tell us, Dr. Rowe,
25 about what kind of warnings Dow gave its own workers

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1 potentially exposed to asbestos about the health
2 hazards of asbestos during the Forties?

3 A. I don't know.

4 MR. PIERCE: I'm going to object
5 to the form of the question. It
6 assumes facts not in evidence.

7 A. I don't -- I don't -- I don't recall. I
8 don't -- I don't know.

9 Q. Would that -- Would you recall for what was
10 done to warn these workers during the Fifties?

11 A. No.

12 Q. Or the Sixties?

13 A. No.

14 Q. How about the Seventies?

15 A. No.

16 Q. How about workers potentially exposed to
17 free silica in the air?

18 MR. PIERCE: Objection to the form
19 of the question, if that is a question.

20 MR. BLANKS: Well, there was a
21 comma there; and I was in mid clause.

22 MR. PIERCE: I'm sorry to
23 interrupt you at a comma.

24 (By Mr. Blanks)

25 Q. Do you know, sir, if Dow gave any warnings

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1 to workers potentially exposed to free silica --

2 MR. PIERCE: Objection.

3 Q. -- at their plants?

4 A. I do not know, personally.

5 Q. Okay.

6 A. I would assume that that was the case, but I
7 do not know.

8 Q. You would expect that that would have been
9 done in the Forties?

10 A. Yes.

11 Q. Would you expect that warnings would have
12 been given to workers potentially exposed to asbestos
13 about its health hazards in the Forties?

14 MR. PIERCE: Objection.

15 A. I would expect so.

16 Just a minute. In the Forties?

17 Q. Yes, sir.

18 A. I'm not sure.

19 Q. How about in the Fifties?

20 A. I don't know.

21 Q. Did the folks working in your laboratories
22 who handled asbestos get any kind of warnings about
23 its health hazards?

24 A. Not to my knowledge.

25 Q. As you don't know about any warnings given

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1 to Dow employees potentially exposed to asbestos or
2 silica, I wonder - you probably wouldn't know about
3 any warnings that might have been given to
4 contractors.

5 A. I do -- I have no knowledge.

6 Q. Okay. Did you, yourself, ever recommend,
7 Dr. Rowe, that warnings and training be given to
8 workers potentially exposed to asbestos at Dow?

9 A. I don't recall any.

10 Q. How about exposures - possible exposures -
11 to free silica, did you ever recommend that warnings
12 be given about that possibility?

13 A. Not that I recall.

14 Q. Did Dow tell workers at its plants during
15 any years, Dr. Rowe, that exposures below the
16 guidelines were safe?

17 A. I don't -- I can't answer that. I don't
18 know.

19 Q. Do you know who, if anyone, ever recommended
20 that all of the asbestos insulation in the Dow plant
21 should be removed?

22 MR. PIERCE: Objection to the
23 form; assumes facts not in evidence.

24 A. I don't know.

25 Q. Do you know whether any effort was begun

1 while you were at Dow to, in fact, remove all the
2 asbestos-containing insulation?

3 A. I didn't -- I do not know.

4 Q. Dr. Rowe, do you think that it would be
5 appropriate to tell workers being exposed below the
6 guideline levels that it was safe for them to work in
7 airborne dust at those concentrations?

8 MR. PIERCE: I'm going to object
9 on ambiguity.

10 But go ahead.

11 A. I -- I don't know how much was told in that
12 respect. My feeling was that if the exposure levels
13 were within so-called acceptable levels, the issue was
14 not pursued.

15 Q. But do you think that it would have been
16 appropriate or proper to tell people working at below
17 or near and below the guideline levels that they were,
18 in fact, safe from any risk of disease?

19 MR. PIERCE: Objection to the form
20 of the question. It's compound and
21 also asked and answered.

22 A. I think it's always desirable to...

23 MR. BLANKS: I see Mr. Pierce has
24 yanked the microphone out and...

25 THE WITNESS: Something came

1 loose. I don't know how it's supposed
2 to go on there.

3 MR. PIERCE: If there is a record,
4 for the record, certainly Mr. Pierce
5 didn't do it.

6 THE WITNESS: Thank you.

7 MR. BLANKS: Supposing counsel
8 must have done it from over here.

9 (By Mr. Blanks)

10 Q. Sorry, Dr. Rowe. You were saying that
11 you...

12 A. Excuse me.

13 Q. You were in the middle of an answer when you
14 discovered the microphone dangling.

15 MR. PIERCE: Perhaps for
16 everyone's -- Could we reread the
17 question?

18 THE WITNESS: Maybe so.

19 THE REPORTER: "QUESTION: But do
20 you think that it would have been
21 appropriate or proper to tell people
22 working at below or near and below the
23 guideline levels that they were, in
24 fact, safe from any risk of disease?"

25 And then there was an objection.

1 "MR. PIERCE: "Objection to the
2 form of the question. It's compound
3 and also asked and answered.

4 "ANSWER: I think it's always
5 desirable to..."

6 And then...

7 MR. PIERCE: And then the
8 microphone.

9 THE REPORTER: Right.

10 A. I think it's always desirable to inform
11 people of potential hazards. In the earlier years I
12 did not think that was necessarily done as thoroughly
13 as it has in the last maybe 20 years.

14 (By Mr. Blanks)

15 Q. Okay. Do you recall, Dr. Rowe, whether or
16 not contractors from time to time would do work in
17 your laboratory areas?

18 A. I had nothing to do with contractors. I
19 don't know what they were doing.

20 Q. Well, did you ever see non-Dow employees
21 doing maintenance work or remodeling work or any kind
22 of building work in your laboratories?

23 A. Not that I recall.

24 Q. So, if any of that work was done, it would

25 have been done by Dow employees?

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1 A. I don't know. I say I don't know. There
2 may have contractors that I didn't know they were
3 contractors.

4 Q. Well, let me ask you this: If people from
5 outside the lab came in to do some work, whether it
6 was to modify some plumbing or paint the ceilings or
7 what have you, did they get any kind of warning or
8 instructions from folks in the lab about potential
9 hazards in the lab - in the lab environment?

10 A. I can't think of any particular situation
11 where anything like that would have been required.

12 Q. You mean if somebody were coming in to do
13 some repair work or some construction work, all of the
14 laboratory materials and the toxic materials would be
15 put away and out of the way safe where there wouldn't
16 be any possibility of exposure?

17 A. We certainly wouldn't leave them out where
18 they were likely to be encountered.

19 Q. Okay. Do you recall, sir, from any of your
20 biochemical medical safety meetings whether there were
21 discussions about the health hazards of asbestos or

22 silica or benzene that might be encountered in Dow

23 premises?

24 MR. PIERCE: At any time?

25 MR. BLANKS: Any time.

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1 A. Well, you mentioned a number of compounds.

2 And I'm sure that many compounds were discussed, but I

3 don't remember which ones.

4 (By Mr. Blanks)

5 Q. Would you remember asbestos being a topic?

6 A. I do not remember discussing asbestos.

7 Q. How about free silica dust?

8 A. I don't remember silica dust.

9 Q. What about benzene?

10 A. Yes.

11 Q. What time frame would that have been in?

12 A. I don't remember.

13 Q. Would you agree, Dr. Rowe, that when a -

14 when you have a pneumoconiosis-producing dust in the

15 air in a worker's breathing zone that he will, in

16 fact, inhale some of that dust so long as he

17 breathes?

18 MS. KETAI: Objection.

19 THE REPORTER: Excuse me.

20 MS. KETAI: Objection; calls for
21 speculation, misstating facts not in
22 evidence.

23 A. I guess one would have to assume that if
24 it's in the air that he's breathing he would have
25 some.

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1 Q. And wouldn't you agree that the longer the
2 man works in an asbestos or silica dust environment
3 then the more dust or fibers he would breathe in?

4 MR. PIERCE: Objection to the
5 form. Some of the terminology used is
6 vague and ambiguous.

7 MR. BLANKS: Like "environment"?

8 MR. PIERCE: You want me to phrase
9 the question for you? That's not my
10 purpose here. But you should -- Well,
11 I'm sure you're quite adequate and
12 capable of phrasing a question
13 properly.

14 MR. BLANKS: Object to the
15 compliments.

16 (By Mr. Blanks)

17 Q. Let's try again. Yes, sir. Dr. Rowe,
18 wouldn't you agree that the longer a man works in a -
19 in an environment where there is airborne asbestos or
20 silica in his breathing zone, then the more of that
21 particulate he is actually going to breathe into his
22 lungs?

23 MR. PIERCE: I am going to
24 continue the objection. I think that
25 question is unintelligible as asked.

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1 It makes assumptions such as that there
2 is any place in which there are no such
3 fibers and suggests by implication that
4 we're dealing with certain level when
5 no levels are mentioned within the
6 question, making the question almost
7 impossible to answer.

8 But go ahead.

9 A. Well, certainly the - a more prolonged
10 exposure to a given condition is - would be expected
11 to produce a greater accumulation, providing that the
12 level is higher than the clearance potential of the
13 respiratory tract, if you're talking about dust. And
14 I don't know just where that comes, but the

15 respiratory tract does have a capability - capacity to
16 clear itself of foreign bodies.

17 (By Mr. Blanks)

18 Q. To some extent.

19 A. That's the best answer I could give you.

20 Q. And, likewise, the higher the concentration
21 in the air of the respirable asbestos or silica, then
22 the more fiber or dust the man would be breathing in,
23 correct?

24 A. Well, I'd suspect that that would depend
25 somewhat on particle size; but generally that's a

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1 safe - we'd have to - we'd have to assume that that
2 was correct.

3 Q. And wouldn't you agree that even today it's
4 not known exactly how much asbestos fiber a man can
5 inhale and still be a hundred percent free of risk for
6 an asbestos-related disease?

7 A. I don't know.

8 Q. Certainly when you were with Dow, you didn't
9 know just how much asbestos fiber one could breathe
10 and be a hundred percent free of the risk of an
11 asbestos --

12 A. I don't know.

13 Q. -- related disease, did you, sir?

14 A. I don't know.

15 Q. You don't know whether you knew when you
16 were at Dow?

17 MR. PIERCE: I think we've spent
18 enough time --

19 A. I don't -- I don't --

20 MR. PIERCE: Excuse me. Let me
21 just interpose this objection. This
22 has been asked and answered, plus you
23 have investigated both today and
24 yesterday the state of knowledge in
25 respect to asbestos of this particular

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1 witness.

2 But go ahead.

3 A. I guess I'd have to ask you to repeat.

4 Q. I think I asked you isn't it true that when
5 you were with Dow you did not know then nor did Dow
6 know exactly how much asbestos fiber a man could
7 breathe and inhale and still remain a hundred percent
8 free of the risk of getting an occupational disease
9 from it.

10 MR. PIERCE: I'd like to now add

11 to the objection to what Dow did or

12 did not know.

13 But go ahead and answer the

14 question.

15 A. I don't know.

16 Q. Isn't it true, Dr. Rowe, that during the

17 late Thirties, the Forties, the Fifties, the Sixties,

18 even into the Seventies while you were at Dow that Dow

19 had no scientifically documented conclusive findings

20 that exposures at any guideline level to asbestos dust

21 would be a hundred percent safe and free of risk of

22 disease? Did it?

23 MR. PIERCE: I'm going to object

24 to the form. You're asking this

25 witness as to what Dow knew rather than

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1 what he, V. K. Rowe, knew.

2 A. I don't know.

3 Q. That is to say you know of no such

4 scientifically documented conclusive evidence that

5 exposures at any guideline level would be a hundred

6 percent safe?

7 A. I don't know.

8 Q. Would that also be true as regards silica
9 exposures at any threshold limit value or guideline
10 level?

11 A. I don't know.

12 MR. PIERCE: Might what also be
13 true?

14 Q. That you don't know of any scientifically
15 documented conclusive evidence that exposures at the
16 guideline levels to silica are a hundred percent free
17 of the risk of occupational disease.

18 A. I don't.

19 MR. ALMQUIST: We've been going
20 about an hour.

21 MR. BLANKS: Okay.

22 MR. ALMQUIST: Let's take a
23 short...

24 (AT THIS TIME A BRIEF RECESS WAS
25 TAKEN, AND THE PROCEEDINGS THEREAFTER

1 RESUMED AS FOLLOWS:)

2 (By Mr. Blanks)

3 Q. Dr. Rowe, in your work at Dow can you tell
4 us how many cases there were that you did have

5 scientifically documented conclusive findings that
6 exposures at a T.L.V. or guideline level were
7 100 percent safe?

8 MR. PIERCE: I'm going to object
9 to the ambiguity in that question
10 and to the premise that you could
11 somehow cull a negative into the
12 terms of nondisease.

13 But go ahead and answer it to the
14 best of your ability.

15 A. I don't think you ever have a situation that
16 is a hundred percent safe.

17 Q. So, is that to say, then, that for the
18 chemicals and materials that people worked with at Dow
19 that could cause disease that, as far as you were
20 concerned, you could never know that you were a
21 hundred percent free of risk in handling those
22 materials?

23 MR. PIERCE: I'm going to object
24 to the question as being ambiguous.

25 You mean only materials at Dow or

2 what?

3 I find the question ambiguous, but

4 go ahead and answer it.

5 MR. ALMQUIST: It's also overly

6 broad.

7 A. I'll answer the question this way: In no

8 circumstance - no circumstance - are you a hundred

9 percent safe. You're not a hundred percent safe

10 sitting here.

11 Q. So, in no circumstance of handling an

12 industrial material is the worker a hundred percent

13 safe, in your experience?

14 MR. PIERCE: Asked and answered.

15 A. Philosophically there is no such thing as

16 absolute safety.

17 Q. Okay. Were there any materials that were

18 used at Dow premises over the years for which you had

19 scientifically documented conclusive findings that a

20 particular exposure level would cause disease?

21 A. Would you please restate that.

22 Q. Yes, sir. We've gone to the opposite

23 extreme here. Can you recall any materials that were

24 used at Dow during the years you were there for which

25 you had scientifically documented conclusive findings

1 that a particular exposure level to that material

2 would cause occupational disease?

3 A. Yes. I think so.

4 Q. What would some of those be?

5 A. I don't recall, but certainly dermatitis was

6 one of the situations that is an occupational

7 disease. Some people are more susceptible to

8 irritation than others. We've had situations where

9 we've had dermatitis. We've had people ill from

10 exposures. As I mentioned earlier, carbon

11 tetrachloride. We had people that were ill.

12 Q. So, those would be situations where you

13 actually had the scientifically documented conclusive

14 findings that a particular exposure level would result

15 in disease?

16 MR. PIERCE: I'd like to object to

17 the form. The question has been asked

18 and answered.

19 MR. ALMQUIST: And I also object

20 to the form because it doesn't specify

21 whether you're talking about it caused

22 disease in a specific individual or

23 every individual exposed at that

24 level.

25 A. I have trouble with your word "disease." I

1 would say "ill effects," "adverse effects."

2 Q. Would you call, let's say, asbestos-related
3 lung cancer just an adverse effect of exposure to
4 asbestos?

5 A. I would call it "an adverse effect."

6 Q. Some adverse effects can be fatal, can't
7 they?

8 A. You'll have to describe an adverse - what's
9 the character of the adverse effect. But any adverse
10 effect is an effect. It may be severe. It may be
11 mild. It may be transitory.

12 Q. Or terminal.

13 MR. PIERCE: You want to let

14 Dr. Rowe answer his question, please?

15 A. I guess it's the connotation of words that
16 bothers me.

17 Q. All right, sir. Isn't it a little bit
18 euphemistic to speak of a terminal disease as being
19 merely an adverse effect?

20 MR. PIERCE: Objection to the
21 form; argumentative.

22 A. Not if it's characterized.

23 Q. Characterized how?

24 A. Well, you define it as an adverse effect.

25 Well, then how adverse is it?

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1 Q. I see. Okay. Part of your job as a
2 toxicologist was to recommend to management what to do
3 about materials' health hazards. Isn't that true?

4 A. Yes.

5 Q. Did you believe, Dr. Rowe, as a toxicologist
6 that you had to wait for scientifically documented
7 conclusive findings before you should make a
8 recommendation to management?

9 A. I don't know that we ever did that.

10 Q. What would be a sufficient level of
11 information or confidence to cause you to make
12 recommendations to management about health effects or
13 precautions to be used with materials at Dow?

14 A. We made recommendations to management all
15 the time on the basis of our toxicological
16 investigations.

17 Q. Sometimes you'd do it on the basis of
18 preliminary Class I-type investigation.

19 A. Certainly.

20 Q. Sometimes those studies would be followed by

21 more intensive investigations?

22 A. That's right.

23 Q. But it wasn't the practice to wait until you
24 had absolutely conclusive evidence about the harmful
25 effects of a material before you would pass that on to

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1 the management or people in the plants, was it?

2 A. Of course not.

3 Q. Do you think that would be improper from a
4 scientific standpoint to delay conveying information
5 about hazards until you had conclusive proof?

6 MR. PIERCE: Object to the form;
7 ambiguous and vague.

8 A. I didn't say that we waited till we had
9 conclusive proof. I said if we had information that
10 suggested an adverse effect might develop with new
11 materials and our toxicological studies indicated that
12 we should control exposures to such level or if we
13 didn't have quantitative data to the best of our - our
14 best guess.

15 Q. I didn't mean to imply that you did await
16 conclusive proof. I was meaning -- I'm sorry. I
17 apologize. I was meaning to ask you whether you think
18 it's reasonable from a scientific standpoint to wait

19 for conclusive proof about health hazards before
20 conveying the information you do have that could help
21 to protect your company, your employees, people
22 working in your plants. That was the question. Would
23 it be proper to delay --

24 MR. PIERCE: I'd like to continue
25 the objection. Especially terminology

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1 used like "proper," scientifically,"
2 and "conclusive proof" are ambiguous
3 in terms and very difficult or
4 impossible to answer, making the
5 question unintelligible to answer.

6 But go ahead, please, sir.

7 A. Our whole purpose in our - in our work was
8 to prevent occupational disease from occurring.

9 Q. Yes, sir?

10 MR. PIERCE: Is there a question?

11 Is "Yes, sir" a question?

12 A. Isn't that the answer to your question? We
13 did not wait until somebody was laying flat out on the
14 slab before we did anything.

15 Q. Okay. And you don't do the best job of

16 preventing the occupational diseases by waiting until
17 you have scientifically documented conclusive findings
18 before you react, do you, sir?

19 MR. PIERCE: I'd like to object
20 again to the continuing use of
21 "scientifically "conclusive" or
22 whatever findings they are since
23 they're not amenable to
24 interpretation.

25 A. Well, that would -- I would have to

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1 interpret your statement there as indicating that -
2 that we did not practice preventive measures and alert
3 medical people and others as to the hazards as best we
4 could judge them. We certainly didn't expose people
5 and then go back to the animal lab to find out except
6 in rare systems or situations where something
7 unexpected happened. And then we would go back to the
8 laboratory and try to find out why and how come. But
9 our charge was to prevent occupational health hazards.
10 Q. And you would best accomplish that charge by
11 responding to perceived hazards as soon as you had
12 some information to work with as opposed to waiting
13 until you had conclusive findings? That's the

14 question, Dr. Rowe.

15 MR. PIERCE: Object to the form.

16 Completely vague and ambiguous unless

17 you spell out what you mean by "some

18 findings."

19 A. I guess -- May I ask, what do you mean by

20 "conclusive findings"?

21 Q. Well, I suppose something that would be

22 scientifically documented as to which you, as a

23 scientist, would find it to be conclusive.

24 A. Well, that's looking at things after the

25 fact. We're talking about preempting these things in

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1 a preventive mode.

2 Q. That was your approach?

3 A. Yes.

4 Q. That was, you still believe, the proper

5 approach?

6 A. Yes.

7 Q. Prevent the problems before you get to the

8 point where you have many documented conclusive cases

9 of occupational disease that prove there was a

10 problem. Would you agree with that?

11 A. With our best judgment, we tried to achieve
12 that end.

13 Q. All right, sir. You said in our discussions
14 yesterday that people you refer to as "friendly
15 scientists" work with facts, not fantasy. Do you
16 remember that?

17 A. Yes.

18 Q. How many facts did Dow need before it felt
19 compelled to warn people working in its plants about
20 their risk to occupational health hazards like
21 asbestos or silica?

22 MR. PIERCE: Objection to the
23 form; ambiguous and vague and asks for
24 Dr. Rowe to present the thinking of
25 The Dow Chemical Company.

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1 A. Well, certainly you have to have some facts
2 before you can predict.

3 Q. All right, sir. Would you agree that
4 somebody seeking to prevent occupational disease in a
5 workplace ought to do some investigation to obtain
6 facts about suspect materials used in the plant the
7 way that you did in the tox. lab and in your other
8 work?

9 A. I don't know any other way to approach it.

10 Q. Okay. And obtaining those facts that will
11 allow you to predict hazards would include, as we
12 discussed yesterday, going to the published literature
13 for the - to obtain the experience of others as
14 reported in professional journals, correct?

15 A. To look at the literature, if there's any -
16 if it's available.

17 Q. And that if you failed to go and investigate
18 the literature, knowing that you had a suspected
19 material in your plant where people could be or were
20 being exposed to it would not be a responsible
21 approach, would it, sir?

22 MR. PIERCE: Objection to the
23 form. That's too vague.

24 In any instance under any
25 circumstance?

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1 A. I don't -- I don't think anyone can be
2 totally informed about the literature. Particularly
3 in the days past, literature was hard to find and was
4 not accessible like it is today.

5 Q. There weren't computer data bases to go to

6 and such as that?

7 A. We didn't have data bases to go to --

8 Q. Okay.

9 A. -- and computerized information centers and
10 so forth.

11 Q. You would have gone to the - probably to the
12 trade journals, your professional journals, for your
13 own professional associations and the medical
14 associations, --

15 MR. PIERCE: Objection to the
16 form; leading.

17 Q. -- would you not?

18 A. Those were our usual sources of literature
19 information.

20 Q. Industrial hygiene association journals.
21 The different sources we discussed yesterday. Would
22 you agree?

23 A. Yes.

24 Q. And such things as the Chemical Abstracts,
25 which I suppose you used from time to time.

1 A. From time to time.

2 Q. Okay. So, do you think, Dr. Rowe, that even
3 in the 1940's it would have been reasonable for a

4 company that had a toxic material or suspected toxic
5 material in its plants and that - one that workers
6 were being exposed to, to ignore the published
7 literature and to not make any effort to investigate
8 the health hazards that might have been reported in
9 the literature?

10 MR. PIERCE: I'm forced to object
11 to that question as being highly
12 ambiguous, nonspecific as to facts and
13 circumstances, making it very, very
14 difficult, if impossible, to answer.

15 Do your best.

16 A. I did not know that literature was ignored.

17 Q. Well, now, Dr. Rowe, just because I asked
18 you something doesn't mean I'm implying that you did
19 it or Dow did it. I'm just asking you what your view
20 was from that time period as to whether it would be
21 reasonable to ignore the literature. I'm not saying
22 that you did it. I'm not meaning to suggest you did
23 it.

24 A. No. It's -- It's -- It's reasonable to use
25 the literature that you can find and limited, perhaps,

1 on your capacity and your ability to do so. But

2 certainly don't ignore facts.

3 Q. Dr. Rowe, do you recall making any kind of

4 presentations at any time to the board of directors of

5 Dow on a health- or safety-related matter?

6 A. Yes.

7 Q. What would be -- What would be the

8 occasion? What was it?

9 A. I don't know. Don't remember.

10 Q. Were there several?

11 A. Yes.

12 Q. Does this mean you were, like, periodically

13 invited to talk to them and bring them up to date on

14 current topics or --

15 MR. PIERCE: Object -- Objection

16 to the form; leading.

17 MR. BLANKS: Leading? I get to

18 lead. You're the one that doesn't get

19 to lead.

20 A. It was not -- It was not on a periodic or

21 scheduled basis except on - at various times certain

22 of the board were interested in what we were doing as

23 part of their job, I suppose, to know what's going on.

24 Q. All right, sir. So, you had access to the

25 board and were from time to times invited there to

1 speak to them about things of interest to them and to
2 you?

3 A. Yes.

4 MR. PIERCE: I'd like to object to
5 mischaracterization of certain parts of
6 his answer.

7 Go ahead. He already answered it;
8 so, let's go forward.

9 Q. Do you know, sir, of any destruction at Dow
10 of industrial hygiene records?

11 A. I'm sorry. I didn't hear it, I guess.

12 Q. Yes, sir. I wonder if you were aware of any
13 destruction of industrial hygiene records that was
14 done at Dow before you left the company.

15 A. Not to my knowledge. I don't know anything
16 about anything like that. I've never heard of it.

17 Q. Have you heard of any -- Okay. You've never
18 heard of any destructions even since you left Dow --

19 A. No.

20 Q. -- of such records? Okay. How about
21 toxicological records, reports, and such?

22 MR. PIERCE: Objection to the form
23 of the question, --

24 A. Not to my knowledge.

1 question.

2 A. Not to my knowledge.

3 Q. Do you know, Dr. Rowe, whether Dow had a
4 document retention or document destruction program
5 that called for getting rid of documents of a certain
6 age?

7 MR. PIERCE: Objection to the form
8 of the question. It's compound. I
9 think it's editorializing. And it's
10 leading.

11 And if there is a program you
12 wish to ask him about, why don't you
13 just identify it. Go ahead.

14 Q. Do you know, Dr. Rowe, whether Dow adopted a
15 policy to purge its files of old records of any sort
16 to destroy documents from the past while you were
17 there with the company?

18 A. As I recollect, there was a - a program - I
19 can't tell you what time or what - but to clear
20 records of old - or clear the records section,
21 whatever that was, of, I presume, irrelevant
22 material.

23 Q. Did this program affect the departments for
24 which you were responsible or in which you worked?

25 A. I don't -- I'm not aware of it. I don't

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1 know.

2 Q. Did you understand that medical or health
3 and safety records were not included in this program
4 of destroying old records?

5 A. I'm not aware -- I'm not aware. As far as I
6 know, they were not.

7 Q. I see.

8 A. Not destroyed, I mean. Nothing -- Health
9 records, I always thought, were - were there at least
10 for the life of the person.

11 Q. And what about the - all the data gathered
12 by the toxicology lab at Dow, did you understand that
13 that was protected from the document destruction
14 program?

15 A. I --

16 MR. PIERCE: Objection to the
17 form. Objection to the use of the term
18 "document destruction program."

19 MR. ALMQUIST: And I want to join

20 in that objection. There is a
21 characteriza -- Argumentative
22 characterization of the program.
23 Q. You did understand that the --
24 A. Not that I know of.
25 Q. -- program called for the destruction of old

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1 documents, didn't you, Dr. Rowe?
2 MR. PIERCE: I think he has
3 already given you his answer.
4 A. I -- This was out of my area of
5 responsibility. And I don't know what the -- They
6 certainly were not in my files or any lab files, that
7 I know of.
8 Q. Okay. So, the "document police" never came
9 to your lab or offices and said, "Hey, Dr. Rowe, get
10 with the program. You haven't been purging your
11 files," anything like that?
12 MR. PIERCE: Come on, now,
13 Mr. Blanks. Even for you "document
14 police" is a bit much. And, also, he
15 has indicated to you that his documents
16 are retained. So, what else do you
17 need? You're asking for his personal

18 knowledge of his documents. He's
19 telling you about them.
20 Q. How about your department's documents?
21 A. Not to my knowledge.
22 Q. Did you have an opinion while you were still
23 with Dow about the propriety of discarding and
24 destroying old records from the scientists, tox. lab,
25 that sort of thing?

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1 MR. PIERCE: Objection to the
2 form. I think he's indicated to you
3 that his records were not removed or
4 destroyed.
5 A. I had no part of destroying any records.
6 Q. If the program had called for the
7 destruction of the toxicological lab records, is that
8 something that you would have been philosophically
9 opposed to, then, Dr. Rowe?
10 A. I would have objected.
11 Q. All right, sir. Do you know, sir, whether
12 copies of any of the toxicological records at Dow were
13 sent from time to time to the Dow legal department?
14 A. I'm sure reports went to the legal

15 department. I don't know whether all did or not
16 but -- They probably did not, but certainly some did.
17 Q. Okay. Can you recollect any of the sort of
18 situations that would have called for tox. lab records
19 to go to the legal department? What would have been
20 the condition that would have made that happen?

21 MR. PIERCE: I'm going to object
22 to the form of the question because, as
23 worded, it requires speculation.

24 A. There was -- I certainly can't remember all
25 possible situations, but certainly the -- There was a

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1 unit involved in registration of materials with the
2 Government which was in the legal department. And
3 they certainly had all of our reports. If there was a
4 particular issue that the legal department wanted or
5 was interested, they had access to it.

6 Q. Would that also have been true of industrial
7 hygiene documents during the years that you were
8 responsible for industrial hygiene?

9 A. As far as I know.

10 Q. Do you know, sir, whether records from
11 industrial hygiene section were destroyed under the
12 document program at Dow that we've talked about?

13 A. Not to my knowledge.

14 Q. Is that -- Is that something that you would
15 have been philosophically opposed to, as well, the
16 destruction of the old industrial hygiene records and
17 files?

18 A. Yes.

19 Q. Why is that, Dr. Rowe? Why would you be
20 opposed to that?

21 A. I think they would probably contain a lot of
22 history.

23 Q. And what conceivable importance would that
24 be to a scientist, Dr. Rowe?

25 A. It would be the only way, that I know of,

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1 that you could document what the situation was.

2 Q. In the past?

3 A. In the particular plant, certainly. I don't
4 know that -- If they were destroyed, I don't know
5 that.

6 Q. Yes, sir.

7 A. If they were, I don't know it. I don't know
8 that they were.

9 Q. And if they were --

10 A. I doubt if they were but that's...

11 Q. Okay. Have you, yourself, been working on a

12 history of your work or the Dow toxicology program?

13 A. Not for years.

14 Q. You plan to get back to the project?

15 A. I don't -- I don't know whether I will or

16 not.

17 Q. When the OSHA regulations came into effect

18 around 1970, what did Dow do then, that you recall, to

19 change its rules for working with asbestos insulation

20 in its plants?

21 A. I don't know.

22 Q. Do you recall that there were any changes

23 during that time, '70 to '73, in the asbestos handling

24 program?

25 A. I don't recall.

1 Q. Do you recall that your department or the

2 people that were reporting to you made any proposals

3 that would have come before you to improve the methods

4 for handling asbestos materials in Dow plants?

5 A. I don't remember.

6 Q. Do you recall, Dr. Rowe, whether there were

7 any changes that took place in the toxicology lab in

8 conjunction with the OSHA regulations of the early

9 Seventies as to handling asbestos in the lab?

10 A. No. I don't remember.

11 Q. Were you still working in the lab at all in

12 1970 through '73?

13 A. Very little.

14 Q. Do you know whether Dow ever ceased the use

15 of asbestos in the Gooch crucible filters?

16 A. No, I don't know.

17 Q. They were still using it the last time you

18 wore in the lab, I suppose.

19 A. Don't know.

20 Q. Don't remember?

21 A. No.

22 Q. Did not the -- Didn't the health and safety

23 professionals that worked at Dowell Company share with

24 you the occupational health information that they

25 developed and had at hand?

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1 A. I don't recall. I just don't -- I don't

2 remember.

3 Q. You told us how you had done over the years

4 your toxicology work or industrial hygiene work for

5 subsidiaries like Dowell and including Dowell, I

6 think, yesterday, correct?

7 A. We did a certain amount of - of

8 toxicological work, as we discussed yesterday, I

9 believe; but as far as industrial hygiene, I don't --

10 I just don't recall what the situation was there.

11 Q. Was the case, though, that you did have open

12 communications with the health and safety people

13 working for Dowell between your tox. lab in Midland

14 and their folks in Tulsa or wherever they were? I

15 mean there was a...

16 A. Well, there must be must have. There would

17 be no reason why there wasn't. But I don't recall

18 the - any particular arrangements.

19 Q. But the practice was that there was a free

20 exchange of information between the health and safety

21 professionals in Midland and Tulsa?

22 A. It would depend upon your description of

23 "information exchange," because our reports would not

24 go to Dowell unless they were concerned with materials

25 that Dowell was interested in or asked about.

1 Q. Okay. But they had access to you - to your

2 department for consultations, I suppose.

3 A. Yes.

4 Q. And they didn't withhold information that
5 they had from the Midland toxicologists or medical
6 departments, to your knowledge, did they?

7 A. I don't know.

8 Q. You wouldn't have expected them to, would
9 you?

10 A. I wouldn't expect them to, but I don't know.

11 Q. I mean, surely the Dowell company operated
12 under the same general philosophy about providing safe
13 workplaces as Dow Chemical did, didn't it?

14 MR. PIERCE: He's given you his
15 answer that he doesn't know. Of
16 course, he can not know what's in the
17 mind of anyone at Dowell.

18 A. I'm not -- I really don't remember what
19 the - even how that operation was conducted down
20 there.

21 Q. Okay. When was it, Dr. Rowe, approximately,
22 that Dow adopted the policy to inform each and every
23 person who would be in a block area of all the known
24 hazards?

25 A. I don't know.

1 Q. Do you know, sir, whether that ever became
2 the Dow policy?

3 A. No, I don't know.

4 Q. Well, certainly it was the policy in your
5 lab, wasn't it, to inform everybody that would be in
6 there of all the known hazards that they might
7 encounter there?

8 A. I'm confused, I guess, by where the -- I
9 don't understand what your - what you're talking
10 about, I guess. We passed our information to people
11 that asked for it or that we thought it was important
12 that they know about it. And there was no problem on
13 that, as far as I know; but I guess I don't understand
14 your question.

15 Q. Okay. Let me try again, and maybe we can
16 get together because I know you're trying to be
17 helpful.

18 Do you know, Dr. Rowe, whether it was ever
19 the practice at Dow to inform each and every worker
20 who would be in a block area in the plant of all the
21 known hazards that they could encounter there?

22 A. Now, what do you mean by "block area"?

23 Q. I use that term the same way Dow may have
24 used it. It's a Dow term.

25 A. I don't know what it means. That's why

1 I'm --

2 Q. Okay.

3 A. -- I'm -- I can't answer you.

4 Q. In a particular unit area. Would that make
5 it easier?

6 A. Well, in a particular plant, yes.

7 Q. When we speak of a plant, are we talking
8 about a subpart of the big Midland facility; or do you
9 just - do you speak of the Midland plant as
10 encompassing everything?

11 A. Well, various operations were scattered
12 different places in the - in the Midland area. Now,
13 we're talking about Midland.

14 Q. Yes, sir.

15 A. That's a big area. And there were plants
16 that were dealing with, for instance, the chlorinated
17 hydrocarbons. And there might be one over here and
18 there might be one over there making a different
19 material, but they would probably be under the same
20 supervision.

21 Q. But would we speak of each grouping of
22 machinery as a plant? That's what I was trying to get
23 a handle on.

24 A. Yes. A manufacturing unit, for instance,
25 that was making carbon tetrachloride.

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1 Q. Okay.

2 A. Or a separate unit that was making vinyl
3 chloride or something similar. Now, those two
4 probably didn't go together. But there were groupings
5 of operations, and they were under - usually under a
6 single manager.

7 Q. Well, then, let's speak in terms of a
8 manufacturing unit, if that makes it more precise. Do
9 you know, sir, when, approximately - what decade,
10 even - it became the practice at Dow to inform each
11 and every person who would be in a unit area of the -
12 all the known hazards there?

13 A. I can't -- I don't know when that was. That
14 was pretty much under Mr. Hoyle's operation. And I
15 know he was one who was very interested in perfecting
16 that distribution of information.

17 Q. So that if Mr. Hoyle were the one who began
18 that practice, it would have obviously begun after his
19 employment began around '48 or so.

20 A. I would expect it would be his - him or his
21 people.

22 Q. Okay. And would it also have been the
23 procedure or the policy to inform the people who would
24 be in a particular manufacturing unit of the
25 appropriate protective equipment required for that

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1 area?

2 MR. PIERCE: Are you asking
3 Dr. Rowe if he knows, his specific
4 knowledge on this; or are you asking
5 him to speculate as to what might have
6 been?

7 MR. BLANKS: Well, --

8 MR. PIERCE: I don't think the
9 question is clear as to really what you
10 want on that.

11 (By Mr. Blanks)

12 Q. Are you confused, Dr. Rowe? I find that
13 Dr. Pierce's objections always confuse me.

14 MR. PIERCE: Not as much as your
15 questions confuse us.

16 A. Well, would you try again?

17 Q. Yes, sir. I wonder if, as part of the
18 policy of informing each and every person who would be

19 in a manufacturing unit area of all the known hazards
20 there, whether Dow also would have informed these
21 folks of the appropriate protective equipment required
22 for that area that they'd be going into.

23 A. I would think they would if there was
24 protective equipment required. And that was not our
25 general policy to operate with protective equipment.

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1 That was not supposed to be except on emergencies or
2 very short-term efforts.

3 Q. All right, sir. Do you know, Dr. Rowe, of
4 any times when Dow began to monitor for asbestos dust
5 in connection with brake shoe repair work?

6 A. I don't recollect.

7 Q. Do you recall, sir, ever receiving at the
8 toxicology lab or the industrial hygiene department
9 any information from the automobile manufacturers that
10 asbestos was - in brake shoes was a hazardous
11 material?

12 A. I do not recall receiving any information
13 from manufacturers.

14 Q. Would the same be true for the manufacturers
15 of brake shoe parts, brake - disk pads in brake shoes,
16 as well as the auto manufacturers?

17 A. I don't recall.

18 Q. Don't recall getting any information from

19 them, either?

20 A. I beg your pardon.

21 Q. Recall receiving no information from the

22 brake parts manufacturers, either?

23 A. I don't recall that. It seems to me that

24 there was a publication somewhere along the line

25 discussing that, but I don't - I don't know where it

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1 is.

2 Q. You're recollecting a publication you had at

3 Dow that discussed the asbestos brake shoe --

4 A. No.

5 Q. -- hazard? Is that what --

6 A. Something in the literature.

7 Q. Oh, okay. All right, sir. Was it always

8 during your years with the company Dow's policy to

9 tell its customers of all the known and suspected

10 health hazards of Dow products?

11 A. As far as I know, at the - very early in the

12 game - early years - I do not believe that was the way

13 they practiced.

14 Q. Shortly after you arrived --
15 A. But later on, after the Material Safety Data
16 Sheets and everything started to come out, I believe
17 it was - the information was supposed to have passed
18 on, but that would have been through salespeople.
19 Q. Would that have been as early as the 1940's?
20 A. No.
21 Q. Fifties?
22 A. I don't know.
23 Q. Weren't you, in your tox. lab, developing
24 information about the products that Dow made as early
25 as the - even the late 1930's?

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1 A. Yes.
2 Q. You just don't know whether or not Dow was
3 providing that information to the customers for those
4 products that early?
5 A. That I don't know.
6 Q. Surely you'd agree that that's a reasonable
7 thing to do, is to tell your customers about the known
8 and suspected hazards that could be encountered in the
9 use of a material, wouldn't you?
10 MR. PIERCE: Are you asking this
11 of the witness as an expert on required

12 warnings, as a citizen in his
13 community, as a toxicologist? I don't
14 understand the basis of asking that
15 kind of general question to this
16 witness.

17 Q. Do you understand that the reasonableness of
18 telling the users of products about the health hazards
19 that they entail would be different for a toxicologist
20 as opposed to a manufacturer as opposed to some
21 ignorant customer, Dr. Rowe?

22 A. Well, the literature that would be - that
23 would go along with it, including labels, were
24 supposedly to inform people that - of hazards. And
25 there were certain - certain governmental regulation

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1 that prescribed - stated this sort of information that
2 had to be presented in the label which was, I presume,
3 on every package that - of a material.

4 The biggest problem was sometimes the labels
5 were pretty small if the package was small. And an
6 effort then was made to - I don't know how
7 consistently - to pass on information that was
8 available.

9 Q. And certainly if Dow had information that
10 went beyond what the minimum Government standard was
11 for a label - I mean that dealt with the toxicity of a
12 material to the user - it would convey that, wouldn't
13 it?

14 MR. PIERCE: Once again, I would
15 like to object. Dr. Rowe has not
16 indicated he is an expert on labeling.
17 Portions of this question require legal
18 conclusions from this witness which he
19 is not in a position to make. But he
20 certainly can answer it, to the best of
21 his ability, as a general person in the
22 community.

23 A. There was a section that I mentioned earlier
24 that was in - in the legal department that was
25 responsible for meeting Government regulations with

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1 respect to labeling.

2 Q. As a scientist concerned with facts working
3 in the area of toxicology, an area that deals with the
4 ability of materials to cause disease and death and
5 adverse effects, as you say, certainly you never
6 condoned, did you, withholding information about

7 poisonous materials or potentially poison material
8 just because there was a label required that the
9 Government wanted, would you?

10 MR. PIERCE: Object to the form of
11 the question. It's ambiguous.

12 Withholding what materials,
13 molecular weights? I mean, it's so
14 ambiguous that it's impossible to
15 answer accurately.

16 MR. ALMQUIST: And I'm going to
17 further object to it because it is
18 nonspecific with respect to whom the
19 material was being sold, whether we're
20 talking about sale to a sophisticated
21 merchant user or we're talking about
22 consumers. That type of question
23 without more information is incapable
24 of being answered.

25 A. Well, I certainly didn't object to passing

1 information along and - if it was useful for the
2 prevention of adverse effects at the other end of the
3 pipeline, so to speak. That was not my job to pass

4 that information along, and I don't know how well it
5 was done.

6 Q. Certainly you believed that it should be
7 passed along during the years that you worked at Dow,
8 didn't you, sir?

9 MR. PIERCE: Objection to the form
10 of the question and the ambiguity of
11 the term "it."

12 Q. That information -- Didn't you believe when
13 you worked for Dow that that information that you
14 developed should be passed along to the customers?

15 MR. PIERCE: I continue the
16 objection for ambiguity and vagueness.

17 A. Oh, I had every reason to believe that it
18 did.

19 Q. Don't you think, Dr. Rowe, that a
20 manufacturer of a product that's known or suspected of
21 being able to cause cancer or crippling, disabling
22 diseases has an obligation to investigate what can
23 reasonably be known about the health effects of the
24 material --

25 MR. PIERCE: Objection.

1 Q. -- before it puts it on the market?

2 MR. PIERCE: Objection to the form
3 of the question. It's asking about
4 obligations, requiring legal
5 conclusions on the part of this
6 witness.

7 Go ahead.

8 A. Well, I would categorize it in a more
9 general way and just say that if there was a
10 particular hazard, irrespective of what the material
11 is, that that information should be passed along.

12 Q. Indeed, then, you'd agree that - as a
13 scientist, that a company would have a moral
14 obligation to investigate those hazards and pass it
15 on, wouldn't you, sir?

16 MR. PIERCE: I'm going to object
17 to the form of the question. He's not
18 here to answer about moral obligations,
19 which, also, requires essentially legal
20 conclusions. He's here as a fact
21 witness. Why don't you ask him the
22 fact questions that he's here to
23 answer.

24 Q. Sir?

25 A. I don't think anyone can say that

1 information shouldn't be passed on.

2 Q. And even back in the Thirties, didn't you
3 believe, Dr. Rowe, that it was the right thing to do
4 for Dow to try to learn what it could reasonably know
5 about the potential health hazards of the materials it
6 was using and selling?

7 A. Well, that was the reason why our laboratory
8 was developed, to generate that sort of information.

9 Q. And didn't you believe then, sir, that this
10 was the right thing for any company to do that made
11 materials that could have harmful health effects in
12 their ordinary use?

13 MR. PIERCE: When you say, "this
14 the right thing to do," does that
15 mean -- I'm sorry. Do you mean share
16 information? Do you mean test it,
17 themselves? Do you mean send it out?
18 It's a completely ambiguous question.

19 A. I can only speak for my own feelings, which
20 I've already expressed.

21 Q. So, was it the case, then, that during the
22 Thirties and the Forties, the Fifties and the Sixties
23 you really didn't expect the suppliers of toxic
24 materials to Dow to have made any kind of
25 investigation about the health hazards that it could -

1 that they could pass on to Dow?

2 MR. ALMQUIST: Object as being an
3 argumentative question.

4 A. There were -- There were some companies that
5 had facilities and used them to develop information.
6 And our purchasing people were - in the later years,
7 anyway -- I don't like to say "required," but it was
8 part of the program to inquire of the seller what
9 information they had with respect to a particular
10 substance. Many -- Many very small companies did not
11 have that -- They had no information; so, they
12 couldn't pass it on.

13 Q. And they would have had no information
14 because they hadn't developed any, I suppose.

15 A. Or there wasn't any in the literature or
16 anything of that nature.

17 Q. Yet when Dow faced a situation like that
18 where it didn't have the information or found none in
19 the literature, Dow would actually make an
20 investigation through its toxicology lab, wouldn't it?

21 A. Well, we tried to do that.

22 MR. STANGER: Could we ask the

23 witness to speak up, please?

24 Q. Dr. Rowe, could you share with us how in

25 your job at Dow you would go about attempting to

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1 influence decision makers in Government?

2 MR. PIERCE: I'd like to object to

3 the form of the question.

4 Could you be more specific?

5 MR. BLANKS: Well, about what,

6 "Government"?

7 MR. PIERCE: Yes.

8 MR. BLANKS: "Decision"?

9 MR. PIERCE: What Government?

10 What influence?

11 Well, go ahead --

12 MR. BLANKS: "Influence"?

13 Go ahead and answer, to the

14 best of your ability, with the

15 vagueness. Go ahead.

16 (By Mr. Blanks)

17 Q. Now, wait a minute. I'm not

18 suggesting --

19 A. I didn't get your question.

20 Q. All right. We'll try again. And not

21 meaning to imply any illegal influence of the sorts

22 we --

23 MR. PIERCE: Oh, we never would

24 have seen that in your --

25 Q. -- see in Government from time to time.

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1 How did you in your job at Dow go about

2 influencing decision makers in Government?

3 A. We would do our best to gather the facts and

4 present them to them on a scientific basis, along with

5 our interpretation of those results, and discuss it

6 with the appropriate people.

7 Q. And these efforts were from time to time

8 directed at influencing proposed changes in

9 regulations about the chemicals you were using at Dow?

10 MR. PIERCE: Why not -- Instead of

11 leading that way, why don't you ask him

12 what he did; and then he could tell

13 you.

14 MR. BLANKS: Well, then I wouldn't

15 get your objections.

16 MR. PIERCE: Okay. So, now you

17 have it.

18 Objection to the form.

19 A. I would think that that would have been

20 within the scope of Government relations.

21 (By Mr. Blanks)

22 Q. Could you explain to us, Dr. Rowe, what sort

23 of topics or areas that you did attempt to influence

24 Government decision makers as part of your Government

25 relations activities?

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1 MR. PIERCE: When you say

2 "influence," you mean educate, bring

3 information to them? I mean, what is -

4 what are you really asking this

5 witness?

6 Okay. Try to answer it, Dr. Rowe.

7 A. Well, when we developed information that was

8 pertinent to the A.C.G.I.H. threshold limit committee,

9 we presented it to them and made our suggestions.

10 When we went to the Food and Drug Administration, we

11 presented our data and our proposals to acquaint them

12 and give them the best information and opinions that

13 we had or that were available with respect to

14 regulations that were to come out on a particular

15 material or whatever. This was very broad in scope.

16 Q. All right. Did any of your work in
17 Government relations deal with any proposed OSHA
18 regulations or changes in the standards - in OSHA
19 standards?

20 MR. PIERCE: I'd like to object to
21 the form of the question. The way you
22 phrased it, "his work in Government
23 relations," suggests he was in the
24 Government relations department, which
25 I don't believe was part of Dr. Rowe's

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1 background.

2 But given that objection, go ahead
3 and answer.

4 MR. BLANKS: Well, it was the term
5 he used earlier, you know.

6 A. Relations with OSHA?

7 Q. Yes, sir.

8 A. Yes. I had - I had relations with OSHA. I
9 can't remember all the materials that we discussed
10 with them.

11 (By Mr. Blanks)

12 Q. Were your relations with OSHA directed

13 toward influencing changes in the regulations that

14 OSHA wrote or proposed to write?

15 A. I -- I don't know about the "change,"

16 but "help develop appropriate regulations" might be a

17 better description.

18 Q. Were there any particular materials you

19 recall, Dr. Rowe, in which you attempted to influence

20 the development of proposed regulations with OSHA?

21 A. I don't -- I can't remember specifics.

22 Q. Okay.

23 A. Are you talking about developing regulations

24 or criticizing them or what?

25 Q. Well, I suppose all of the above because I

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1 really don't know what your activities were and was

2 just hoping you'd explain those to us.

3 You never went to OSHA and suggested that

4 regulations be written about any particular material

5 or workplace condition, did you?

6 A. I'm not -- I'm not certain that we didn't

7 make suggestions to OSHA as to things that might or

8 that should occur or did occur. I served on the OSHA

9 carcinogen advisory committee. And we presented data

10 on a number of materials that we were handling and

11 using.

12 Q. Did you find that to be a productive effort,

13 Dr. Rowe?

14 A. In some respects.

15 Q. And what were those?

16 A. Well, that was a very - very interesting

17 committee. There were many factors. "Many factions"

18 I should say. And there was considerable disagreement

19 between the various groups, as one might expect.

20 Q. What did you learn from that experience

21 about the purpose of some of Dow's adversaries that

22 you encountered on that committee?

23 A. Of what?

24 Q. About the goals and purposes of Dow's

25 adversaries that you encountered on that advisory

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1 commission or advisory committee.

2 A. Well, the principal - the principal

3 difference in philosophy, I think, between different

4 groups was the belief that reflected the Delaney

5 clause in the Food and Drug Act which indicates that

6 if a material produces a cancer in any animal at any

7 dose, it therefore deserves a zero tolerance. And I

8 don't believe that that's scientifically sound at all.

9 THE REPORTER: Excuse me. I need
10 to change my paper.

11 MR. BREWTON: You've got another
12 minute and a half (directed to
13 Mr. Blanks).

14 MR. BLANKS: He's out of tape,
15 you're out of paper.

16 MR. PIERCE: Okay. Let's take a
17 lunch break.

18 1:15? Is that all right?

19 MR. BLANKS: Sure, guys.

20 (AT 12:07 P.M. THE DEPOSITION WAS
21 RECESSED FOR LUNCH. AT 1:33 P.M. THE
22 PROCEEDINGS RESUMED AS FOLLOWS:)

23 (By Mr. Blanks)

24 Q. Dr. Rowe, from our first couple of days
25 visiting together, you'll recall that you brought with

1 you a number of documents from your personal files in
2 response to the subpoena duces tecum that was part of
3 the deposition notice. And I just wanted to establish
4 for our record that those documents were, in fact,
5 things that you brought from your personal file.

6 With that in mind, Dr. Rowe, have you had a
7 chance to check through the three volumes of the
8 exhibits to the deposition of yourself taken on
9 October 1st and October 2nd of 1992?

10 A. I have not.

11 Q. Can you tell us, sir, whether or not the
12 documents that are in each of the three exhibits to
13 your October 1st and 2nd, 1992, deposition did come
14 from your personal files at home?

15 MR. PIERCE: I think with that
16 question you have to give him at least
17 a few seconds to scan them or
18 something.

19 Why don't you just take a quick --
20 Scan through them very quickly.

21 MR. ALMQUIST: And for the benefit
22 of Dr. Rowe, as well, let me simply
23 tell him that these are the
24 documents that we had copied and
25 produced; that I have looked at

1 them, as well, to make sure that they
2 are the documents that you brought.

3 MR. PIERCE: From the first
4 deposition.

5 MR. ALMQUIST: From the first
6 deposition.

7 Q. But take a moment, if need be, to --

8 A. Well, there's quite a volume. All I can say
9 is that the originals that I provided the attorneys I
10 have to assume are - these are copies of those. That
11 was -- That was the understanding when I gave them to
12 them for copying. And if they can attest to the fact
13 that -- They came -- All they had to copy came from my
14 personal files, yes.

15 MR. ALMQUIST: And I can tell you
16 that I had - took those documents that
17 Dr. Rowe gave me and had them copied
18 and provided them to you. And they are
19 attached as the three volumes of
20 exhibits to his first deposition.

21 Q. Okay. Mr. Pierce, is that --

22 MR. PIERCE: I have no problem.
23 I'm not making any objection. I just
24 think the way you worded the question
25 would put him in a -- But I think he's

1 explained; and that's fine for all of

2 us, I believe.

3 Q. All right, sir. Now, Dr. Rowe, bear with me

4 on a few questions about a couple other things from

5 the older times.

6 Do you recall, sir, having with you at Dow

7 the industrial toxicology textbook from 1934 when you

8 were working there?

9 MR. PIERCE: Objection to the form

10 of the question. It's vague. No

11 author --

12 Q. A text titled Industrial Toxicology,

13 published in '34.

14 A. I -- Was this the -- Who was the editor?

15 Was it Patty?

16 Q. I think it's too early for Patty.

17 A. I think so, too. I don't believe so. The

18 earliest one that I have is the Industrial Hygiene and

19 Toxicology edited by Patty, and I can't remember what

20 the publication date on that was.

21 Q. All right, sir. I think you told us before

22 that you thought that was the first edition. Do you

23 know --

24 A. Yes. It is.

25 Q. Okay. Do you recall having a text called

1 Industrial Hygiene, edited by Lanza --

2 A. No. No.

3 Q. -- and Goldberg from '39?

4 A. I do not. I do not.

5 Q. How about Cyril Blacktin's text titled Dust

6 from 1934?

7 A. I do not.

8 Q. Did you have a book called Industrial

9 Hygiene for Engineers and Managers by Carey McCord and

10 Floyd Allen?

11 A. No.

12 Q. Do you recall having Drinker and Hatch's

13 text titled Industrial Dust from '36?

14 A. No, I do not.

15 Q. How about Lanza's 1938 book titled Silicosis

16 and Asbestosis?

17 A. No.

18 Q. All right, sir. Dr. Rowe, sometime in the

19 morning a couple of boxes of papers were wheeled in.

20 And could you explain to us where those copies came

21 from, just generally?

22 A. The big bulk of that material was a file

23 that I accumulated over - of reprints that I

24 accumulated over the years on various - various

25 aspects of the subject of carcinogenesis. And I had

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1 at one time a thought that I might try to write a
2 treatise of some description on the subject. It
3 always did intrigue me, but I never knew enough about
4 it; and nothing has ever happened. Those things -- I
5 don't know why I shipped them down here when I came
6 down here 13 years ago, but I did. And I haven't
7 looked at them since until Counsel suggested that they
8 might be part of the things that I should provide.
9 And there's nothing -- I have nothing to hide. I
10 simply didn't believe that they pertained to the
11 particular subject that we had at issue.

12 Q. Okay.

13 A. So, I made them available for whatever use
14 you may have.

15 Q. Okay. So, back in October it just didn't
16 strike you that they came within the scope of the
17 document request; but since then you've considered
18 they might be?

19 A. That's true.

20 Q. And you were kind enough, then, to go
21 through your papers of the ones you've just described

22 and pull out those that you thought could possibly be
23 responsive to the document request?

24 A. That was what I did at the first
25 deposition. I have not even -- I did not even go

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1 through that box of stuff. It just was in my closet.

2 Q. I see. Okay. Does that pretty much exhaust
3 your collection of old articles and papers, then?

4 A. It does.

5 Q. All right, sir.

6 A. I may have something on 2,4,5-T and loose
7 paper clippings on Agent Orange and things like that
8 and the dioxins that -- I think I have those yet.

9 Q. Generally speaking, Dr. Rowe, the two boxes
10 of documents you brought consist of articles from
11 years past concerning carcinogenicity and related - or
12 just generally toxicology and industrial hygiene, I
13 suppose.

14 A. Well, the one batch was -- I tried to
15 categorize them years ago into what was related to
16 carcinogenesis, occupational and otherwise. And then
17 there are other documents that I didn't think had any
18 bearing on - on the hearing that are now available to
19 you - a lot of personal cards and notes that I've used

20 and will probably continue to use in lectures on this,
21 that, and other things. Every once in a while someone
22 asks me to give a talk on the subject, and I go back
23 and I look at some of my old notes so that I don't
24 have to reconstruct everything.
25 Q. Okay.

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1 A. So -- But they're there for whatever value
2 they may be to the purpose of your inquisition.
3 MR. PIERCE: Appropriate
4 terminology.
5 A. I don't know what's going on but --
6 Q. Oh, well, Mr. Pierce was laughing at your
7 use of the word "inquisition," which is one of my
8 favorites, too, but...
9 All right, sir. The articles that are in
10 the boxes, would those be reprints that you acquired
11 around the time that the articles were published?
12 A. I don't know.
13 Q. Does the box also include typed notes of
14 some lectures that you, yourself, gave over the years?
15 A. It could be.
16 Q. If among the documents in the two boxes are

17 papers that on their title show that it's a paper
18 authored by you or a speech to be given by you, would
19 that be accurate?
20 A. I think so.
21 Q. All right, sir. And if the box contains
22 text of speeches given by others and yourself and the
23 title shows that to be so, would those, to your
24 knowledge, be accurate, as well?
25 A. They all came from my file.

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1 Q. So, for example, --
2 A. I don't know what all -- I don't even know
3 what all is in there.
4 Q. Well, for example, if we were to find in
5 there a couple of talks that appeared to have been
6 authored by John Zapp, a Cummings Lecture, or a
7 Stokinger Lecture, would it be your recollection that
8 those would be copies of speeches that you obtained
9 around the time they were given?
10 A. Yes.
11 Q. And there are also, as you mentioned, some
12 handwritten documents in there. And I don't mean to
13 address them globally, but some of those would be
14 things that you, yourself, wrote that have been

15 copied - photocopied?

16 A. I think they're probably all - all my

17 writing. I looked over those, those - those

18 handwritten statements. And there may be one or two

19 in there that I can't even remember where they - where

20 they were given. So, I don't know.

21 Q. Okay. Well, that's understandable.

22 A. But they're there, and that's why I brought

23 them.

24 MR. PIERCE: Mr. Blanks, perhaps

25 this would be an appropriate time to

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1 put on the record what we were

2 discussing informally before -

3 Mr. Almquist, yourself, and myself -

4 that if there are any questions as to

5 any specific document's handwriting,

6 that if you'll bring it to our

7 attention, we'll certainly have

8 Dr. Rowe look at it and identify it for

9 you at any time.

10 MR. BLANKS: Well, we appreciate

11 that kind offer, sir.

12 (By Mr. Blanks)

13 Q. I had a few specific ones that I did want to
14 visit with you about, if we could just take a few
15 minutes.

16 Dr. Rowe, I've got - I have a reprint of an
17 article titled, "Public Health Hazards from
18 Environmental Chemical Carcinogens, Mutagens and
19 Teratogens," that I'd like to show you here as soon as
20 I can put a label on it.

21 MR. BLANKS: And I'm going to
22 label this Plaintiffs' Exhibit 710105
23 WCH.
24 (PLAINTIFFS' EXHIBIT 710105 WCH
25 WAS MARKED FOR IDENTIFICATION

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1 PURPOSES BY MR. BLANKS. SAME WILL BE
2 FOUND IN THE EXHIBIT VOLUMES ATTENDANT
3 TO THIS DEPOSITION.)

4 (By Mr. Blanks)

5 Q. (Tendering document) And this one does have
6 some handwritten notes on it.

7 MR. PIERCE: (Reviewing document)

8 (By Mr. Blanks)

9 Q. But Mr. Pierce doesn't want you to see it

10 yet.

11 MR. BLANKS: I'm sorry. I should

12 have gotten out your copy, too. I

13 think there were two of them in there.

14 MR. PIERCE: I mean, I hope you

15 don't object to me looking at a

16 document that you're about to hand the

17 witness.

18 MR. BLANKS: Well, I think it's -

19 I think it's quite unreasonable,

20 actually, but...

21 MR. PIERCE: (Tendering document

22 to the witness)

23 (By Mr. Blanks)

24 Q. Do you recognize the handwriting that's on

25 the front page of that article or reprint, sir?

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1 A. (Reviewing document) I don't recognize the
2 handwriting.

3 Q. So, that's not your handwriting on the cover
4 of that?

5 A. No, sir.

6 Q. Okay. Is this an article that you did have

7 in your files, however?

8 A. Yes.

9 Q. Okay. And you recognize the name of the
10 author?

11 A. Dr. Hueper?

12 Q. Yes, sir.

13 A. Yes.

14 Q. Okay. Did you ever have any dealings or
15 communications, correspondence, that sort of thing
16 with Dr. Hueper?

17 A. I -- I don't remember.

18 Q. Okay.

19 A. He was pretty early on in the game, when I
20 was a neophyte.

21 Q. Yes, sir. Okay. Do you think you ever met
22 the gentleman?

23 A. I may have met him at a meeting or something
24 of that nature, but I've never had any meetings with
25 him.

1 Q. All right, sir. Dr. Rowe, the note on the
2 cover page of Dr. Hueper's article looks to be signed
3 by -- Chet?

4 A. Yes.

5 Q. Do you know who "Chet" is?

6 A. His name was Chet Otis.

7 Q. How do you spell that last name, sir?

8 A. O-t-i-s.

9 Q. Oh, Otis. Okay.

10 A. He signed it up above.

11 Q. Oh, I see. And who was he with, Dr. Rowe?

12 A. He was in our agricultural - I don't know

13 what the name of it - agricultural division. In

14 sales, I believe.

15 Q. I see.

16 A. Sales or development. I don't know which.

17 Q. Do you recognize the name above the Chet

18 Otis name at the top right?

19 A. I beg your pardon.

20 Q. Can you tell what word that is above Chet

21 Otis' name?

22 A. I don't know who that is. I don't know who

23 that is.

24 Q. Oh, okay. Probably of no - no matter.

25 Dr. Rowe, I've got some papers that are

2 the boxes that you provided today that was titled,
3 "loose papers at top of stack." And I rubber-banded
4 them together so that we'd know where they came from,
5 but could we just run through these quickly and let
6 you at least identify them as being in your hand or
7 not and perhaps just a brief clue as to what each one
8 might represent (tendering document)?

9 (PLAINTIFFS' EXHIBIT ROWE 9
10 WAS MARKED FOR IDENTIFICATION
11 PURPOSES BY MR. BLANKS. SAME WILL BE
12 FOUND IN THE EXHIBIT VOLUMES ATTENDANT
13 TO THIS DEPOSITION.)

14 MS. COLDWELL: What exhibit is
15 that?

16 MR. BLANKS: This is marked as
17 Rowe Exhibit No. 9. And I've penciled
18 in at the top there "from loose papers"
19 so we'd keep track of it.

20 A. (Reviewing document)

21 THE WITNESS: See if there's
22 something missing (directed to
23 Mr. Pierce).

24 MR. BLANKS: I don't know,
25 Mr. Pierce. I thought this was an

1 appropriate time for you to object that
2 the document speaks for itself and...

3 MR. PIERCE: I haven't heard a
4 question yet. Maybe I will.

5 MR. BLANKS: No. I was asking
6 Dr. Rowe to just try and tell us what
7 that collection of notes was or
8 pertained to.

9 (AT THIS TIME PLAINTIFFS' EXHIBITS
10 ROWE 10, ROWE 11, ROWE 12, ROWE 13,
11 ROWE 14, AND ROWE 15 WERE MARKED FOR
12 IDENTIFICATION PURPOSES BY MR. BLANKS.
13 SAME WILL BE FOUND IN THE EXHIBIT
14 VOLUMES ATTENDANT TO THIS DEPOSITION.)

15 MR. HOBSON: He's waiting for a
16 question.

17 (By Mr. Blanks)

18 Q. Oh, I'm sorry. Could you give us a clue as
19 to what that generally pertains to or what it is?

20 A. Well, it's obviously the card notes that I
21 used in a speech somewhere.

22 Q. Topic --

23 A. But I can't tell you where.

24 Q. Could you tell what the topic of the talk
25 was, Dr. Rowe?

1 A. I don't know. It has to do with - with the
2 broad concept of toxicology and safety and
3 responsibility and the kinds of tests that are
4 conducted and... It looks like an educational lecture
5 for somebody that I don't -- I don't know where
6 (tendering document).

7 Q. All right, sir. Can you place it in a
8 decade, even?

9 A. No.

10 Q. Let me hand you Rowe Exhibit 10, sir, and
11 ask you if that's your handwritten notes (tendering
12 document).

13 A. (Reviewing document)

14 MR. PIERCE: Mr. Blanks, no
15 underlinings or tabs or anything like
16 that on these documents?

17 MR. BLANKS: No. Just the "from
18 the loose papers at the top of the
19 stack" right here.

20 MR. PIERCE: Okay.

21 MR. HOBSON: We haven't had time
22 to accomplish that yet. Lunch was only
23 an hour. Hour and a half, I guess.

24 MR. BLANKS: There is a note
25 written in here on one, "We knew all

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1 along..."

2 A. (Reviewing document) Again, obviously, my
3 notes from a speech. I have no idea where it was
4 given.

5 Q. Or even --

6 A. When.

7 Q. -- or even approximately when? All right,
8 sir. Let me hand you Rowe 11 and ask you if you can
9 answer the same questions about that, sir (tendering
10 document).

11 A. This, again, is another one of the same
12 category.

13 Q. All right, sir. Your handwritten notes?

14 A. Yes.

15 Q. (Tendering document) Rowe 12, please, sir.

16 A. That's my handwriting.

17 Q. All right, sir. (Tendering document)

18 Please look at Exhibit Rowe --

19 What is that one? Hold it. What's the
20 number on that, please?

21 A. Twelve.

22 Q. Oh, dear. I've misnumbered here. We've got
23 two 12's. You just gave me back 12. Let me change
24 the number on that. I've equivocated on us here.

25 MR. BLANKS: All right. We've got

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1 12. I'm going to change that one to 16

2 because I've already marked up through

3 15.

4 (PLAINTIFFS' EXHIBIT ROWE 16

5 WAS MARKED FOR IDENTIFICATION

6 PURPOSES BY MR. BLANKS. SAME WILL BE

7 FOUND IN THE EXHIBIT VOLUMES ATTENDANT

8 TO THIS DEPOSITION.)

9 (By Mr. Blanks)

10 Q. Let's proceed on orderly fashion to Rowe

11 Exhibit No. 13, sir (tendering document).

12 A. (Reviewing document) That's my handwriting.

13 Q. Thank you. Would you please look at Rowe

14 Exhibit 14 (tendering document).

15 A. (Reviewing document) That's mine. There's

16 a blank piece in here that I don't identify as mine,

17 though. I don't know where that belongs or where it

18 came from (tendering document).

19 Q. "Do you want to cover the presentation and
20 provisions?" Well...

21 A. I don't know where it came from.

22 Q. Okay. I'd leave out --

23 A. As I said, I didn't...

24 Q. All right, sir. Anyway, that's not your
25 writing?

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1 A. That's not mine, no.

2 Q. Apparently it was in there, but nothing to
3 do but set it aside now.

4 All right, sir. And Rowe Exhibit 15. would
5 this be your handwriting, as well, sir (tendering
6 document)?

7 A. (Reviewing document) Yes, it is.

8 Q. Dr. Rowe, the next bunch of these appears to
9 be from - copies of file cards. And they were not
10 stapled together; so, I assume they were all loose in
11 your file, as well. But we've marked these as Rowe
12 Exhibit 16. And these came out of a file in the boxes
13 that was labeled "from V. K. R.'s talks and papers,"
14 within which were found, also, typed notes that
15 appeared to be from your talks.

16 Could you identify that stack or
17 characterize it generally for us (tendering document)?
18 A. (Reviewing document) This is my
19 handwriting.
20 Q. All right, sir. Dr. Rowe, I have some
21 handsome laser color copies of what look to be charts
22 here. And we've just paper-clipped them all together
23 at this point. I've not marked them yet. But could
24 you tell me, first, if they all go together, as best
25 you remember (tendering charts)?

619

1 A. (Reviewing charts) Yes. These are copies
2 of color slides that I have used in - in talks to
3 discuss various aspects of carcinogenicity and other
4 diseases and so forth and particularly to demonstrate
5 the -- I think most all these data probably came from
6 U. S. Public Health Service publications relative to
7 the incidence of various types of cancer in the
8 population. My use of it was primarily in lectures in
9 which I was trying to get people to understand the
10 hazards of smoking.
11 Q. All right, sir. Would these have been
12 slides that you had had prepared while you were still
13 at Dow?

14 A. Yes. I had those prepared. And there were
15 several copies of them. I had one sheet - one set of
16 slides that I used in lectures. And I've used them
17 here - I mean at my present location - for other
18 groups, not recently but sometime -- The data is
19 pretty much outdated, I think, now; but nevertheless
20 it does explain the - or shows graphically the
21 incidence of various types of cancer that the
22 population in this country experiences.

23 Q. Would the data be generally from the Sixties
24 and Seventies?

25 A. I -- It would be in the Sixty or Seventy,

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1 somewhere in that range. I don't know. I can't tell
2 you.

3 Q. All right, sir. I'm going to label this
4 collection as Rowe Exhibit 17, and we'll leave them
5 grouped together. And I'm going to put that label on
6 the clean side of the mystery paper. And we'll put
7 that together.

8 (PLAINTIFFS' EXHIBIT ROWE 17
9 WAS MARKED FOR IDENTIFICATION
10 PURPOSES BY MR. BLANKS. SAME WILL BE

11 FOUND IN THE EXHIBIT VOLUMES ATTENDANT
12 TO THIS DEPOSITION.)

13 (By Mr. Blanks)

14 Q. All right, sir. Was it -- The kind of notes
15 that you have on your file cards, would those be,
16 like, notes for little talks you might have given to
17 Dow employees?

18 A. Very likely. It could have been any place,
19 but I did give a lot of talks like that to various
20 groups within the company.

21 Q. And generally when you made a presentation
22 before a professional body of your colleagues or your
23 peers, you would normally have that talk typed up in
24 advance to where you would have a more complete and
25 formal draft, would you not?

621

1 A. That generally would be true, but I did not
2 always in verbal presen - in verbal presentations read
3 a talk. And sometimes I used cue cards, so to speak,
4 in - to keep me on track.

5 Q. Okay. Dr. Rowe, if we looked to one of
6 these cards, specifically the -- Let's just look at...

7 MR. HOBSON: Garth Brooks. Never
8 mind. Wrong award. I'm sorry.

9 MR. BLANKS: That was even

10 supposed to be a joke?

11 MR. HOBSON: Some people got it.

12 (By Mr. Blanks)

13 Q. Dr. Rowe, let's just look at one of these

14 cards out of your Exhibit Rowe 9, or any of the other

15 cards on there that you want. But I'm wondering from

16 looking at the sixth page and using these notes what

17 kind of a presentation you would give from that

18 (tendering document).

19 A. (Reviewing document) This would have been

20 to some area of management or sales department

21 people. I think there's a lot more in this than just

22 the - some of the legal and moral responsibilities;

23 but that type of talk would have been internal and to,

24 as I say, sales management or company management or

25 whatever. I don't know.

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1 Q. Could you share with us the message that you

2 would have been - would give off of these notes on

3 this particular card and the context of the rest of

4 that talk?

5 A. Well, I was attempting to emphasize to

6 whoever was present that the - that subject, breach of
7 warranty of safety. What I said was (reading)
8 warranty expressed in or implied from communication
9 such as letters, labels, advertising, or verbal
10 statements made by a representative. And deceit or
11 fraudulent misrepresentation allegations usually are
12 that defendant made false or misleading statements to
13 conceal true facts. Generally if moral or legal
14 responsibilities are discharged there will be few --
15 "Suits," I guess it is (tendering document).

16 Q. I'm sorry. The last part was "Generally if
17 moral and legal responsibilities are discharged," --

18 A. Yes.

19 Q. -- "then there will be few suits"? And this
20 was a message you were giving to --

21 A. Management.

22 Q. Dow management?

23 A. Someplace. Yes.

24 Q. All right.

25 A. Or sales - salespeople. I say some area of

623

1 management. I don't know where.

2 Q. For these different exhibits you've been

3 kind enough to go through with us up through 16, 17,

4 do these notes reflect your thoughts accurately at the
5 time that you - that you made them?

6 A. Yes.

7 Q. And they - what facts or views that you set
8 out on the notes would have been truthful at the time
9 that you made them, whenever that was?

10 A. That was -- I would have no reason to
11 believe otherwise.

12 Q. All right, sir. Very good. I would like to
13 mark as Rowe Exhibit 18 the remainder of the
14 documents, the contents of the box - the box, itself.
15 And we will arrange to have those and all these other
16 exhibits appropriately stamped and numbered so that we
17 have a record of what you've been good enough to
18 bring, Dr. Rowe, and attorneys.

19 A. Well, I brought them -- I don't know whether
20 they're useful, whether they're of any interest; but
21 they were in my files.

22 Q. Very good. Well, we appreciate that, sir.

23 MR. BLANKS: So, that will be
24 Plaintiffs' Exhibit No. Rowe 18. And
25 there are many hundreds of pages.

1 (REPORTER'S NOTE: PLAINTIFFS'
2 EXHIBIT ROWE 18 WAS LATER MARKED FOR
3 IDENTIFICATION PURPOSES BY THE
4 REPORTER. SAME WILL BE FOUND IN THE
5 EXHIBIT VOLUMES ATTENDANT TO THIS
6 DEPOSITION.)

7 (By Mr. Blanks)

8 Q. Dr. Rowe, finally, I want to ask you about a
9 couple of things that we've talked about before.

10 Has Dow, since we last met, hired you to
11 serve as a consultant to them in connection with these
12 cases or any other cases?

13 A. When I retired I had a contract with Dow to
14 consult and to do a lot of writing, which I did after
15 I retired. They wished me to be a part of the
16 information source. I did not require or ask -- As a
17 matter of fact, I told them I did not want a contract
18 but I would try to be available if I could be helpful
19 or useful in things that I knew about. And that is
20 the arrangement that we've had since then. We have no
21 formal arrangement. I do bill them for my time, and
22 they pay me.

23 Q. In connection with the lawsuits that we're
24 here testifying about today, are you actually serving
25 as a consultant to Dow?

1 A. I presume so, but I don't know the
2 connotation of that word all the way but...

3 MR. ALMQUIST: He's a fact witness
4 in this case, obviously, Mr. Blanks.
5 And we have reimbursed him for his time
6 since there's been a significant drain
7 on his time, obviously, to be here for
8 these depositions; but we are not
9 retaining him as an expert witness
10 in this litigation either as a
11 consulting expert or at trial.

12 (By Mr. Blanks)

13 Q. Okay. Before we resumed our deposition
14 yesterday, had you taken time to visit again with
15 lawyers about the continuation or resumption of your
16 deposition?

17 A. This particular one?

18 Q. Yes, sir.

19 A. Yes.

20 Q. When did that occur?

21 A. Monday - Monday afternoon, about 3:30 to
22 5:00 o'clock, I believe, something like that.

23 Q. And that was the first time since we'd left
24 you in October that you'd met with any lawyers about

25 your testimony in these cases?

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1 A. That's correct.

2 Q. Who was present at your Monday afternoon
3 meeting?

4 A. Dr. Pierce and Linda.

5 MR. ALMQUIST: Linda Fiegenger.

6 Q. And who do you understand Ms. Pickner to be?

7 A. Pardon?

8 Q. Who do you understand Ms. Pickner to be
9 associated with?

10 MR. ALMQUIST: Fiegenger.

11 MR. BLANKS: I'm sorry.

12 MR. PIERCE: Fiegenger.

13 MR. BLANKS: Sounds like what I
14 said.

15 How do you spell it?

16 MR. PIERCE: F-i-e-g-e-n-e-r.

17 MR. BLANKS: Thank you.

18 (By Mr. Blanks)

19 Q. Yes, sir. Who is the lady connected with?

20 A. She's representing Dow someplace or other.
21 Texas division, I think.

22 Q. Do you understand her to be an attorney who

23 works for Dow?

24 A. I understand her to be an attorney.

25 MR. ALMQUIST: Let's correct the

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1 record for Linda's benefit. She's a

2 legal assistant in the Dow legal

3 department.

4 Q. And during this visit with Ms. Fiegener

5 present, what things were discussed, Dr. Rowe?

6 MR. PIERCE: I direct you not to

7 answer any questions as to any

8 specifics of our conversations.

9 MR. ALMQUIST: And I will join --

10 MR. PIERCE: And, listen, you know

11 that this is attorney-client

12 privilege. You know this is

13 inappropriate. So, please, let's not

14 go through this again.

15 MR. ALMQUIST: And on behalf of

16 Dow, we would assert the

17 attorney-client privilege, as well,

18 with any communications with Mr. Rowe.

19 Q. Did the lady, Ms. Fiegener, have anything to

20 say at this meeting, Dr. Rowe?

21 MR. ALMQUIST: Again the same

22 instruction, the same objection.

23 MR. PIERCE: I direct you not to

24 answer anything about our

25 communications.

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1 Q. Dr. Rowe, are you going to continue to

2 follow the instructions of your counsel?

3 A. I believe that's what I should do.

4 Q. All right, sir. Are you going to follow the

5 instructions from Mr. Almquist who is here as Dow's

6 lawyer today?

7 A. Yes.

8 Q. There were, in fact, conversations that took

9 place while Ms. Fiegenger was present with you and

10 Mr. Pierce, were there not?

11 MR. PIERCE: You can answer that.

12 A. Certainly.

13 Q. Okay. And did you look at any documents or

14 papers before or during that meeting or at any time to

15 get ready for resuming your deposition, sir?

16 A. Yes.

17 Q. What did those consist of, Dr. Rowe?

18 A. That 50, 60 pounds of paper that you

19 received.

20 Q. All right, sir. Anything other than the

21 documents you were kind enough to bring today that you

22 looked at before the deposition or for purposes of

23 preparing --

24 A. I beg your pardon.

25 Q. I was wondering, sir, if there were any

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1 other papers besides those that are in Exhibit 18 and

2 Exhibits 9 through 17 --

3 A. I don't believe so.

4 Q. Have you had any conversations with

5 Mr. Almquist about your testimony either in the past

6 or during this week?

7 A. Not at all.

8 Q. Have you had any letters or written

9 communications from him?

10 A. No.

11 Q. Or from any other lawyers associated with

12 Dow, that you know of?

13 A. No.

14 Q. Do you understand, Dr. Rowe, that Dow is

15 paying for Mr. Pierce to appear here with you today

16 and yesterday?

17 A. Yes.

18 Q. And who was it, Dr. Rowe, that suggested

19 that or told you that Mr. Pierce would be designated

20 to represent you at these deposition days?

21 A. Nobody told me that he would. They asked me

22 if I would like to have him represent me, and I said

23 yes.

24 Q. So, this came in the form of a --

25 A. Pardon?

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1 Q. This came in the form of an implied

2 suggestion that you might want to have him represent

3 you, then?

4 MR. PIERCE: Objection to the

5 form.

6 He said it came in the form of a

7 question which he answered.

8 Q. Who asked you that question, Dr. Rowe?

9 A. Mr. Stuart.

10 Q. Duncan Stuart, the lawyer that's an employee

11 of Dow Chemical Company?

12 A. Yes.

13 Q. Same --

14 MR. PIERCE: I think we're getting
15 back to the same area of specifics
16 and conversation between attorney and
17 clients. And although I'm not going to
18 interpose objections on behalf of The
19 Dow Chemical Company, I feel that we're
20 skirting an area of privilege which you
21 should not raise at this deposition.
22 And you should be on notice about that,
23 please.

24 Q. Did you have any conversations with Duncan
25 Stuart about your deposition either in October or this

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1 upcoming one or - the one that we're in here today on?

2 A. No.

3 MR. BLANKS: Okay. I'm going to
4 pass the witness at this time,
5 provisionally given that we still have
6 Exhibit 18 and several thousand pages
7 of documents to peruse and with the
8 reservation that we may need to return
9 and spend a little more time with

10 Dr. Rowe, but not to a certainty. We
11 don't know that until we get a
12 chance to look through all those
13 documents. But I want to give anybody
14 else who wanted to cross-examine
15 Dr. Rowe on asbestos-related matters an
16 opportunity to do that at this time.

17 MR. PIERCE: Okay. Let me
18 also state for the record that if there
19 are a few questions that do come to
20 mind, we'd be very happy to give you
21 written responses - notarized, if you
22 wish - to any of those questions so as
23 to make no unnecessary trips or
24 problems for any of the attorneys
25 involved here. We'd be very happy to

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1 cooperate with you.

2 MR. BLANKS: Well, depending on
3 the nature of the questions,
4 we'll --

5 MR. PIERCE: Well, of course.
6 Yeah.

7 MR. BLANKS: -- try to work with

8 you on what's appropriate. Very good.

9 Does anyone have any examination

10 for Dr. Rowe?

11 MR. HOBSON: Asbestos.

12 MR. BLANKS: On asbestos?

13 And the room was silent. Well,

14 then, let us move on to the wonderful

15 world of silica.

16 Just another dust, Mr. Pierce.

17 (By Mr. Blanks)

18 Q. Dr. Rowe, we visited at great length, as you

19 know, about your toxicology work and the industrial

20 hygiene program at Dow and the general philosophy that

21 you had and that you observed at Dow concerning

22 occupational health and safety.

23 Would the same general principles that

24 you've described to us about the industrial hygiene

25 program at Dow apply to dealing with any potential

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1 silica dust hazards that might arise in the Dow

2 premises?

3 A. I think anything that I could say with

4 respect to silica would probably also - or what I

5 would say about asbestos I would probably take about
6 the same position with respect to silica, at least as
7 I understand it. Again, I would - I wish to qualify
8 I'm not an expert at all in the field of silicosis or
9 other such diseases.

10 Q. Certainly you recognized before 1940 in your
11 first few years at Dow that silicosis was a recognized
12 occupational disease among people exposed to
13 sufficient quantities of free silica, didn't you, sir?

14 A. I don't know when I became aware of it.

15 Q. It certainly would have been during the
16 first decade of your work in toxicology?

17 MR. PIERCE: Objection to the
18 terminology "certainly" within those
19 questions.

20 A. I would expect that to be true.

21 Q. All right, sir. And at Dow from time to
22 time abrasive blasting was done using sand as the
23 abrasive, was it not?

24 A. I don't know.

25 Q. Do you know, sir, whether or not Dow

1 required even back to 1940 the use of air-supplied
2 hoods to protect workers doing sandblasting on their

3 premises?

4 A. I don't know.

5 Q. Would it be your view, sir, that that would

6 be the appropriate protective device to give a man

7 doing sandblasting?

8 A. I do not know from firsthand experience what

9 kind of equipment was used.

10 Q. Was air-supplied respiratory equipment

11 available in the Dow plants back when you began

12 working there?

13 A. I don't know.

14 Q. You don't recall encountering air-line

15 respirators or --

16 A. I had no personal experience with it.

17 Q. Okay. Do you recall encountering any cases

18 of silicosis among Dow employees during any of the

19 years you were with the company or being advised of

20 any cases?

21 A. I don't recall.

22 Q. Did you ever do any toxicological work in

23 connection with free silica or silica dust while you

24 were at Dow?

25 A. At one time I believe we used free silica as

1 a control in an animal experiment - a very cursory
2 experiment - to check on the fibrotic nature of
3 something or other.

4 Q. And were you using silica in that
5 experiment, Dr. Rowe, as a positive control?

6 A. Yes.

7 Q. One where you knew that the control group
8 would develop a fibrosis or disease?

9 A. Yes.

10 Q. That's what we mean by "positive control"?

11 A. Well, we -- I don't know that - about the
12 disease part; but it elicited a particular type of
13 response when injected intraperitoneally in rats. And
14 it was rather - a rather unique observation so that
15 you could have something to compare with.

16 Q. Okay. If I could restate it, perhaps,
17 simply, then, you selected silica as your positive
18 control substance because you knew that it would
19 produce an adverse effect in the way you were using
20 it.

21 A. Well, we presumed it would.

22 Q. Okay. And did, indeed, find that it
23 worked.

24 A. Yes.

25 Q. Okay. You were aware at some point from

1 your dealings or communiques with the Saranac
2 Laboratory that they had done some work on the
3 inhalation hazards associated with silica, weren't
4 you, Dr. Rowe?

5 A. With whom?

6 Q. That the Saranac Laboratory scientists,
7 Dr. Gardner and his associates, had done some
8 experimental work with silica inhalation.

9 A. Yes.

10 Q. Could you recall approximately when you did
11 the study that used silica as a positive control,
12 Dr. Rowe?

13 A. I don't remember when that was.

14 Q. What was the nature of the rest of the
15 study; do you recall?

16 A. I don't remember the details. As I
17 remember -- What I do remember of it is that there
18 was - that one of the research laboratories had
19 developed something that they thought could be used as
20 a substitute somewhere along the line. And we had no
21 knowledge of what it might do; and, so, we thought we
22 would check it out. And that's what -- I don't even
23 know when it was.

24 Q. Or what they were trying --

25 A. I don't remember what the material was that

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1 we were checking. Whether it ever came to production

2 or anything or not, I don't know.

3 Q. All right, sir. Do you recollect what you

4 were seeking a substitute for?

5 A. No. That's a blank, also.

6 Q. Okay. Did that lead to any kind of a

7 publication, that experiment that used the silica as a

8 positive control?

9 A. I beg your pardon.

10 Q. Did your work on the - that involved using

11 silica in the experiment, did that lead to any

12 publication?

13 A. No.

14 Q. What was it that gave you the idea to use

15 silica in your experiment, Dr. Rowe?

16 A. The purpose -- This was a totally new

17 technique for us. And if the results were to be any -

18 be meaningful, we had to know that - what the lesion

19 that would be produced by silica would look like under

20 those conditions. And if a material that we were

21 testing also produced a similar lesion, we would

22 assume it would behave similar to silica.

23 Q. I see. Was the new technique that of doing
24 the intraperitoneal injection of the irritant?

25 A. Yes.

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1 Q. So, that would probably place that back in
2 the first few years of your --

3 A. Not necessarily. I just don't know.

4 Q. Okay. I was just thinking there had been
5 some similar experiments done, perhaps at Saranac,
6 using that technique and by Bradley and Patty in
7 Detroit around the late Thirties, if that helps in
8 your recollection.

9 Did you ever consider in the tox. lab or
10 analyze any proposed substitute abrasives to use
11 instead of silica so that you could prevent any
12 possibility of silicosis in your sandblasters?

13 A. As I say, I don't remember what the material
14 we were working with was even designed for at this
15 time. I just -- I've forgotten, I guess.

16 Q. Oh, I'm sorry. I had moved on to wondering
17 if you considered any substitute materials for
18 abrasive blasting use.

19 A. I don't know. It might have been that the
20 material we were working on was a substitute for that
21 for all I know. I just don't know.

22 Q. Okay. Do you know if your industrial
23 hygienists at Dow were doing air monitoring in
24 connection with sandblasting work during that time
25 when you were in charge of the industrial hygienists?

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1 A. I don't remember.

2 Q. Would you agree with me that in the presence
3 of a visible dust cloud from sandblasting that
4 monitoring of the individuals in that work area would
5 be an appropriate thing for the industrial hygienists
6 to do?

7 MR. PIERCE: I'm going to object
8 to the form. And I'd like to indicate
9 to you that Dr. Rowe answered
10 previously that this was not an area in
11 which he is familiar or expert in.

12 But go ahead.

13 MR. BLANKS: I was simply asking
14 Dr. Rowe as the chief of the toxicology
15 and industrial hygiene department.

16 MR. PIERCE: Well, he's told you

17 that he was administratively head of
18 that, of the industrial hygiene
19 department.

20 A. Well, I would think that that would be
21 appropriate.

22 (By Mr. Blanks)

23 Q. All right, sir. Do you know, Dr. Rowe, if
24 Dow ever banned the use of silica as an abrasive for
25 blasting in its plants, sir?

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1 A. I don't know.

2 Q. Given the propensity for silica to cause
3 silicosis in workers sufficiently exposed, would it be
4 your view as a toxicologist that it would be desirable
5 to find a substitute abrasive for silica?

6 MR. PIERCE: I'd like to object to
7 the form; argumentative term,
8 "propensity."

9 Go ahead.

10 A. I think it -- It think it would be
11 appropriate.

12 Q. Thank you, sir. Dr. Rowe, do you think it's
13 really fair to - in giving health information to

14 workers to describe the toxic qualities of silica in
15 terms of being merely an irritant to the lung?

16 A. I beg your pardon. Would you please
17 repeat.

18 Q. Yes, sir. If you were -- In the context of
19 a worker's safety manual, is it fair to simply
20 describe the toxic character of silica from
21 sandblasting as being merely an irritant to the lung?

22 A. I don't think that -- I wouldn't think that
23 that would be quite appropriate. It wouldn't be
24 right.

25 Q. And why would information like that be

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1 deficient? I mean, how would it be deficient?

2 MR. PIERCE: Objection to the form
3 and mischaracterization of his
4 testimony. He never indicated it was
5 deficient.

6 Go ahead.

7 MR. BLANKS: Don't worry, Stan.
8 Dow didn't do this sort of thing.

9 MR. PIERCE: I'm just dealing with
10 the questions you are setting up for
11 this witness. And I'd like him to have

12 an opportunity to answer the questions

13 fairly. That's my only interest here

14 today.

15 (By Mr. Blanks)

16 Q. I'm sorry, sir. Tell the jury why a warning

17 or an instruction that simply describes the toxicity

18 of silica in sandblasting as an irritant is not fair

19 or adequate, if you don't think it's adequate.

20 A. Well, I don't -- I don't think that would be

21 correct. It would not be correct.

22 Q. Would you say, Dr. Rowe, that it would be

23 also incorrect and inadequate to describe the toxicity

24 of asbestos as being merely an irritant to the lung?

25 A. I don't...

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1 MR. PIERCE: You mean as we sit

2 here today?

3 A. If that's a hypothetical, that's one thing;

4 but I don't believe we ever did that.

5 Q. I don't suggest that you ever did that,

6 sir. It was a hypothetical.

7 Would it be fair to describe the toxic

8 properties of asbestos simply as an irritant to the

9 lung?

10 A. No.

11 MR. ALMQUIST: I think we can just
12 take a couple of minutes before you go
13 on for him to move around a little.

14 MR. BLANKS: Oh. Well, okay.

15 MR. PIERCE: Thank you.

16 MR. BLANKS: You want to get
17 up and stretch just a second,
18 Dr. Rowe?

19 THE WITNESS: Yes. I will.

20 MR. BLANKS: We're about to
21 finish on this.

22 (Brief pause)

23 MR. PIERCE: Are you okay?

24 THE WITNESS: Yeah.

25 MR. PIERCE: Okay.

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1 THE WITNESS: Got it loosened up
2 again.

3 MR. PIERCE: Good.

4 (By Mr. Blanks)

5 Q. Would you agree, Dr. Rowe, that when
6 sandblasting in an inadequately ventilated area that

7 an air hood or equivalent equipment supplied with
8 filtered air should be worn by the workers?

9 A. If that's what's required to prevent
10 excessive exposure. As I say, I don't know what all
11 is available, what all is required; but my general
12 understanding is that some sort of ventilation to
13 provide reasonably clean air at least would be
14 appropriate.

15 Q. So that the air that the worker is breathing
16 has a very low amount of the pneumoconiosis-causing
17 dust in the air, right?

18 A. Well, as best as possible.

19 MR. BLANKS: All right. I'll pass
20 the witness at this time on this topic
21 for anybody that has cross-examination
22 on silica-related matters.

23 No takers, Dr. Rowe. You want to
24 take a short break at this point or...

25 MR. PIERCE: Unless you're ready

1 to finish up.

2 MR. BLANKS: Well, I'm through
3 with that part; and we move on to

4 Chapter III now.

5 MS. KETAI: Let's take a break.

6 MR. POFF: Are we done with

7 silicosis now?

8 MR. BLANKS: I reckon.

9 MS. KETAI: Well, they'll think

10 of something to ask at the break.

11 If you want to leave, well, --

12 MR. BLANKS: All right. Be gone.

13 A pox on you. Get out. You've stayed

14 too long here.

15 MR. POFF: Don't want to stay too

16 long.

17 MS. KETAI: Yeah. Really. Get

18 out of here.

19 MR. BLANKS: Well, let's take a

20 quick break, Dr. Rowe, to stretch your

21 legs, get something to drink, and head

22 on toward the finish line.

23 THE WITNESS: I didn't need to

24 take that stretch, did I?

25 MR. BLANKS: Well, maybe you need

1 another one.

2 (AT THIS TIME A BRIEF RECESS WAS
3 TAKEN, AND THE PROCEEDINGS THEREAFTER
4 RESUMED AS FOLLOWS:)

5

6 RE-EXAMINATION BY MR. HOBSON:

7 Q. Dr. Rowe, beginning here on a different
8 topic with you, sir, if we may, in the documents that
9 you produced was a copy of an article that you are
10 shown as a coauthor on with Mr. Wolf and others. It
11 starts on the Bates-numbered page 384 and has
12 Plaintiffs' Exhibit 561000, all caps "DOW," D-O-W, and
13 then in parentheses "AMA-AIH."

14 That is a paper that you were one of the
15 coauthors on; is that right, sir?

16 A. Yes.

17 Q. And this was published in the American
18 Medical Association Archives of Industrial Health,
19 October, 1956, as indicated in the reprint; is that
20 right, sir?

21 A. Yes.

22 Q. Can you tell me if Dow did any other
23 toxicological studies on benzene other than this
24 particular one, sir?

25 A. Not that I recollect.

1 Q. There are a number of references in the
2 bibliography to this paper. And the bibliography
3 begins on page 395 and continues to 396.

4 Would it be accurate, sir, to say that you
5 had copies of all of these items that are listed in
6 the bibliography and had an opportunity to read them
7 and review them when you wrote this paper?

8 A. (Reviewing document) I don't remember
9 that - a number of those.

10 Q. Is it the usual practice sir, when, you cite
11 a paper in a bibliography that you've authored that,
12 indeed, you have read that particular paper that
13 you've referenced and would be familiar with it or you
14 wouldn't have put it in the bibliography?

15 A. That's right.

16 Q. There's a series of referenced items that
17 are shown to - or attributed to the American Petroleum
18 Institute that are called Toxicological Reviews for
19 various materials.

20 Do you happen to have a specific
21 recollection of those, Dr. Rowe?

22 A. I don't have a recollection of them. The
23 name rings a bell, so to speak, but I can't even --
24 I've forgotten, I guess. I don't know what they look
25 like.

1 Q. Can you give me your best recollection,
2 Dr. Rowe, of when you appreciated that there was some
3 association between benzene exposure and leukemia?

4 A. I don't know when it was.

5 Q. Do you recall any conversations that you had
6 while you were an employee of Dow about benzene and
7 its ability to cause leukemia?

8 A. Yes.

9 Q. Can you tell me, in general, what you
10 recall, sir?

11 A. I just recall that it was rather unique in
12 that category of aromatic hydrocarbons.

13 Q. Is there any way that you could tell me how
14 far back in time, even to the nearest decade, that you
15 would have had these conversations about benzene and
16 leukemia while you were a Dow employee, sir?

17 A. I -- I don't remember the situation, even.

18 Q. If you'll notice, Reference 5 to your
19 bibliography there happens to be one of the A.P.I.
20 Toxicological Reviews, this one for benzene. And it's
21 dated 1948.

22 A. Uh-huh.

23 Q. If -- The fact that it's referenced here as
24 No. 5 -- I think you told me earlier you would have
25 had that document and would have read it. Would a

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1 reference to leukemia in a document like that be
2 something that you would have likely noticed, or can
3 you tell me?

4 A. I think that it would have been very -- If
5 it was in there. I don't know that. If it had been,
6 I'm sure we would have been - it would have struck us,
7 a note of concern.

8 Q. As of the time you left Dow as their
9 employee, would you give me, if you might recall, sir,
10 your understanding of benzene's ability to cause
11 leukemia at that point in time?

12 A. I guess I really don't know how to answer
13 your question. Try it again on me.

14 Q. All right, sir. I'm trying to find out if
15 you can relate to me -- And I know it's been some time
16 ago but -- Trying to learn what your appreciation was
17 at the time you left Dow Chemical as its employee
18 about benzene and the ability of benzene to cause
19 leukemia in humans.

20 A. Okay. I think that was very well known and

21 long before I left the company, but I can't tell you

22 exactly when I learned it.

23 Q. Is it your understanding, sir, that benzene

24 can cause different kinds of leukemia or one kind of

25 leukemia? Can you help me with that, please?

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1 A. Well, it -- As I recollect, it does produce

2 leukopenia at some stages. And it's somewhat

3 different in different species, as I remember; but I

4 don't remember the details now.

5 Q. Would you recall, Dr. Rowe, that if you look

6 in the medical and scientific literature as of the

7 time you left Dow that there were reports that benzene

8 could cause various kinds of leukemia in humans?

9 MR. PIERCE: I'm going to object

10 to the form of the question.

11 Would you identify which specific

12 types of leukemia you claim are

13 indicated by the time Dr. Rowe left Dow

14 as in any way related to benzene

15 exposure.

16 MR. HOBSON: Yes, sir. I have in

17 mind the myelogenous leukemias and the

18 lymphatic leukemias.

19 A. I just don't -- I'm not sure of myself. I

20 don't know.

21 (By Mr. Hobson)

22 Q. Do you recall a text called Industrial

23 Toxicology by Hamilton and Hardy?

24 A. Yes. That is quite ancient.

25 Q. I think there were several editions of it;

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1 and it does go back to the first edition being a very,

2 very long time ago. Would you recall --

3 A. I remember the name, yes.

4 Q. Is that a textbook that you would look at

5 with any kind of authority?

6 A. I would certainly look at it with - because

7 both of those people were very highly respected, I

8 guess, by the community.

9 Q. But as we sit here today, you can't recall

10 ever coming to an appreciation for whether or not

11 benzene can cause any one kind of leukemia or other

12 kinds of leukemia: would that be a fair statement?

13 MR. PIERCE: Asked and answered.

14 A. I've forgotten, I guess. I just don't know

15 now.

16 Q. I noticed in your paper that was published
17 in 1956 that we referred to earlier that you reported
18 on effect levels. And I wondered if you could help me
19 with part of that, Dr. Rowe, and make sure I'm reading
20 it accurately.

21 There's a Table 6 which is on the Bates
22 number 390, page 6 of your article. You see Table 6
23 there, sir?

24 A. Yes.

25 Q. And as I read Table 6, the levels of

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1 exposure that you tested for the different species,
2 the lowest levels that you used all showed an effect
3 in the species that received the exposure. Is that
4 the correct interpretation of that table, sir?

5 A. Yes.

6 Q. And over -- If you'll look, sir, on Table
7 11, it seemed to be a little bit confusing to me. And
8 I wanted you to explain to me precisely what you meant
9 as one of the authors of this paper. Table 9 which --

10 A. Table 9?

11 Q. I'm sorry. On page 9, Table 11.

12 A. Oh, okay.

13 Q. It says "Comparison of Results of Repeated
14 Vapor Inhalation Studies on Animals Exposed to Benzene
15 and Some Alkylated Benzenes." And under "Material"
16 the first one listed is benzene. And it lists the
17 species tested next. And then there's a column that
18 says "No Effect Level, Parts Per Million"; and you
19 have an entry there for benzene.

20 Could you read that entry and then explain
21 to me how you meant that?

22 A. (Reviewing document) Would you please
23 repeat your question. I --

24 Q. Yes, sir.

25 A. I'm on the right spot here now.

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1 Q. Okay, sir. Under "No Effect Level, Parts
2 Per Million" in Table 11 --

3 A. Yes.

4 Q. -- on page 9 of the article, in the row for
5 benzene, --

6 A. Yes.

7 Q. -- under that entry, it says "Not found:
8 well below 80." Were you intending to communicate
9 there that you did not determine a no-effect level for
10 benzene in this experiment?

11 A. That's correct.

12 Q. And that you believed that the no-effect

13 level for benzene in this experiment was well below 80

14 parts per million?

15 A. That was our interpretation.

16 Q. Did you ever determine, that you can recall,

17 what a no-effect level for benzene exposure was at Dow

18 Chemical?

19 A. I don't remember.

20 Q. Can you recall, Dr. Rowe, what it was at Dow

21 that led you to do this work on benzene and alkylated

22 benzenes?

23 A. Yes.

24 Q. Would you tell us, please.

25 A. Because of the effect of benzene, which was

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1 known, the questions came up primarily because we were

2 manufacturing ethyl benzene, styrene, a-methyl

3 styrene, and vinyl toluene and - which are closely

4 related to benzene. And the question logically came

5 up will these materials elicit a response similar to

6 that of benzene. So, in this study we used benzene as

7 a positive control. It was not a study on benzene for

8 the sake of benzene. It was a -- It was simply a
9 control - positive control - for evaluating the
10 potential of the other materials to produce a - a
11 hemolytic - hemological ex - effect and other
12 pathology, as well.

13 Q. Was benzene a product that or material that
14 Dow was using or manufacturing in its facilities in
15 the 1950's about the time this article was written?

16 A. Yes.

17 Q. And I was curious, sir. Would you know if
18 benzene was either used or manufactured by Dow when
19 you joined the company in the late Thirties?

20 A. I'm sorry. I didn't get...

21 Q. Would you recall, sir, if -- When you joined
22 Dow in the late Thirties, was benzene either being
23 used or manufactured at Dow?

24 A. I'm quite certain it was not being
25 manufactured, but I can't answer your question. I

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1 don't know.

2 Q. Is there a time that - or an approximation
3 of a time that you can give me that you learned that
4 Dow did use benzene in a process at manufacturing
5 activities?

6 A. I can't -- I don't know.

7 Q. So, sometime at least around 1956, though,
8 you know that Dow did use benzene in some of its
9 processes?

10 A. I'm sure Dow used benzene because they used
11 it as an intermediate in the chemical synthesis. I
12 don't know when this started.

13 Q. Was Dow already making some of these
14 alkylated benzenes at the time you did this work in
15 1956?

16 A. Yes.

17 Q. And had they been making some of these
18 alkylated benzenes for a number of years; or would you
19 know, sir?

20 MR. PIERCE: Objection to the
21 form; asked and answered.

22 A. I don't know exactly when these particular
23 benzene derivatives were first produced, but I would -
24 I would say that the article was published in '56.
25 So, the work was actually done before that. And I

1 don't know just how long or the period of time it took
2 to get all the pathology done and the publication -

3 the reports written. I don't remember.

4 Q. I noted, sir, on page 388 of the -- That's

5 the Bates number. It's page 4 of the article,

6 itself. On the right-hand column - It's numbered

7 paragraph 2 - it talks about odor and irritation

8 experiments. Do you see that entry, sir?

9 A. Yes.

10 Q. It talks about human subjects. Was there an

11 activity in your laboratories that called from time to

12 time for you to use human subjects in your

13 experimentation on toxicology?

14 A. We did some, yes.

15 Q. May I ask, sir, how you - how you did that

16 as far as getting the volunteers? I take it they were

17 volunteers to do the work.

18 A. Yes. I was one of them. We used our

19 professional staff in toxicology, everyone thoroughly

20 understanding the situation. And as far as odor and

21 irritation is concerned, that's a very brief

22 exposure. But this is important to identify. If you

23 have a good warning property for a material, it's much

24 less hazardous than one that has no odor or irritating

25 properties.

1 Q. Was there a standard protocol that you used
2 in working with human subjects in the early 1950's, or
3 was this fairly informal in that time period?

4 A. It was quite informal.

5 Q. Would the human subjects always have been
6 those workers there in the toxicological laboratories?

7 A. I -- I think so.

8 Q. I don't see that benzene was used in this
9 particular phase of the experiment. Would that be
10 your understanding of reading this, as well, sir?

11 A. Yes.

12 Q. Was that because you understood that benzene
13 did have the potential to cause serious injury to the
14 bone marrow at this time?

15 A. Yes.

16 Q. Are you aware of any epidemiological studies
17 that Dow did with regard to benzene?

18 A. I don't recall any.

19 Q. Were you involved at all, Dr. Rowe, in any
20 of Dr. Kilian's work with benzene in Texas?

21 A. No.

22 Q. Were you aware of it at the time it was
23 being planned?

24 A. I don't recollect.

25 Q. Are you now aware that Dr. Kilian did do

1 some work with benzene and workers at the Texas
2 facilities with regard to chromosomal aberrations?

3 A. I know he was doing that kind of work, but I
4 don't know what materials he was working with. I
5 don't remember, if I did know.

6 Q. Now, the last six to eight years that you
7 were with Dow, would you have been getting reports of
8 what Dr. Kilian was doing in Texas?

9 A. I don't know.

10 Q. Now, Dr. Kilian was a physician, correct?

11 A. Yes.

12 Q. So, he was in a different organization than
13 you were; and, also, he was in Texas?

14 A. Yes.

15 Q. And the last five or six years you were with
16 Dow, what was your position again, sir?

17 A. I was in a section called
18 Health/Environmental Research.

19 Q. And did your job duties in that position
20 have anything to do with what Dr. Kilian would have
21 been planning on doing in Texas?

22 A. I doubt it.

23 Q. Was it your experience, Dr. Rowe, that if a
24 physician were going to carry out the kinds of tests

25 that Dr. Kilian did with regard to chromosomal

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1 aberrations in benzene exposures that they would need
2 approval for that; or would you know one way or the
3 other?

4 A. I don't know -- I can't recall if I ever did
5 know what he did; so, I don't know.

6 Q. Would you know of a Dr. Ott, O-t-t, at Dow?

7 A. Doc -- Mr. Ott?

8 Q. Is it Mr. Ott?

9 A. Yeah. Yes.

10 Q. How is it that you knew of Mr. Ott?

11 A. He was a biostatistician. He was a
12 statistician, I guess.

13 Q. And an employee of Dow, I take it.

14 A. Yes.

15 Q. We had some testimony earlier about the
16 establishment of an epidemiological program at Dow.

17 Was Mr. Ott part of that program that was
18 established, the epidemiology --

19 A. I believe so.

20 Q. Could you tell me, if you have any opinion,
21 of Mr. Ott's ability to do his work at Dow?

22 A. We considered him to be competent in that -
23 in his area.

24 Q. Would Mr. Ott be doing the kind of work that
25 you as a scientist would rely upon?

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1 A. Well, I don't - I believe Mr. Ott would have
2 been a - the prime investigator. On any of this type
3 of work I believe it would have been in an association
4 with an epidemiologist in the medical department.

5 Q. Would you know of a Mr. Bond or Dr. Bond?

6 A. Who?

7 Q. Bond, B-o-n-d.

8 A. That name is not familiar.

9 MR. BLANKS: James Bond.

10 (By Mr. Hobson)

11 Q. Did you ever have any involvement, Dr. Rowe,
12 with doing any work with benzene in trying to
13 determine the amount of benzene that would be expired
14 by Dow employees after exposure to benzene in their
15 expired air?

16 A. Some work of that nature was done, but I
17 don't recall that benzene was included. It may have
18 been. I don't know.

19 Q. But you never did anything any of that work,

20 yourself?

21 A. No.

22 Q. Or your laboratory?

23 A. Well, I may have participated in some

24 experiments to - in what we would call "metabolic

25 experiments." And I think many of us participated in

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1 that. But certainly not benzene.

2 Q. But not for benzene?

3 A. No.

4 Q. Are you aware of any human experiments at

5 Dow during your tenure that involved benzene?

6 A. No.

7 Q. And, I mean, you say that rather with some

8 assurances. Why would that be?

9 A. I know of none but - at least in - that I

10 had anything to do with.

11 Q. Would you have been opposed to any kind of

12 human experimentation with benzene while you were a

13 Dow employee?

14 A. I guess it would be -- Generally, yes. But

15 there may have been... Well, possibly some things can

16 happen when you have an accidental exposure, for

17 instance, and you know that it happened. Then it's
18 sometimes advantageous to collect biological samples
19 for purposes of possible use in monitoring when
20 questions are asked and things like this. I don't
21 know that anything purposefully was ever done.

22 Q. Yes, sir. And that was my question, really,
23 would be purpose - purposeful or intentional
24 experimenting --

25 A. I'm not aware of any.

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1 Q. And you would caution against doing any
2 intentional or purposeful exposures in human
3 experimentation?

4 MR. PIERCE: You mean at any level
5 or --

6 MR. HOBSON: Yes.

7 MR. PIERCE: And what time
8 frame are we --

9 MR. HOBSON: Any time he was a Dow
10 employee, even from the early
11 Thirties. I'm sorry. Late Thirties.

12 A. I don't necessari -- I wouldn't say that I
13 would categorically. It would depend upon the
14 particular circumstances. Certainly it would be done

15 with extreme caution.

16 (By Mr. Hobson)

17 Q. Now, you mentioned some biological
18 monitoring in connection with accidental exposures in
19 talking about benzene.

20 Are you aware of any of that work actually
21 being done at Dow, Dr. Rowe?

22 A. Any of what work?

23 Q. Biological monitoring following an
24 accidental exposure to benzene.

25 A. No, I'm not.

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1 Q. Let me tell you, sir, that I have heard -
2 and I wonder if you can confirm - that there were a
3 number of employees - less than a dozen - who did have
4 an accidental exposure to benzene in the early 1950's
5 that was on the order of a hundred parts per million
6 for some 90 days. Does that have any familiarity to
7 you at all, Dr. Rowe?

8 A. I don't remember that. It may have
9 happened. I don't know.

10 Q. Is that the kind of information that, if it
11 did happen, you would want to have known about and

12 likely would have recalled?

13 A. Well, --

14 MR. PIERCE: Object to the
15 speculative nature of that
16 question.

17 But go ahead and answer it.

18 A. I would have expected so.

19 Q. Can you tell me, Dr. Rowe, if in the
20 instance of a carcinogen whether or not you can
21 accurately and reliably determine a no threshold in
22 humans?

23 MR. PIERCE: I'm sorry. A what
24 kind of threshold?

25 MR. HOBSON: Accurately and

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1 reliably establish a no effect
2 threshold.

3 A. I don't know that you can. It comes down to
4 a matter of diminishing effects. And where that curve
5 tails off to zero nobody knows. There are statistical
6 ways of looking at it which I think are fallacious in
7 many instances.

8 (By Mr. Hobson)

9 Q. Would you agree then, sir, that the prudent

10 thing to do is to aim at the complete elimination of
11 exposure as much as you can do?

12 MR. PIERCE: I'm going to object
13 to that question as asked and answered
14 numerous times. The witness has
15 testified that zero exposure is the way
16 to go. I think he has been asked that
17 question at least six or seven times.

18 But once again...

19 A. Well, you certainly do as much as you can to
20 diminish the probability of exposure. It doesn't mean
21 that you can reach zero. There is no such thing if
22 you're going to work with a material and maybe not
23 even if you're not because there are other things
24 around that may elaborate benzene. Who knows?

25 Q. Dr. Rowe, we've previously marked Exhibit 17

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1 to your deposition. And there's one of these charts
2 that you identified for us. And I see at the top it
3 says "Occupational Exposure." And you've listed a
4 number of materials. And in the center of the middle
5 column is listed benzene (indicating).

6 Can you put in context for me how you would

7 have used this slide in any of your speeches?

8 A. No. I don't -- I would expect it would be
9 in the text - one of those texts that I gave you.

10 Q. It struck me that most, if not all, of these
11 materials that are listed on this chart have been
12 reported as having the potential to cause cancer. I
13 see coal soot, coal tar, petroleum - although that's a
14 very broad term --

15 A. Yeah. That's too broad.

16 Q. -- petroleum coke, wax - again a very broad
17 subject --

18 A. Uh-huh.

19 Q. -- creosote, anthracene. And it
20 continues.

21 MR. PIERCE: And includes iron
22 oxide and wood dust and --

23 MR. HOBSON: Yes.

24 MR. PIERCE: -- leather.

25 MR. HOBSON: Well, I think

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1 it's leather dust.

2 MR. PIERCE: Leather dust.

3 MR. HOBSON: As well as asbestos

4 and chromium and nickel.

5 A. I think it was used as an example of
6 materials that were suspected of being carcinogens.

7 (By Mr. Hobson)

8 Q. Can you give me any kind of a time period
9 when you would have first prepared this particular
10 list, Dr. Rowe?

11 A. I'm -- I'm not certain that I prepared that
12 list. I think maybe that was a copy from a
13 publication. And I don't know just when it was that I
14 used it. It was some years ago.

15 Q. All right, sir. You can't even put it in a
16 decade for me?

17 A. No.

18 Q. I notice the next one that we happen to turn
19 to in this particular exhibit at the top it's titled,
20 "Cancer Triggering Diseases." And on here is
21 pernicious anemia. Would you have had reference to
22 benzene with that, Dr. Rowe?

23 MR. PIERCE: I'm going to object
24 to that question.

25 And I'd like to bring to your

1 attention I believe you are completely

2 misinterpreting the term "pernicious
3 anemia." And if you're trying to imply
4 that that's a benzene-related anemia, I
5 just -- That's not my place. I'm
6 sorry.

7 I withdraw that objection.

8 MR. HOBSON: That's what I thought
9 I was asking him. But anyway...

10 A. I don't remember.

11 MR. BLANKS: It was a pernicious
12 objection, as well.

13 MR. PIERCE: I get offended by
14 such obvious scientific inaccuracies.
15 I'm sorry. I should not have reacted
16 that way.

17 (By Mr. Hobson)

18 Q. Can you tell me, Dr. Rowe, if you recall,
19 how you intended to use the term "cancer triggering
20 diseases" that heads up this chart?

21 A. If memory serves me correctly, those were
22 associated with existing conditions in which perhaps
23 they were activators or at least would make a person
24 more susceptible to development of cancer from other
25 stresses or exposures.

1 Q. And can you recall, sir, in the instance of
2 listing pernicious anemia --

3 A. I don't recall details on those.

4 Q. All right, sir. There's another chart that
5 makes up Exhibit 17 that appears to show a flow of
6 information. And on the left it says "inheritance,"
7 on the right it says "mutagens." And those two arrows
8 seem to come together on "defective chromosomes."

9 Can you tell me how you would have used this
10 chart and, in particular, that part of it, Dr. Rowe?

11 A. I don't remember enough of the detail now to
12 elaborate on it.

13 Q. And would that also be so for the rest of
14 this particular chart?

15 A. I think so, yes.

16 Q. Did you use benzene for purposes other than
17 positive control at your laboratory there at Dow; in
18 other words, did you use it as a solvent or as an
19 analytical agent?

20 A. Possibly. I don't know. I don't remember
21 that we did, but we could have because there are -
22 sometimes you have to use benzene. It's a very
23 excellent solvent. If you want to dissolve
24 something that won't dissolve something else, you use
25 benzene.

1 Q. Would you recall if you had any kind of a
2 medical surveillance program or a biological
3 monitoring program for your workers there at the
4 laboratory who would have done work such as the
5 benzene experiment that was reported in 1956?

6 MR. PIERCE: You mean -- Excuse
7 me. That question is ambiguous.

8 Do you mean only for the workers
9 who did - who might have done the
10 benzene work or for anybody who worked
11 in that laboratory?

12 MR. HOBSON: I was asking about
13 the ones who did the benzene work.

14 A. No, we did not.

15 (By Mr. Hobson)

16 Q. And, Dr. Rowe, if I could, I want to move to
17 another subject with you.

18 Did you ever do any work in your
19 laboratories at Dow, that you might recall, that dealt
20 with nitrosamines?

21 A. I don't remember working with nitrosamines.

22 Q. Is the area of nitrosamines and
23 carcinogenicity something that you feel that you have

24 knowledge about?

25 A. Those are in the category of aromatic amines

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1 and the derivatives which as a class are suspect, I

2 guess. We would have recognized that.

3 Q. And the aromatic amines were known to be

4 human carcinogens at least from the late Thirties; is

5 that correct, sir?

6 A. I don't know the dates. Not all aromatic

7 amines are carcinogenic, as I understand; but there

8 are - that is a class of compounds that's associated

9 usually with the dyes that are of concern.

10 Q. And when you say that nitrosamines would be

11 suspect, how did you mean that, sir?

12 A. Well, they belong to an amine group or

13 amine-type compound that - that one would be cautious

14 about.

15 Q. Are you saying that because you know that

16 some of the materials in this family of chemicals have

17 known carcinogenic properties you would be suspicious

18 of the other families until you had evidence that they

19 were not carcinogenic?

20 MR. PIERCE: Objection to the

21 form; leading, leading.
22 Why don't you ask him what he
23 thinks.
24 A. I would -- I would say that it would be
25 analogous to the situation that we discussed earlier

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1 with respect to benzene and benzene derivatives.
2 Until you know about the others, you don't know. And
3 you have concerns because they belong to a class.
4 Q. And I think you've put in your writings in
5 the past that one of the jobs of a toxicologist is to
6 look at materials that have known properties and
7 extrapolate to other members of that same family of
8 chemicals for a suspicion and then do testing as
9 appropriate. Would that be accurate, sir?
10 MR. PIERCE: I'd like to object to
11 the form of the question as being
12 multipart.
13 A. Well, that, I think, is a reasonable
14 approach to the thing. Until you've tried it, you
15 don't know.
16 Q. And that's what you were doing in 1956 in
17 your publication on benzene and the alkylated
18 benzenes. Yet you knew about benzene. You had

19 suspicions about the other materials. And, so, you
20 tested them to show that they did not affect the bone
21 marrow and the blood as benzene did. Is that right,
22 sir?

23 A. That's correct.

24 MR. PIERCE: I'd like to object to
25 the form as a mischaracterization of

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1 the nature of that scien - paper which
2 you brought to his attention as an
3 exhibit earlier.

4 But go ahead.

5 A. That was our approach.

6 Q. Would you agree with me, Dr. Rowe, that
7 certain polynuclear aromatic hydrocarbons have been
8 known to be human carcinogens for at least 50 years,
9 if not much longer?

10 A. What -- Would you repeat, please.

11 Q. Yes, sir. Would you agree with me that
12 certain polynuclear aromatic hydrocarbons have been
13 known to cause cancer in humans for at least 50 years,
14 if not longer?

15 A. I don't know the time frame, but I'm aware

16 that - that certain polycyclic's aromatic compounds
17 have been associated with that.

18 Q. One of the materials on your chart that we
19 looked at a moment ago was anthracene. That's a
20 polynuclear aromatic hydrocarbon, is it not?

21 A. Yes.

22 Q. And it has known carcinogenicity, does it
23 not?

24 A. I -- I don't remember offhand that - the
25 information on anthracene.

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1 Q. Would you recall if Dow either purchased or
2 sold any materials that were rich in polynuclear
3 aromatic hydrocarbons, sir?

4 MR. PIERCE: Objection to the
5 form in the utilization of the vague
6 and ambiguous term "rich."

7 MR. BLANKS: Everybody knows
8 what's rich, who's rich and who's not.

9 MR. PIERCE: Go ahead.

10 A. I don't recollect that they did.

11 Q. Did Dow manufacture any products, to your
12 knowledge or recollection, that were used in the
13 rubber industry?

14 A. We made materials that were used in the - in
15 the synthetic rubber industry.

16 Q. And what kinds of materials would those have
17 been, Dr. Rowe, that you might recall?

18 A. It would be styrene and butadiene.

19 Q. Would you have made any of the other lesser
20 components of synthetic rubber such as antioxidants,
21 the retardants, the short stops, any of the other
22 materials that you might recall that are used in the
23 manufacture of synthetic rubber?

24 MR. PIERCE: Could we ask them
25 individually or -- Change the question

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1 so it really isn't a compound question
2 with these multi parts.

3 MR. HOBSON: Well, we might be
4 done with the whole topic, depending on
5 the answer.

6 A. I don't know.

7 MR. BLANKS: So, there.

8 MR. PIERCE: You were correct.

9 MR. HOBSON: I think that's all
10 I've got on this subject area.

11 I'll pass the witness for any
12 cross-examination.

13 There being none, I thank you for
14 your patience, Dr. Rowe. And I think
15 that for today's activities we are
16 concluded. Thank you, sir.

17 THE WITNESS: Okay.

18 (AT THIS TIME, 3:36 P.M., THE
19 PROCEEDINGS OF MAY 12, 1993, WERE
20 CONCLUDED.)
21
22
23
24
25

1 THE STATE OF ARIZONA:

2 COUNTY OF :
3

4 I, VERALD K. ROWE, hereby certify that I
5 have read the foregoing Vol. II transcript of my
6 testimony, given in the foregoing numbered and styled
7 case, and that same is true and correct to the best of
8 my knowledge and belief.

9 I further certify that any and all
10 corrections have been made on a separate page and
11 initialed by me.

12 This day of , 19 .

13

14

15 VERALD K. ROWE

16 SWORN TO AND SUBSCRIBED BEFORE ME this

17 day of , 19 .

18

19 NOTARY PUBLIC

20 My Commission Expires:

21

22

23

24

25

675

1 THE STATE OF TEXAS :

2 COUNTY OF JEFFERSON:

3

4 I, SANDRA S. SULLIVAN, a Certified Shorthand

5 Reporter for the State of Texas, hereby certify

6 pursuant to the Texas Rules of Civil Procedure and/or

7 agreement of the parties present to the following:

8

9 That this Vol. II deposition transcript is a
10 true record of the testimony given by Verald K. Rowe,
11 the Witness named herein, on May 11, 1993, and May 12,
12 1993, after said Witness was duly resworn by me.

13

14 SWORN TO AND SUBSCRIBED by me on the
15 1st day of June, 1993.

16

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18 SANDRA S. SULLIVAN, CSR, RPR

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1 B-126,986
 2 RUSSELL ALLEN, ET AL * IN THE DISTRICT COURT OF
 3 VS. * JEFFERSON COUNTY, TEXAS
 4 AMERICAN PETROFINA, ET AL * 60TH JUDICIAL DISTRICT

5 A-134,614
 6 FRENCH HICKS, ET AL * IN THE DISTRICT COURT OF
 7 VS. * JEFFERSON COUNTY, TEXAS
 8 BETHLEHEM STEEL CORP., *
 9 ET AL * 58TH JUDICIAL DISTRICT

10 B-141,242
 11 ROOSEVELT SCOTT * IN THE DISTRICT COURT OF
 12 VS. * JEFFERSON COUNTY, TEXAS
 13 AMERICAN OPTICAL CORP., *
 14 ET AL * 60TH JUDICIAL DISTRICT

15 A-138,633
 16 MARGARET FAULKNER, ET AL * IN THE DISTRICT COURT OF
 17 VS. * JEFFERSON COUNTY, TEXAS
 18 AKRON CHEMICAL CO., ET AL * 58TH JUDICIAL DISTRICT
 19

20 A-136,143
 21 KEITH GIBLIN, ET AL * IN THE DISTRICT COURT OF
 22 VS. * JEFFERSON COUNTY, TEXAS
 23 MOBIL OIL CORPORATION, *
 24 ET AL * 58TH JUDICIAL DISTRICT

VIDEO DEPOSITION OF VERALD K. ROWE

23 was taken at the instance of the Plaintiffs at the
24 Sheraton Greenway, 2510 W. Greenway, Phoenix, Arizona,
25 pursuant to Stipulation of Counsel contained herein.

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2 respective client or clients in the cause of action or
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1 S T I P U L A T I O N

2

3 IT IS STIPULATED AND AGREED BY COUNSEL FOR
4 THE PARTIES HERETO:

5 That the deposition of the Witness named
6 herein is taken pursuant to Notice;

7 That the Witness may sign the deposition
8 before any duly authorized and acting Notary Public
9 for the appropriate area in which signature is
10 obtained;

11 That this deposition, or any part thereof,
12 when so taken may be used upon the trial of this cause
13 with the same force and effect as if the Witness were
14 present in court and testifying in person;

15 That all objections, other than those that
16 relate to the form of the question and responsiveness
17 of the answer, are hereby preserved and may be made at
18 the time any testimony herein is sought to be offered
19 upon the trial of this cause, despite no objection

20 having been made at the time the testimony was taken;

21 That the deposition is to be videotaped by

22 Paul Robichau;

23 That Sandra S. Sullivan, a Certified

24 Shorthand Reporter in and for the State of Texas, may

25 act as a Certified Shorthand Reporter in and for the

18

1 State of Arizona for the purposes of swearing the

2 Witness in this deposition;

3 That the original transcript of the

4 deposition, pursuant to Rule 206 of the Texas Rules of

5 Civil Procedure, will be given to Joseph C. Blanks for

6 safekeeping and use at trial. In the event the

7 original deposition is unavailable at the time of

8 trial, an unsigned copy of the transcript may be

9 utilized in lieu thereof.

10

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1 (REPORTER'S NOTE: WHEN ASKED BY
2 THE REPORTER TO STATE ANY STIPULATIONS
3 THEY MAY HAVE FOR PURPOSES OF TAKING
4 THE DEPOSITION, COUNSEL STATED AS
5 FOLLOWS:)

6

7 MR. HOBSON: Pursuant to the
8 Rules.

9 And would the witness like to
10 read and sign his deposition?

11 MR. PIERCE: Yes, he would.

12 Additionally, I'd like to make a
13 statement for the record at this time
14 that this witness is not and has never
15 been an officer, managing agent, or

16 director of The Dow Chemical Company
17 nor of any other defendant in this
18 matter; that the witness has not been
19 properly served with any subpoena but
20 is here voluntarily as a fact witness;
21 and, additionally, that the witness
22 does have a hearing problem. He would
23 appreciate it if the questioner would
24 speak up and also speak slowly and try
25 to enunciate carefully when asking your

20

1 questions. Also, please try to face
2 the witness when questioning him. And,
3 additionally, in particular, please,
4 everyone, try to avoid rustling papers
5 because this can interfere with his
6 hearing aids.

7 MR. BLANKS: If you'd kindly
8 identify yourself so we know who you
9 are, sir.

10 MR. PIERCE: I am Stanley Pierce
11 with the law firm Rivkin, Radler &
12 Kremer; and I am V. K. Rowe's attorney.

13 MR. BLANKS: Well, also for the

14 record, Mr. Rowe was not served with a
15 subpoena, although he certainly could
16 have been, at the request of Dow
17 Chemical Company's counsel who assured
18 us that he would appear through their
19 cooperation pursuant to the notice as
20 though he had been served and
21 presumably would also bring with him
22 such documents as were addressed in the
23 subpoena duces tecum that was part of
24 the notice. And our reason for not
25 serving this gentleman was to

21

1 accommodate him and Dow's attorneys.
2 MR. PIERCE: He is present.
3 MR. BLANKS: Very well.
4 And thank you, Mr. Rowe, for
5 joining us today.

6

7 VERALD K. ROWE,
8 having been duly sworn, testified as follows, to-wit:
9 EXAMINATION BY MR. HOBSON:
10 Q. Would you introduce yourself, please, sir.
11 A. My name is Verald Keith Rowe.

12 Q. And where do you reside, please, sir?

13 A. I reside in Sun City, Arizona.

14 Q. I understand it's "Dr. Rowe." I understand
15 that you have an honorary doctorate degree. Is that
16 correct?

17 A. That is correct.

18 Q. Dr. Rowe, I understand that you are a
19 retired employee of The Dow Chemical Company. Is that
20 right?

21 A. Would you please repeat.

22 Q. Yes, sir. I understand that you are a
23 retired employee of The Dow Chemical Company.

24 A. That is correct.

25 Q. Would you tell us, sir, when you began

22

1 working for Dow.

2 A. I began working for Dow the 1st of November,
3 1937.

4 Q. And what was your first job with Dow,
5 please, sir?

6 A. I was classified as a biochemist.

7 Q. What were the duties of a biochemist, the
8 position that you had when you began in 1937 with
9 Dow?

10 A. I was one of the --

11 MR. PIERCE: I would like to

12 object to the form of the question.

13 Are you asking Dr. Rowe what his

14 specific duties are or all biochemists'

15 within Dow at that time?

16 Q. I would like to know what you did,

17 Dr. Rowe. Let me do the question again, please, sir.

18 Would you tell us, Dr. Rowe, what you did as

19 a biochemist when you first joined Dow in 1937.

20 A. I was working mostly with the animals in

21 experimental work that was in progress.

22 Q. In what way, sir?

23 A. Handling, treating.

24 Q. Did you do anything other than handle and

25 treat the animals as a biochemist when you first began

23

1 working in 1937?

2 A. Recorded observations and then pertinent

3 information relative to the work that was to be done.

4 Q. Tell us what you mean by "treated" in regard

5 to these animals.

6 A. Administering various materials to the

7 animals.

8 Q. What group or organization within Dow
9 Chemical Company were you working within in 1937 when
10 you began?

11 A. The biochemical research laboratory.

12 Q. Was the biochemical research laboratory
13 already established when you began working in 1937?

14 A. Yes.

15 Q. Do you have any understanding as to when the
16 biochemical research laboratory at Dow would have been
17 begun - would have started?

18 A. Yes.

19 Q. When is that, sir?

20 A. The first person involved in that was hired
21 in the fall of 1933.

22 Q. Based on your work and your review of
23 records at Dow, do you have some understanding of the
24 history of the biochemical research laboratory from
25 1933 until 1937 when you began?

1 MR. PIERCE: Objection to the form
2 of the question.

3 A. Yes.

4 Q. Would you tell me your understanding of who
5 it was that began the biochemical research laboratory

6 at Dow, if you know, and who it was that was involved
7 in the management of that group, sir, from 1933 to
8 1937.

9 MR. PIERCE: Continue the
10 objection.

11 A. Dr. Don D. Irish was the director of the
12 laboratory.

13 Q. Would you know, sir, for how long Dr. Irish
14 was the director of the laboratory?

15 A. I do not know the date he retired from the
16 laboratory.

17 Q. Would you know approximately when he
18 retired?

19 A. It would have been in the neighborhood of
20 1970.

21 Q. Would you know if Dr. Irish is still living?

22 A. He is not.

23 Q. Was Dr. Irish in the same position as
24 director of the laboratory from 1933 until his
25 retirement?

1 A. Yes.

2 Q. Do you have an understanding of what
3 Dr. Irish's training was, sir, his educational

4 background?

5 A. He was trained as a biochemist.

6 Q. Would you know where he was trained?

7 A. University of Cincinnati.

8 Q. Did Dr. Irish, to your knowledge, have any

9 assistants in 1937 who helped him in the management of

10 the biochemical research laboratory?

11 A. Yes.

12 Q. Who would those have been, please, sir?

13 A. Dr. Edwin E. Dunn and Dr. Edgar M. Adams.

14 Q. What's your understanding of Dr. Dunn's

15 title in 1937, sir?

16 A. He was assistant director of the laboratory

17 and in charge of microbiological research.

18 Q. And Dr. Adams: would you tell me what you

19 understood his job to be in 1937, please.

20 A. He was in charge of toxicology section.

21 Q. Were there only those two sections in 1937

22 of the biological research laboratory, microbiology

23 and toxicology?

24 A. No.

25 Q. What others existed, please?

1 A. There were subsections under Dr. Dunn having

2 to do with preservation of wood and work with

3 development of agricultural chemicals.

4 Q. Any other subsections?

5 A. Not that I recall.

6 Q. Which one of these groups or which groups

7 did you work in, sir, in 1937?

8 A. In the toxicology group.

9 Q. To whom did you report when you began in

10 1937, please?

11 A. Dr. Adams.

12 Q. And then Dr. Adams would have reported to

13 Dr. Irish, is that correct, as you understood it?

14 MR. PIERCE: Objection to the

15 form.

16 Q. I'm sorry. I didn't get your answer, sir.

17 A. Yes.

18 Q. Would you give me some of the details of the

19 kinds of things you were doing in 1937 at the

20 biochemical research laboratory.

21 A. We were studying the toxicology of many

22 materials of interest to the company.

23 Q. Would you give me some examples of those

24 materials, please.

25 MR. PIERCE: This continues

1 through - up through 1937?

2 MR. HOBSON: That's right.

3 A. At that time we were working with - with
4 the - with phenols, chlorophenols, methyl bromide. I

5 don't recall what else was going on at that time.

6 Those were major areas.

7 (By Mr. Hobson)

8 Q. What kinds of work activities did you,
9 yourself, have in this 1937-1938 time period shortly
10 after you joined Dow in any action involving phenols?

11 A. We would be administering various phenols to
12 animals.

13 Q. What kind of animals were you using in this
14 time period, please, sir?

15 A. Rats, guinea pigs, rabbits.

16 Q. And would you describe the kind of testing
17 that you were doing with the phenol on rats, guinea
18 pigs, and rabbits, please.

19 A. We were studying the effect of the materials
20 and the amounts that were required to produce whatever
21 effect it did, what that effect was, and by various
22 routes of administration.

23 Q. Would you give me your best recollection of
24 the various routes of administration that you were
25 testing in this 1937 and shortly thereafter time

1 period for these materials on these animals.

2 A. Would you please rephrase that or --

3 Q. Yes, sir. I'd like to know just what it was

4 you were doing with phenol and the rats, the guinea

5 pigs, and the rabbits. How were you doing whatever it

6 was you were doing with this material and these

7 animals?

8 A. We would administer the material by stomach

9 tube - various dosages. We would apply it to the

10 skin, measure rate of absorptions. And with those

11 materials, eye irritation. We did not do any vapor

12 work with those.

13 Q. Did the biochemical research laboratory have

14 the capability of working with vapors and dosing

15 animals with vapors in the 1937 time period when you

16 began with Dow?

17 A. Yes.

18 MR. PIERCE: Objection to the form

19 of the question.

20 Q. What vapors do you recall that you worked

21 with in the biochemical research laboratory within,

22 say, the first two years that you went to work for

23 Dow?

24 MR. PIERCE: Objection to the form

25 of the question.

29

1 But answer it if it's answerable.

2 A. Methyl bromide.

3 Q. Would you describe what kind of work you did

4 evaluating the vapor of methyl bromide in this 1937

5 and shortly thereafter time period, please.

6 A. We exposed animals to various concentrations

7 for various periods of time.

8 Q. What kinds of time periods would you have

9 been looking at, please?

10 A. Anything from minutes to months.

11 Q. Were you familiar with any other

12 similar-type toxicity testing laboratories existing in

13 the Country in the 1937-1938 time period?

14 A. Yes.

15 Q. Where were some of the other laboratories in

16 that era, to your knowledge?

17 A. There was a laboratory at Mellon Institute.

18 There was work going on at the University of

19 Cincinnati, Saranac Laboratory, laboratories of the

20 U.S. Public Health Service, and Du Pont.

21 Q. Were you familiar with the Mellon

22 Institute's toxicological testing laboratory shortly

23 after you went to work for Dow?

24 A. No.

25 Q. When would you recollect that you learned

30

1 about Mellon Institute's laboratories, if you ever

2 did?

3 A. I couldn't tell you.

4 Q. Thirties? Forties? Fifties?

5 A. The Forties.

6 Q. In the Forties when you learned of Mellon

7 Institute's activities, what did you learn?

8 A. I don't know.

9 Q. Where was it located?

10 A. In Pittsburgh.

11 Q. Was Mellon -- Did you have any understanding

12 of its affiliation or how it got its support?

13 A. Yes.

14 Q. What did you understand, sir?

15 A. It was supported by... I will say Allied.

16 Q. Allied Chemical Company?

17 A. I believe it was Allied.

18 MR. PIERCE: Mr. Hobson, I know

19 we're reserving objections other than

20 to form until trial time; but I must

21 say I don't understand why you are
22 bothering Dr. Rowe with questions about
23 what his understanding is of the
24 affiliation of Mellon in the 1940's.
25 How this could be even vaguely relevant

31

1 or likely to lead to information that
2 you can utilize is just beyond me. And
3 I think perhaps if we got to the issues
4 in this matter, we'd all be happier.

5 MR. HOBSON: Well, I believe I'm
6 there.

7 A. I wish to correct that.

8 (By Mr. Hobson)

9 Q. Yes, sir?

10 A. I don't -- It was Carbide - Carbide - United
11 Carbide and Carbon at that time.

12 Q. United Carbon and Carbide?

13 A. I believe it was what we used to call as
14 Carbide - Carbon and Carbide.

15 Q. And not Allied?

16 A. I'm not sure.

17 Q. Did you visit the Mellon Institute at any
18 time?

19 A. Yes.

20 Q. What is approximately the earliest time you

21 can remember visiting the Mellon Institute?

22 A. I can't remember.

23 Q. Would it have been in the Forties, likely,

24 you think?

25 MR. PIERCE: Objection to the

32

1 form; asked and answered.

2 A. Probably more likely in the Fifties.

3 Q. What is your earliest understanding, as best

4 you can recollect now, of what kind of work Mellon

5 Institute was doing in the area of toxicology?

6 A. They were doing much the same sort of thing

7 we were. But the first things that, I believe, were

8 they chlorinated aliphatic hydrocarbons.

9 Q. Was there any particular person that you

10 knew of by name at the Mellon Institute once you

11 became familiar with its activities?

12 A. Henry F. Smyth, Dr. Smyth.

13 Q. Can you recall approximately when it was you

14 met Dr. Smyth?

15 A. Probably about 1940.

16 Q. Can you tell me how it was you came to meet

17 Dr. Smyth, please?

18 A. It was at a convention.

19 Q. Would you remember which one?

20 A. The A.I.H.A.

21 Q. And that's the American Industrial Hygiene
22 Association?

23 A. Correct.

24 Q. Do you have a memory in your mind of
25 actually meeting Dr. Smyth at that meeting?

33

1 A. Yes.

2 Q. Tell me what you recall about the
3 circumstances that led up to meeting Dr. Smyth and
4 what you recall from that meeting, please.

5 A. I was introduced to him by Dr. Irish.

6 Q. Anything else you recall?

7 A. No.

8 Q. And was Dr. Smyth at that time already at
9 Mellon Institute, to your recollection?

10 A. Yes.

11 Q. Do you have any understanding of what
12 Dr. Smyth was doing, what his job involved at Mellon
13 Institute?

14 A. He was -- He was the agent in charge of the

15 sponsors' activity in Mellon Institute. He was also
16 associated with the University of Pittsburgh, I
17 believe; but he was a director of that operation.

18 Q. "That operation" being the Mellon Institute?

19 A. Mellon Institute's toxicology program
20 sponsored by Carbide.

21 Q. Was it your impression at the time that you
22 were introduced to Dr. Smyth by Dr. Irish that
23 Dr. Irish previously knew Dr. Smyth?

24 MR. PIERCE: Are you asking his
25 impression 52 years ago when they met?

34

1 MR. HOBSON: Sure.

2 A. Yes.

3 (By Mr. Hobson)

4 Q. Would you recall if Dr. Smyth ever came to
5 Dow's operations?

6 A. Yes.

7 Q. What's the earliest recollection you have of
8 Dr. Smyth coming to any of Dow's operations?

9 A. I don't remember.

10 Q. I take it it would have been sometime after
11 you met Dr. Smyth.

12 A. Yes.

13 Q. Would you have any understanding as to any
14 of the reasons or the purposes of Dr. Smyth's visits
15 to any of Dow's operations?

16 MR. PIERCE: Objection to the form
17 of the question.

18 Are you asking this witness if he
19 knows what was in Dr. Smyth's mind?

20 MR. HOBSON: No. I think the
21 question was clear. I'm asking for his
22 understandings.

23 A. Would you please rephrase it or restate it.

24 (By Mr. Hobson)

25 Q. Yes, sir. Would you have any understanding

35

1 as to why Dr. Smyth would have been coming to visit
2 any of Dow's operations?

3 MR. PIERCE: Continue the
4 objection.

5 A. I don't know.

6 Q. Was Dr. Smyth at Dow's operations more than
7 once, as you recall?

8 A. Yes.

9 Q. Could you give me some idea of how many
10 times you recall Dr. Smyth might have visited Dow's

11 operations?

12 A. Several times.

13 Q. And can you give me a time period at all of

14 when these visits - these several visits - of

15 Dr. Smyth's would have occurred?

16 A. It would have been during the Forties and

17 Fifties.

18 Q. Can you tell me any of the people that

19 Dr. Smyth would have been meeting at - when he visited

20 Dow's facilities?

21 MR. PIERCE: Objection to the form

22 of the question.

23 A. Well, he would have met with Dr. Irish,

24 Dr. Adams, with me; but I don't know that it was all

25 the time or every time.

1 Q. Do you recall what the reason or what kind

2 of business was being transacted when Dr. Smyth would

3 come and meet with you at Dow?

4 A. I can't say for sure, no.

5 Q. You just don't remember any at all at this

6 point in time?

7 A. (Shaking head negatively) The only thing

8 that I remember on that was there was some discussions

9 with respect to the chlorinated aliphatics and the
10 work that was going on in both places.

11 Q. Was it your understanding that there was
12 some coordination between Dow's work and Mellon's work
13 on this group of chemicals?

14 A. None whatsoever.

15 Q. You were merely exchanging information about
16 what each facility was doing?

17 A. Yes.

18 Q. Do you recall, Dr. Rowe, visiting the
19 University of Cincinnati's toxicology testing
20 facilities?

21 A. Yes.

22 Q. What is your earliest recognition -- What is
23 your earliest memory of the time that you visited the
24 University of Cincinnati's toxicity testing
25 facilities?

1 A. It would have been in the late Forties or
2 early Fifties.

3 Q. Was there someone at the University of
4 Cincinnati's facilities that you dealt with there,
5 that you recall?

6 A. Yes.

7 Q. Who was the person or persons at that
8 location?

9 A. Dr. Kehoe.

10 Q. How is it that you came to know Dr. Kehoe?

11 A. I was introduced to him by Dr. Irish.

12 Q. And would you recall the circumstances of
13 you meeting Dr. Kehoe?

14 A. I believe it was at his laboratory.

15 Q. There in Cincinnati?

16 A. Yes.

17 Q. And did Dr. Irish and you then travel to the
18 University of Cincinnati?

19 A. Yes.

20 Q. What do you recall about the capabilities
21 for toxicity testing at the University of Cincinnati
22 in this early time period when you first met
23 Dr. Kehoe?

24 MR. PIERCE: Objection to the form
25 of the question. It's vague and

1 overbroad.

2 But go ahead and answer.

3 A. We were concerned or interested in how they
4 were handling materials that - particularly vapors

5 which were flammable. And they had been doing some
6 work on something or other. I don't remember what.

7 Q. Was the University of Cincinnati doing work
8 under contract for Dow?

9 A. No.

10 Q. What is it that led to this visit? Why was
11 this interest on the part of you and Dr. Irish in
12 the - these flammable vapors?

13 A. We were interested in seeing how or what
14 kind of chambers and how they had constructed their
15 chambers to avoid having internal explosions.

16 Q. Was it that you were considering doing some
17 work at Dow and wanted to utilize any design
18 advantages that Dr. Kehoe's group might have had?

19 A. Yes.

20 Q. Did you have -- Do you now have any
21 understanding as to when the toxicity program -
22 toxicity testing program - at the University of
23 Cincinnati began?

24 A. I do not.

25 Q. What was your impression of Dr. Kehoe as a

1 scientist when you met him and after you visited with
2 him over the years?

3 A. I had great respect for him.

4 Q. Was there anyone else at the University of
5 Cincinnati that you came to know over the years
6 besides Dr. Kehoe?

7 A. Dr. Deichmann.

8 Q. And could you spell that for me, please,
9 sir?

10 A. D-e-i-c-h-m-a-n-n.

11 Q. And would you tell me your understanding of
12 what Dr. Deichmann's position was at the University of
13 Cincinnati.

14 A. I do not know.

15 Q. Was Dr. Deichmann always at the University
16 of Cincinnati when you knew him?

17 A. No.

18 Q. Where did he go after or before he was at
19 the University of Cincinnati?

20 A. He was at Miami after that. Whether he was
21 somewhere else in between, I don't know.

22 Q. Would you recall Dr. Deichmann's first name?

23 A. William.

24 Q. Anyone else at the University of Cincinnati
25 you recall?

1 A. I don't recall.

2 Q. Did Dow utilize outside laboratories for
3 contract work in the area of toxicology at any of the
4 time you were an employee of Dow?

5 A. Yes.

6 Q. Going back as early in time as you can,
7 would you tell me who you recall being utilized by Dow
8 for contract toxicity testing.

9 A. We used Dr. Kligman, Dr. Clauder for work on
10 skin sensitization.

11 Q. And those are two different people, Kligman
12 and Clauder?

13 A. They were -- They were both, I believe, with
14 the University of Pennsylvania.

15 Q. And what time period would you be referring
16 to, Dr. Rowe?

17 A. It would have been in the Fifties.

18 Q. And what kind of work do you recall being
19 done at the University of Pennsylvania?

20 A. Pharmacological work.

21 Q. What kinds of materials?

22 MR. PIERCE: Objection to the form
23 of the question.

24 A. I don't recall specifics. Lots of materials
25 that we were interested in and that - where we

1 anticipated extensive skin contact as a result of
2 their use or handling.

3 Q. Did any of the work at the University of
4 Pennsylvania, to your knowledge, involve any human
5 experimentation?

6 A. Yes.

7 Q. Would you give me your understanding or
8 recollection of what that was, please.

9 A. Oh, it was skin irritation, skin fatiguing
10 experimentation.

11 Q. Were you, yourself, directly involved in
12 that work at the University of Pennsylvania as far as
13 overseeing it or helping design the projects?

14 A. Yes.

15 Q. What was your role?

16 A. I acted as the Dow contact person.

17 MR. PIERCE: Are we going to get
18 into any relevant questions today,
19 anything to do with asbestos which is
20 my understanding of what this is
21 about?

22 MR. HOBSON: I think these are
23 relevant questions.

24 MR. PIERCE: I'll let it go a

25 while longer.

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1 MR. HOBSON: I'm sorry. I forgot
2 where we were. Did we have a question
3 or an answer; or where were we,
4 Madam Reporter?

5 THE REPORTER: "QUESTION: What
6 was your role?

7 ANSWER: I acted as the Dow
8 contact person."

9

10 (By Mr. Hobson)

11 Q. When you say that, "the Dow contact person,"
12 how do you mean that, Dr. Rowe?

13 A. I really don't know what you mean.

14 Q. What would have been your day-to-day
15 involvement with the people at the University of
16 Pennsylvania? What would you have been doing?

17 A. I did not have day-to-day contact with them.

18 Q. How often would the contact have been?

19 A. The beginning and end of a particular study.

20 Q. What would you have been doing in the
21 beginning of a study?

22 MR. PIERCE: Objection to the

23 form. Indications are that many
24 compounds are involved, many studies.
25 This question is really unanswerable,

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1 unintelligible.

2 But do the best you can under
3 those circumstances, if you can.

4 A. We merely submitted materials to the
5 laboratory and asked for an evaluation of their
6 potential to cause skin fatiguing or skin irritation
7 or skin sensitization.

8 Q. Would you have been involved in designing
9 the protocol that was going to be used at the
10 University of Pennsylvania?

11 MR. PIERCE: Objection to the
12 form.

13 A. In some instances, perhaps.

14 Q. Would you, yourself, have done that, sir?

15 A. Yes, with the approval of medical
16 department.

17 Q. Whose medical department?

18 A. Our medical department.

19 Q. "Ours" being Dow?

20 A. Yes.

21 Q. And then you say you would have had
22 involvement at the end of the study. What involvement
23 would that have been, sir?
24 A. I would receive the report.
25 Q. Was there any other group at the University

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1 of Pennsylvania that you recall Dow did contract
2 toxicity testing with?
3 A. No.
4 Q. What other contract laboratories, if any,
5 did Dow work with over the years while you were a Dow
6 employee?
7 A. We worked with the University of Rochester
8 toxicology program, University of California,
9 Industrial Biotest Laboratories, Hazleton
10 Laboratories, Food and Drug Research laboratory.
11 That's all I can recall.
12 Q. Would you have done any work with the
13 University of Rochester in the Forties and Fifties?
14 A. I don't remember the dates.
15 Q. What about the University of California,
16 would you have done any work with the University of
17 California in the Forties and Fifties?
18 A. I don't know.

19 Q. I'd like to come back to the University of
20 Cincinnati, if I could, for a moment, Dr. Rowe.
21 You told me that you knew Dr. Kehoe and
22 Dr. Deichmann.
23 Do you recall any other names of people at
24 the University of Cincinnati?
25 MR. PIERCE: Objection to the

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1 form; asked and answered.
2 A. I don't recall.
3 Q. Would you recall a Dr. F. F. Heyroth? I
4 don't know if I'm saying it right. H-e-y-r-o-t-h.
5 A. Yes. I do.
6 Q. Was he at the University of Cincinnati?
7 A. I don't remember.
8 Q. How is it that you recall or what
9 recollection do you have of Dr. Heyroth or Hayroth?
10 A. I have very little recollection. I know the
11 name. I remember meeting him, but I have never had
12 any associations otherwise.
13 Q. What about Dr. A. W. Horton? Could be
14 Westley Horton, I believe.
15 A. I don't -- I don't know him.
16 Q. E. J. Largent? L-a-r-g-e-n-t.

17 A. Yes.

18 Q. What do you recall of Dr. Largent?

19 A. Nothing specific.

20 Q. Would you recall that he was at the

21 University of Cincinnati?

22 A. I don't remember.

23 Q. How about Dr. J. J. either "Phar" or

24 "Phair," P-h-a-i-r?

25 A. I do not know him.

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1 Q. Raymond Suskind? Dr. Suskind?

2 A. Yes.

3 Q. Was he at the University of Cincinnati, or

4 would you know?

5 A. Yes. He was.

6 Q. Did you know Dr. Suskind?

7 A. Casually.

8 Q. Can you recall how you met Dr. Suskind?

9 A. No.

10 Q. Do you have any recollection of what

11 activities Dr. Suskind carried on during his

12 professional career?

13 A. Dr. Suskind was involved in epidemiological

14 study of persons exposed at the nitro plant for

15 2,4,5-T and as - we were interested in that sort of
16 thing and had contact with Dr. Suskind.
17 Q. Can you give me the approximate time period
18 for that work, please, sir?
19 A. No.
20 Q. Not even a decade?
21 A. Late Fifties, early Sixties, somewhere along
22 that line.
23 Q. You said "the nitro plant"?
24 A. I believe that was the nitro division of
25 nitro Virginia plant for - at Monsanto.

1 Q. At the University of Rochester, do you
2 remember any of the individuals you dealt with there
3 when it came to toxicity testing?
4 A. Dr. Hodge. Another person whose name
5 escapes me.
6 Q. Would you recall Dr. Hodge's first name,
7 sir?
8 A. Harold.
9 MR. PIERCE: Is the purpose of
10 this deposition to go through every
11 name that Dr. Rowe knows in his long
12 and esteemed career in toxicology?

13 MR. HOBSON: Well, the purpose of
14 the deposition is to do discovery. I
15 don't think we'll get to every person
16 that he knows; but certainly the ones
17 that I'm interested in I hope we will.

18 MR. PIERCE: Well, you're
19 certainly trying to get to every person
20 he knows.

21 MR. HOBSON: I suspect Dr. Rowe
22 knows a lot more people than we'll have
23 time to get to in two days.

24 (By Mr. Hobson)

25 Q. Would you recall Dr. Kligman's first name at

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1 the University of Pennsylvania, sir?

2 A. I heard people call him "Al." Whether it
3 was "Alfred" or what, I don't know.

4 Q. You said Dr. Clauder there, as well. Would
5 you recall how that's spelled, sir?

6 A. C-l-a-u-d-e-r.

7 Q. And would you recall his first name?

8 A. Joseph.

9 Q. Nelson?

10 A. Joseph.

11 Q. Joseph. I'm sorry. Would you recall what
12 kind of work was being done at the University of
13 Rochester for Dow Chemical Company?

14 A. I'm not sure.

15 Q. Can you give me an approximate time frame
16 for the work at the University of Rochester that Dow
17 had conducted there?

18 A. No.

19 Q. Would it have been prior to World War II?

20 A. No.

21 Q. You said that Dow did utilize the services
22 of the University of California for contract
23 toxicological work; is that right?

24 A. Yes.

25 Q. Was that the University of California at

1 San Francisco?

2 A. Yes.

3 Q. I know you've published with Dr. Charles
4 Hines. Is that one of the people you worked with
5 there?

6 A. Yes.

7 Q. Who else at the University of California,
8 San Francisco, do you recall that was involved in that

9 work for Dow?

10 A. I don't know.

11 Q. Was there someone else and you just don't

12 recall?

13 A. I don't know.

14 Q. Did you personally know Dr. Hines?

15 A. Yes.

16 Q. All right. I guess it's "Hine."

17 A. Hine.

18 Q. Do you recall how you met Dr. Hine?

19 A. Yes.

20 Q. How is that, sir?

21 A. When Dr. Hine was setting up his toxicology

22 laboratory, he visited our laboratory to see what we

23 had and how we were operating. That's the first time

24 that I recollect meeting Dr. Hine.

25 Q. Could you give me an approximate time frame

50

1 for that visit from Dr. Hine?

2 A. Probably in the Fifties. Early Fifties,

3 perhaps.

4 Q. Do you recall the name "Dr. Mayo Soley,"

5 Soley, S-o-l-e-y?

6 A. No.

7 Q. Is it accurate, sir, that the work that Dow
8 would have done with Dr. Hine at the University of
9 California at San Francisco would have been after
10 Dr. Hine came to visit your facilities?

11 A. Yes.

12 Q. For approximately what time period did you
13 work with Dr. Hine, sir?

14 A. I don't remember.

15 Q. Would it have been over the course of a
16 number of years?

17 A. Yes.

18 Q. Can you give us your impression of
19 Dr. Hine's ability as a toxicologist?

20 MR. PIERCE: Objection to the form
21 of the question.

22 A. I always thought of him as a very competent
23 person.

24 Q. You and he coauthored a scientific treatise,
25 correct?

1 A. Yes.

2 Q. Did you and he have any disputes about the
3 content of the scientific treatise that would call
4 into question his judgment as a toxicologist?

5 MR. PIERCE: Objection to the form
6 of the question.
7 I don't understand. Are you
8 asking him whether there was a language
9 distinction between them as any authors
10 would on any paper? That question is
11 completely vague and unanswerable.
12 But give it your best.

13 A. I don't recall.

14 Q. You don't recall that there was any dispute?

15 A. (Shaking head negatively)

16 Q. Correct?

17 A. I don't recall any dispute.

18 Q. You told us earlier, I think, Dr. Rowe, that
19 you were aware of activities at Saranac Laboratory; is
20 that right?

21 MR. PIERCE: Objection to the
22 form.

23 The witness never testified to any
24 such thing, Mr. Hobson.

25 MR. HOBSON: Well, then he can

1 tell me I'm wrong.

2 MR. PIERCE: I don't want you

3 putting words into the mouth of the
4 witness. Please ask a question that's
5 appropriate.

6 A. Would you repeat the question, please.

7 (By Mr. Hobson)

8 Q. Yes, sir. I asked you earlier in the
9 deposition about were you aware that there were
10 toxicity testing activities going on around the
11 Country. And as I recall, it was about the time you
12 began at Dow. And I think one of the places you
13 mentioned to me was Saranac Labs. Is that correct?

14 A. (Nodding affirmatively)

15 MR. PIERCE: Objection to the form
16 and objection to the characterization
17 completely improper of the witness'
18 prior testimony.

19 Q. Was that a "yes," Dr. Rowe?

20 A. I was aware of Saranac Laboratory, yes.

21 Q. Would you tell me, sir, what awareness you
22 had of Saranac Laboratory in this time period of the
23 late Thirties?

24 A. I don't know what the dates were; but I was
25 aware, as almost anyone in the field was aware, that

1 they were the outstanding laboratory for the

2 evaluation of particulates.

3 Q. And did you know Dr. Gardner, Dr. Leroy

4 Gardner?

5 A. I did not.

6 Q. Did you know any of the personnel at Saranac

7 Lake throughout your career?

8 A. I knew Vorwald that was - who was there

9 later.

10 Q. Do you recall how you met Dr. Vorwald?

11 A. No, I don't.

12 Q. Did you ever visit Saranac Laboratory?

13 A. Yes.

14 Q. Can you recall approximately when that was,

15 sir?

16 A. No, I can't.

17 Q. I take it it was after the War, though?

18 MR. PIERCE: Objection to the

19 form.

20 Q. World War II?

21 A. I think so.

22 Q. Was it after Dr. Vorwald became the director

23 of that laboratory?

24 A. I can't recall.

25 Q. Would you give me your recollection of what

1 you recall seeing when you visited Saranac.

2 MR. PIERCE: Objection to the form

3 of the question.

4 A. I observed their inhalation chambers. That

5 was our prime purpose, seeing what kind of chambers

6 they had to study particulates.

7 Q. Did Dow have the ability to do toxicity

8 testing involving exposures to particulates?

9 A. Not -- Not appreciably, no.

10 Q. Did Dow, while you were an employee, develop

11 that ability at any time?

12 A. No.

13 Q. Did you at Dow consider developing

14 inhalation toxicity testing ability for particulates?

15 MR. PIERCE: Objection to the form

16 of the question.

17 A. I think we did.

18 Q. Can you remember about when that was going

19 on, sir?

20 A. Probably in the early Fifties.

21 Q. Why was this being considered, if you know,

22 sir, at Dow?

23 A. We were wondering whether we should try to

24 design it into a laboratory to do that.

25 Q. Was this a project that you were involved

1 with, yourself, Dr. Rowe?

2 A. I don't understand your question now.

3 Q. Did you, yourself, get involved in the
4 consideration as to whether or not Dow would develop
5 the ability to do toxicity testing for the inhalation
6 of particulates?

7 A. Yes.

8 Q. What was your perception of why you would
9 want to consider it - consider having this ability?

10 A. Well, from time to time we had materials
11 that people were exposed to that were particulates.

12 Q. Can you recall, sir, what the reasoning was
13 that the decision was made not to incorporate
14 inhalation toxicity testing abilities for particulates
15 into Dow's activities?

16 A. Yes.

17 Q. What was that, please?

18 A. The facilities are - to handle this properly
19 are quite complicated, somewhat beyond our own
20 capabilities, expensive. And inasmuch as there were
21 facilities that could handle anything that we might
22 want, we felt it was a nonjustifiable expense.

23 Q. Do you mean by that, sir, that there were

24 contract laboratories that had the capacity to do the
25 work that you could employ, --

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1 MR. PIERCE: Objection.

2 Q. -- was available?

3 MR. PIERCE: Objection to the
4 form.

5 A. We felt we could employ Saranac
6 laboratories, if we wished.

7 Q. Was it your impression at the time that
8 Saranac Laboratories had the capacity to do whatever
9 toxicity testing you at Dow would need for the
10 foreseeable future?

11 MR. PIERCE: At what time are we
12 now talking about?

13 MR. HOBSON: In the early Fifties
14 when Dow was considering developing
15 inhalation toxicity capability for
16 particulates.

17 A. We felt that they were capable.

18 (By Mr. Hobson)

19 Q. Do you recall when you visited Saranac or
20 when you investigated the work at Saranac that there
21 was capacity to do toxicity testing that was not being

22 utilized?

23 MR. PIERCE: Objection to the form

24 of the question, the characterization

25 of the witness' previous statement.

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1 Go ahead.

2 A. I don't remember.

3 Q. Was this consideration by Dow about whether

4 to do - develop the ability to do inhalation of

5 particulates in-house or to use contractors something

6 that you did alone or did you work with someone else

7 in this consideration?

8 A. No.

9 Q. You worked -- You did it alone?

10 A. We had no contact with anyone else.

11 Q. No, sir. I mean within Dow. Was it a

12 committee, or did you act alone?

13 A. Oh, no. Dr. Irish was very much involved.

14 I was -- I was just accompanying him.

15 Q. Would you recall if there was any

16 correspondence within the company about this

17 consideration of developing particulate inhalation

18 testing ability?

19 A. No.

20 Q. Just don't recall one way or the other?
21 A. I don't -- I don't know.
22 Q. Was it your usual practice when you visited
23 another facility to write some sort of a trip report
24 or memorandum to file or to report to your
25 supervisors?

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1 MR. PIERCE: Objection to the form
2 of the question.
3 A. I wouldn't -- No, not necessarily.
4 Q. Might or might not?
5 A. Yes.
6 Q. You mentioned that when you first got to Dow
7 or shortly thereafter, you recognized that Du Pont had
8 toxicity testing capabilities; is that right?
9 A. Yes.
10 Q. Can you recall if you ever visited any of
11 Du Pont's laboratories?
12 A. Yes.
13 Q. What would be your earliest recollection of
14 visiting a Du Pont laboratory facility?
15 A. I can't tell you. I don't know.
16 Q. Do you think it was before World War II?
17 A. I don't know.

18 Q. What facilities of Du Pont do you remember

19 visiting?

20 A. We visited Haskell Laboratory.

21 Q. You say "we." Do you recall that it was

22 someone other than yourself who also made these visits

23 to Du Pont?

24 A. Dr. Irish.

25 Q. Did you visit any facility for Du Pont other

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1 than Haskell Laboratories, that you recall?

2 A. I don't -- No.

3 Q. Can you give me some idea of about how many

4 times you visited Haskell Laboratories while you were

5 a Dow employee?

6 A. One time.

7 Q. Once. Do you recall who any of the people

8 were at Haskell Laboratories that you would have met

9 with?

10 A. Yes.

11 Q. Who would that be, please?

12 A. Dr. John Zapp.

13 Q. Anyone else?

14 A. Yes. Lester Clayton. Another whose name

15 escapes me.

16 Q. What -- Do you have a specific recollection
17 of visiting Haskell Laboratory this one occasion?

18 A. Would you restate that, please.

19 Q. Yes, sir. Do you have a picture in your
20 mind's eye of the visit to Haskell Laboratories that
21 you made?

22 A. Vaguely.

23 Q. What do you recall seeing at Haskell
24 Laboratories? What's your impression of what you
25 recall from that visit?

60

1 A. We were primarily interested in their method
2 of testing blood pressure on animals.

3 Q. Did you tour their facilities?

4 A. I don't recollect. I would presume that we
5 walked through.

6 Q. While you were a Dow employee, Dr. Rowe, do
7 you remember visiting any other corporate toxicity
8 testing laboratories?

9 A. Yes.

10 Q. Who else's would you recall having visited,
11 please?

12 A. Carbide's.

13 Q. And where would that have been located, sir?

14 A. The Bushey Run.

15 Q. And would you recall about when that would

16 have been?

17 A. No.

18 Q. Did you ever visit Chevron's toxicity

19 testing laboratory in the San Francisco area?

20 A. No.

21 Q. When you were working with Dr. Hine at the

22 University of California, San Francisco, were you

23 aware that he also did work for Shell Oil Company?

24 A. No. I didn't know what he -- I did not know

25 anything about his other work.

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1 Q. Have you ever had any meetings with anyone

2 from Shell concerning toxicology?

3 MR. PIERCE: Objection to the form

4 of the question.

5 You mean in all his conferences

6 over 52 years was there anybody there

7 that - in the audience from Shell? I

8 mean just -- Why don't you be more

9 specific in the question so that the

10 witness can really deal with it.

11 Q. Can you help me out there, Dr. Rowe?

12 A. I knew Norman White, Dr. White.
13 Q. How is it that you came to know Dr. White
14 from Shell?
15 A. We were in school together.
16 Q. And that was at Iowa?
17 A. Yes.
18 Q. And were you also there with Dr. Berry,
19 Clyde Berry?
20 A. No. I don't believe Clyde was there then.
21 Q. You know Dr. Berry, though?
22 A. Yes.
23 Q. Have you had professional association with
24 Dr. Berry over the years?
25 A. Yes. I guess so.

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1 Q. Is that more just from your professional
2 association work, or did you have contact with
3 Dr. Berry directly associated with your work at The
4 Dow Chemical Company?
5 A. I don't recollect that - any of that.
6 Q. Mostly just general professional-type work?
7 A. Yes.
8 Q. Did Dr. White ever have any work, to your
9 knowledge, that directly was for or under contract to

10 Dow Chemical Company?

11 A. I don't recall.

12 Q. Did you have any professional...

13 THE WITNESS: (Conferring

14 privately with Mr. Pierce)

15 MR. PIERCE: If you get tired --

16 MR. BLANKS: Ready to take a --

17 MR. HOBSON: And, Doctor, let me

18 say that if at any time you need to

19 take a break for any reason, you speak

20 up and I'll be kind enough to stop my

21 questioning.

22 THE WITNESS: Okay. Thank you.

23 MR. BLANKS: Don't wait for the

24 lawyers to ask for it. It's your call,

25 sir.

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1 MR. HOBSON: That's right.

2 (AT THIS TIME A BRIEF RECESS WAS

3 TAKEN, AND THE PROCEEDINGS THEREAFTER

4 RESUMED AS FOLLOWS:)

5 (By Mr. Hobson)

6 Q. Now, Dr. Rowe, I think you said that you

7 began working in the Dow biochemical research

8 laboratory in 1937. Would you be kind enough to tell

9 me who else you recall other than the directors that

10 you've named was also working there at that time.

11 A. Dr. Howard Spencer. Fred Meyer.

12 Q. I'm sorry. I didn't hear you.

13 A. Fred Meyer. All you're considering is

14 professional people?

15 Q. Yes, sir. The professionals.

16 A. Okay. I don't remember the others.

17 Q. You told us about Dr. Edwin Dunn, one of the

18 assistant directors. Would you know if Dr. Dunn is

19 still living?

20 A. No, he is not.

21 Q. Dr. Adams: is he still living?

22 A. He is not.

23 Q. Is Dr. Spencer living?

24 A. Yes.

25 Q. Would you know Dr. Spencer's whereabouts?

1 A. Yes.

2 Q. Where does he live, sir?

3 A. Sun City.

4 Q. Ah. A neighbor?

5 A. No.

6 Q. Do you see Dr. Spencer from time to time?

7 A. Yes.

8 Q. Is his health good?

9 A. No.

10 Q. Would you know, sir, one way or the other if

11 he has a serious illness? Is it life-threatening;

12 would you know?

13 A. Well, if cancer is threatening, it is.

14 Q. I'm sorry to hear that. Mr. Meyer: is he

15 still living?

16 A. I don't know.

17 Q. But those are the people that you recall,

18 the professionals who were there in 1937?

19 A. (No response)

20 Q. Would you tell me if you recall or whom you

21 recall the other professionals would have been that

22 would have joined the biochemical research laboratory

23 after 1937 and approximately when they would have

24 joined.

25 A. I can't answer that. I don't know.

1 Q. I take it that there were additions to the

2 staff over the years.

3 A. Yes.

4 Q. I'm not asking you to name every one, but
5 can you think back in time and sort of come forward
6 from 1937 and tell me the people - the professionals
7 that you remember that joined the biochemical research
8 laboratory?

9 MR. PIERCE: Objection to the
10 form.

11 A. Harold Hoyle joined us in the late Forties,
12 I believe. Larry Silverstein. I don't know when he
13 came. Arnold Schaffer.

14 What -- What time frame are you thinking
15 about? I'm trying to orient myself and -- because --

16 Q. Prior --

17 A. What?

18 Q. -- to 1970. From about 1937 to 1970.

19 A. Prior to 1970? Paul Wolf, Mark Wolf, Don
20 McCollister. I can't think of any others at the
21 moment.

22 Q. Mr. Silverstein: would you recall what his
23 job was, sir?

24 A. He was an industrial hygienist.

25 Q. And would you know if Mr. Silverstein is

1 still living?

2 A. Yes.

3 Q. And would you know where he lives, sir?

4 A. No.

5 Q. Mr. Sheffer or Schaffer. Arnold Schaffer.

6 What was his job, sir?

7 A. He was an industrial hygienist.

8 Q. And is Mr. Schaffer still living; would you

9 know?

10 A. Yes.

11 Q. Would you know where he lives now?

12 A. No.

13 Q. Paul Wolf: what was his job, please?

14 A. He was a microbiologist.

15 Q. And is Mr. Wolf, Paul Wolf, still living?

16 A. I think so.

17 Q. And there's another Mr. Wolf, Mr. Mark Wolf?

18 A. Yes.

19 Q. Were they related; would you know?

20 A. Yes.

21 Q. Brothers?

22 A. Yes.

23 Q. What was Mr. Mark Wolf's job, please?

24 A. He was a toxicologist.

25 Q. And would you recall the decade that

1 Mr. Mark Wolf would have joined Dow?

2 A. It would be in the Fifties.

3 Q. And is Mr. Mark Wolf still living; --

4 A. No.

5 Q. -- would you know? He's deceased?

6 A. Yes.

7 Q. And Mr. Don McCollister: what would his job
8 have been, please?

9 A. He was a toxicologist.

10 Q. And would you know; is he still living?

11 A. Yes.

12 Q. Would you know where?

13 A. In Midland.

14 Q. Is he still with Dow?

15 A. I don't know.

16 Q. I think you've told us, if my notes are
17 correct, that when you joined the medical - the bio -
18 sorry - the biochemical research laboratory in 1937
19 that there were essentially two groups - or is that
20 wrong? - microbiology and the toxicology.

21 A. No. I think I mentioned, also, there was a
22 section on wood preservation with preservatives.

23 Q. I understood that was a subsection but --

24 A. It was a - yes, subsection. And the
25 agricultural chemicals was also a subsection, most of

1 whom reported to Dr. Dunn.

2 Q. And Dr. Dunn was the microbiologist over --

3 A. Yes.

4 Q. -- the microbiology section, correct?

5 A. He was a biochemist, but in charge of that,
6 yes.

7 Q. How long, sir, did the organization of the
8 biochemical research laboratory remain essentially
9 that way with these two groupings?

10 MR. PIERCE: Objection to the form
11 of the question.

12 Q. I'm trying to find out the changes in the
13 organization of the biochemical research laboratory.
14 And I don't want to get caught up in sections and
15 subsections, but basically trying to find out how the
16 organization changed with time after 1937 while you
17 were there.

18 A. I can't tell you the dates at which that
19 name was dropped and - but there were - the main
20 section was toxicology, industrial hygiene. And that
21 would have occurred in about the early Seventies.
22 There was still a section -- Well, I don't know
23 whether the name was still "biochemical laboratory"

24 for the rest of it or not. That section split off.

25 Q. And when you say "the biochemical section,"

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1 how do you use that terminology, sir, "it split off"?

2 A. The whole operation was called the Dow
3 Chemical Research Laboratory. At some point in time
4 along there industrial toxicology and industrial
5 hygiene were separated, but I can't remember if there
6 was a formal name for the rest of it or not.

7 Q. This group that separated, what kinds of
8 activities did it do after it separated, as best you
9 understand?

10 A. It wasn't any different.

11 Q. What did it do before then?

12 A. I don't understand.

13 Q. I don't have an understanding yet of what
14 this section that split off - what its activities were
15 either before it split off or after. What kinds of
16 work --

17 A. Toxicology and industrial hygiene split off.

18 Q. Then I guess I don't understand what the
19 other group did.

20 A. The other group was con - consisted of
21 microbiology, pharmacology, organic synthesis. That's

22 it, as far as I can remember.

23 Q. How would -- How did you distinguish between
24 what was toxicology and what was pharmacology at The
25 Dow Chemical Company in your organization before the

70

1 toxicology and industrial hygiene was split off?

2 MR. PIERCE: Objection to form
3 of the question.

4 A. The pharmacology group was - under Maynard
5 Chenoweth, was pretty much an individual unit. They
6 were not a part of - of toxicology and industrial
7 hygiene.

8 Q. And what -- I'm sorry.

9 A. And their work was basically in
10 pharmacology. And that was joined later by a
11 pharmacology group that was part of the drug operation
12 in Indianapolis.

13 Q. And what I'm trying to also learn, Dr. Rowe,
14 is when you say "pharmacology" as opposed to
15 "toxicology," what's the difference in those two, if
16 there is one?

17 A. They're pretty closely related, but they
18 were primarily concerned with - with new drugs that
19 were being developed as opposed to occupational or

20 industrial chemicals.

21 Q. You stayed in the toxicology group all your
22 career with Dow; is that right?

23 A. That's right.

24 Q. So, after this group split off that was
25 toxicology and industrial hygiene, you were in that

71

1 group?

2 A. Yes.

3 Q. After the split-off, to whom did you report?

4 A. I reported to Dr. Irish.

5 Q. So, he was still with Dow; this was before
6 he retired.

7 A. At that point.

8 Q. And at some point in time, I take it you no
9 longer reported to Dr. Adams.

10 A. There was -- There was a transitional period
11 there. Dr. Adams became head of the laboratory when
12 Dr. Irish left. And at that time for about a year I
13 reported to Dr. Adams.

14 Q. And then did Dr. Adams retire, as well?

15 A. Yes.

16 Q. And who took his place, sir?

17 A. Dr. Charles Hinman.

18 Q. Hinmin? Could you spell that, please?
19 A. H-i-n-m-a-n.
20 Q. And what was Dr. Hinman's background, as you
21 understood, sir?
22 A. He was basically an organic chemist with a
23 lot of biochemical background.
24 Q. And was Dr. Hinman your supervisor until you
25 retired?

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1 A. No.
2 Q. Who succeeded Dr. Hinman in that role, then,
3 sir?
4 A. Dr. Blair.
5 Q. And Dr. Blair's first name?
6 A. Etcyl.
7 Q. Was there another person to whom you
8 reported after Dr. Blair?
9 A. No.
10 Q. So, you reported to Dr. Adams for about how
11 many years, sir?
12 A. About one year.
13 Q. And before that you reported to Dr. Irish?
14 A. Yes.
15 Q. For about how many years, perhaps 30 years?

16 A. Twenty-five, I suspect.

17 Q. And then the number of years, approximately,
18 you reported to Dr. Hinman.

19 A. About three, I think.

20 Q. And then Dr. Blair, about how many years,
21 sir?

22 A. About six.

23 Q. In this approximate 1937-'38 time period
24 when you first began working for Dow, would you recall
25 who Dr. Irish reported to, either by name or by title

73

1 or both?

2 A. He reported to Dr. Veazey.

3 Q. Could you spell that, please?

4 A. V-e-a-z-e-y.

5 Q. And would you recall Dr. Veazey's first
6 name?

7 A. No.

8 Q. What was your understanding of Dr. Veazey's
9 position in Dow?

10 A. He was director of research.

11 Q. Was there any particular area of research
12 that Dr. Veazey was a director of, or was this general
13 research for The Dow Chemical Company?

14 A. I'll correct that. I believe at that
15 particular time Dr. Willard Dow was still corporate
16 director of research, and Dr. Veazey was his
17 right-hand man in charge of daily operations.

18 Q. And was this general research overall at
19 Dow?

20 A. Yes. Yes.

21 Q. And would you recall -- Did Dr. Irish report
22 to someone after Dr. Veazey?

23 A. Going back one step further, now, when
24 Dr. Irish first was employed by Dow, he reported to
25 Dr. John Grebe.

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1 Q. And who was Dr. Grebe?

2 A. He was director of the physical research
3 laboratory, of which we were a part for about a year.

4 Q. And would you recall Dr. Grebe's first name?

5 A. John.

6 Q. John. Would you spell Dr. "Grebe" for us.

7 A. G-r-e-b-e.

8 Q. Now, later on did Dr. Irish's supervisor
9 change after Dr. Veazey?

10 A. Yes.

11 Q. Can you give me the people that Dr. Irish

12 would have reported to in some kind of sequence?

13 MR. PIERCE: I'm going to object

14 to the form of the question.

15 But go ahead, Doctor.

16 A. There were a number of people, and I can't

17 remember the sequence. One was Dr. Boundy.

18 Q. B-o-w-d-y?

19 A. B-o-u-n-d-y.

20 Q. Would you recall his first name?

21 A. Ray.

22 Q. And what was your understanding of

23 Dr. Boundy's position?

24 A. Pardon?

25 Q. What was your understanding of Dr. Boundy's

75

1 position when Dr. Irish reported to him?

2 A. Boundy, you mean?

3 Q. Yes, sir.

4 A. Director of Research.

5 Q. Was it that Dr. Irish always reported to the

6 director of research during his career at Dow, as you

7 understood it?

8 A. Yes.

9 Q. Were there any medical doctors in

10 Dr. Irish's organization, that you recall?

11 A. When?

12 Q. Any time.

13 A. What time frame?

14 Q. Any time that Dr. Irish was the director of

15 the biochemical research laboratory or what it later

16 became.

17 A. Yes.

18 Q. What's the earliest physician that you can

19 recall in that organization?

20 A. Dr. Maynard Chenoweth.

21 Q. And can you tell me approximately when

22 Dr. Chenoweth would have been in the group?

23 A. Late Seventies, I would guess - estimate.

24 Q. I take --

25 A. Excuse me.

1 Q. Yes, sir?

2 A. Late -- Late Sixties or early Seventies.

3 Q. Would you have any understanding of

4 Dr. Chenoweth's background before he joined the group

5 with Dr. Irish?

6 A. Yes.

7 Q. What did you understand about

8 Dr. Chenoweth's background before he joined

9 Dr. Irish's group?

10 A. He was a professor of pharmacology at the
11 University of Michigan.

12 Q. Did you know Dr. Chenoweth before he joined
13 Dow?

14 A. Yes.

15 Q. For approximately how many years would you
16 say you knew Dr. Chenoweth before he joined Dow?

17 A. About two years.

18 Q. Did you know him through his work at the
19 University of Michigan?

20 A. Yes.

21 Q. What kinds of activities did you understand
22 Dr. Chenoweth to be doing at the University of
23 Michigan before he joined Dow?

24 MR. PIERCE: Objection to the form
25 of the question.

1 A. He was a professor and a teacher.

2 Q. And -- I'm sorry.

3 A. I don't know what else. I don't recall what
4 other...

5 Q. Would you recall if he was engaged in any

6 research activities, that you were aware of, in

7 Michigan?

8 A. He was engaged in research, but I don't

9 remember the particular subjects.

10 Q. Could you spell Dr. Chenoweth's name for us,

11 please, sir?

12 A. C-h-e-n-o-w-e-t-h.

13 Q. In the time period that you first joined Dow

14 in the late Thirties, were there any physicians

15 employed by Dow Chemical Company, that you were aware

16 of?

17 A. As a con -- On a consulting basis.

18 Q. Who are you aware of who were acting as

19 medical consultants to Dow Chemical in the late

20 Thirties?

21 A. The general medical profession in the town.

22 Q. Do you recall any names?

23 A. I remember just one. Dr. Rice.

24 Q. Would you recall his first name?

25 A. No.

1 Q. Is it your recollection, Dr. Rowe, that Dow

2 Chemical had no full-time-employed medical doctors in

3 the corporation in the late Thirties when you joined

4 the company?

5 MR. PIERCE: Objection to the form

6 of the question.

7 A. That's right. Yes.

8 Q. Was there a time that you became aware that

9 Dow did employ a full-time medical doctor?

10 A. Yes.

11 Q. Approximately when would that have been,

12 sir?

13 A. I -- I just don't know.

14 Q. Would it have been --

15 A. Probably in the Forties.

16 Q. In the Forties. After the War or before;

17 would you know?

18 A. I don't know.

19 Q. Do you recall who that would have been, sir?

20 A. Pardon?

21 Q. The first physician. Do you recall who the

22 first full-time physician Dow would have employed

23 would have been?

24 A. Yes.

25 Q. Who is that, sir?

1 A. Dr. Harold Gay.

2 Q. And how would you spell Dr. Gay's name?

3 A. G-a-y.

4 Q. And in what organization within Dow did you
5 understand Dr. Gay to be working?

6 A. I don't -- I don't know what you mean.

7 Q. Dow had an organizational structure, and I'm
8 trying to find where Dr. Gay fit into the
9 organizational structure.

10 A. I can't tell you. I don't know.

11 Q. Did you have an understanding of Dr. Gay's
12 background before he joined Dow?

13 A. No. No.

14 Q. Did you know him at Dow?

15 A. I knew him at Dow.

16 Q. Would your job activities have brought you
17 in contact with Dr. Gay as a physician? I mean
18 professionally.

19 A. Yes.

20 MR. PIERCE: You have a time
21 frame?

22 A. Yes.

23 Q. What kind of work would you have, Dr. Rowe,
24 with Dr. Gay as early as you can remember in your
25 career at Dow?

1 A. Well, Dr. Gay would frequently come to us
2 for information and advice with respect to medical
3 problems that he encountered.

4 Q. Do you recall some specific examples of
5 that?

6 A. Yes.

7 Q. Would you give me some of the ones you
8 remember, please.

9 A. The first one I can recollect had to do with
10 carbon tetrachloride. And he was seeing too many
11 people that didn't feel well. And he wanted to know
12 what we knew about it.

13 Q. Were these people who had been working with
14 carbon tetrachloride?

15 A. Yes.

16 Q. Did the medical program at Dow, to your
17 knowledge, grow with time after Dr. Gay was hired?

18 A. Yes.

19 Q. Were there other full-time physicians who
20 were hired by Dow Chemical Company after Dr. Gay?

21 A. Yes.

22 Q. Can you remember any of those gentlemen or
23 ladies?

24 A. Dr. Harold Gordon, Dr. Benjamin Holder,
25 Dr. Charnweber, Dr. Kilian, Dr. Landon - "Lanham" I

1 should say - some others whose names I can't

2 recollect.

3 Q. Would you know, sir, is Dr. Gay still

4 living?

5 A. No. He is not.

6 Q. Is Dr. Gordon still living?

7 A. As far as I know.

8 Q. Where was he located the last time you knew,

9 sir?

10 A. It was in Colorado somewhere.

11 Q. Dr. Holder: would you know if he's still

12 living?

13 A. Yes. He is.

14 Q. And where was he the last time you knew,

15 sir?

16 A. In Florida somewhere.

17 Q. And Dr. Charnweber -- Is that his name?

18 A. I don't know.

19 Q. Could you spell Dr. Charnweber's name for

20 us, please?

21 A. I'll try.

22 MR. HOBSON: Can you spell it

23 better than he pronounced it?

24 A. C-h-a-r-n-w-e-b-e-r.

25 Q. Thank you. And Dr. -- Is it "Lanham"?

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1 A. Lanham.

2 Q. Could you spell that, please?

3 A. L-a-n-h-a-m.

4 Q. Would you know Dr. Lanham's first name,
5 please?

6 A. I don't recall at the moment.

7 Q. Would you know if he's still living?

8 A. Yes. He is.

9 Q. And where was he the last you knew, sir?

10 A. In Midland.

11 Q. Is he still with Dow, to your knowledge?

12 A. Is not, no.

13 Q. And Dr. Kilian. Which Dr. Kilian would that
14 have been, please, sir? First name.

15 A. Jack.

16 Q. I believe Dr. Jack Kilian is deceased.

17 A. Pardon?

18 Q. Is Dr. Jack Kilian deceased?

19 A. Yes.

20 Q. And Dr. Charnweber: would you recall his
21 first name?

22 A. Charles. Charles.

23 Q. Charles. And would you know if he's still

24 living, sir?

25 A. I don't know.

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1 Q. The biochemical research laboratory, where

2 was it physically located in the late 1930's?

3 A. Located on Bay City Road. I don't know how

4 else to describe it. There was no streets or anything

5 like -- It was in the plant.

6 Q. Bay City Road within which plant?

7 A. In the fence -- It was in the plant area.

8 Q. And which plant would that have been, sir?

9 A. Midland Chemical Company -- Dow Chemical

10 Company in Midland.

11 Q. Now, when Dr. Gay was employed by Dow, where

12 was his office physically located, if you know, sir?

13 A. It was also on Bay City Road. Again, no

14 street.

15 Q. A different building than the biochemical

16 research laboratory's location?

17 A. No, no.

18 Q. Same building?

19 A. No.

20 Q. I'm sorry. I'm confused. Was Dr. Gay

21 located in the same building as the biochemical

22 research laboratory?

23 A. No, sir.

24 Q. Did the biochemical research laboratory stay

25 in the same location while you were an employee at

84

1 Dow, or did it change?

2 A. Two questions. Would you repeat - Give it

3 to me one at a time.

4 Q. Yes, sir. Let me ask it this way: Where

5 was the biochemical research laboratory physically

6 located during your tenure with Dow?

7 A. I described to you where it was initially.

8 Q. Yes, sir.

9 A. And then a new building was built in 1955,

10 and that was on Austin Street and Washington - Austin

11 and Washington. Then when the units were broken up,

12 we built a new building, also on Washington and Austin

13 but on the northeast corner. And that was known as

14 the toxicology laboratory.

15 Q. The --

16 MR. PIERCE: I'm going to just

17 interpose an objection now to this

18 whole line of questioning. You're

19 asking the witness to give you
20 addresses for events that happened 40
21 and 50 years ago clearly not relevant
22 at all - Dr. Gay's address, this
23 office's address. I wish you would
24 keep to relevant questions so that we
25 can all complete this deposition and

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1 that Dr. Rowe need not be put through
2 this type of questioning.
3 MR. BLANKS: They're pretty
4 abusive questions, aren't they?
5 Q. When you say "Austin and Washington,"
6 Dr. Rowe, is that still within the plant?
7 A. No.
8 Q. Is Austin and Washington - are those streets
9 in Midland, Michigan?
10 A. Yes.
11 Q. And you say the new building - the second
12 new building - that was built after the breakup, and
13 you called that the tox. lab. Was industrial hygiene
14 still located within the tox. lab, then, after the
15 breakup?
16 A. Yes.

17 Q. If I've understood correctly, you've told me
18 that the biochemical research laboratory - one of its
19 jobs was to do toxicity testing.

20 Going back to the late 1930's when you first
21 joined Dow, can you tell me if you have any
22 understanding how it was decided what materials would
23 be tested at the biochemical research laboratory?

24 A. I didn't make that decision at that time;
25 so, I don't know.

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1 Q. Was there a point in time in your career
2 where you either made that decision or were involved
3 in having input in making the decision as to what
4 materials would be tested by the biochemical research
5 laboratory at Dow?

6 A. Yes.

7 Q. Approximately when would that have been,
8 please?

9 A. I -- I don't -- I can't answer. I don't
10 know.

11 Q. Can you give me a decade?

12 A. Probably in the Fifties.

13 Q. Once you either had input or were -- Strike
14 that. Let me ask it this way: Was there a time when

15 you only had input into the decision making; or was
16 there a time that you, yourself, actually made the
17 decision about the priorities of what would be tested?

18 MR. PIERCE: Objection to the form
19 of the question.

20 A. Two questions again. Would you rephrase the
21 question, please.

22 Q. Yes, sir. Was there a time when you were -
23 you had the responsibility of making the decision as
24 to what materials would be tested at the biochemical
25 research laboratory?

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1 A. Yes.

2 Q. Before you had that decision-making
3 authority, was there someone else who made those
4 decisions but to whom you made input?

5 A. Those decisions were usually joint decisions
6 with input from various sources.

7 Q. Would you tell us for the time period that
8 you have knowledge of what the criteria would have
9 been for making the decision as to what materials
10 would be tested?

11 MR. PIERCE: For the period that
12 you know (directed to the witness).

13 Q. Absolutely.

14 A. Well, I don't think there was any material -

15 any new material - that was produced at Dow Chemical

16 Company that didn't go through our laboratory.

17 Q. When you say "go through our laboratory,"

18 how do you mean that?

19 A. I mean subjected to evaluation -

20 toxicological evaluation.

21 Q. What time period can you tell me that you

22 have knowledge of that this would be the case?

23 A. I can't tell you when. It was our general

24 policy to -- As soon as there was any significant

25 interest in a new material, it was almost automatic

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1 that it would be submitted to our laboratory for

2 evaluation.

3 Q. Is it your understanding that that was the

4 general policy of Dow even in the 1940's?

5 A. I can't be sure about the - that time.

6 Q. But by the 1950's do you feel that that was

7 Dow's general policy, as you understood it?

8 A. These sort of things evolved over a period

9 of years. It just didn't happen to fall off a log.

10 Q. But by the 1950's do you believe that that

11 was Dow's general policy about new materials?

12 A. Yes.

13 Q. When you say "new materials," do you mean
14 new materials that Dow was developing?

15 A. Yes.

16 Q. You say that toxicological evaluations would
17 have been made of new materials that Dow was
18 developing, as you've previously described, once it
19 looked like they were going to be - "Promising," I
20 guess, would be a way of saying it.

21 Would you tell us what you mean by
22 "toxicological evaluation" for these new materials.

23 MR. PIERCE: Objection to the
24 form. Objection to the small speech.

25 A. We had various categories of toxicological

1 testing - different degrees. And if a material was
2 encountered or developed that was new and there was no
3 information that we could find in the literature, our
4 testing procedure was called what we -- Well, what we
5 called it was a "Class I evaluation," which was
6 designed to determine the - roughly, the qualitative
7 and quantitative hazards associated with ingestion;
8 eye contact; and skin contact; and, if it was likely

9 to be encountered as a vapor or a gas, short
10 inhalation studies.

11 Q. And you say that's Class I. Were there
12 other classes besides Class I?

13 A. Yes.

14 Q. And what would those classes have been,
15 sir?

16 A. That would be when materials would really
17 begin to show promise. The first class was -- Class I
18 studies were primarily designed to ascertain whether
19 these materials being handled by our research people
20 or whoever - were presented with an unusual hazard.
21 For instance, a splash in the eye, contact with the
22 skin, or accidental ingestion or inhalation. When --
23 The further the material was developed, we would do
24 more extensive studies in both areas - all these
25 areas - and we would begin to do repeated exposures.

1 And this progressed along with the development or the
2 promise of a potential product. And the ultimate
3 was -- Of course, lifetime studies ultimately on such
4 materials that were going into food additives were
5 required by Government agencies for approval by the
6 Food and Drug or whatever.

7 Q. So, basically you're saying that as a
8 product was developed, also the toxicological
9 information for that product was developed along with
10 the product?

11 MR. PIERCE: Objection to the
12 form.

13 A. That was the general pattern.

14 Q. Have you heard the terminology used before
15 of "tier testing"?

16 A. Yes.

17 Q. Is that how you would -- What do you mean by
18 "tier testing," or what have you heard it used as?

19 A. It means different things to different
20 people. It's a stepwise evaluation similar to what
21 I've just described.

22 Q. Would it be unfair to characterize what Dow
23 did as tier testing?

24 A. I don't know how other people define "tier
25 testing" that detailed.

1 Q. Did you have a name for this kind of testing
2 protocol for new products at Dow?

3 A. We called them Class I, Class II, and
4 Class III evaluations.

5 Q. Well, you obviously don't feel comfortable
6 with the term "tier testing." I was trying to find
7 out if there was another set of terminology we could
8 apply to this.

9 A. Not that I know of.

10 Q. You've told us about Class I in your testing
11 protocols for new products. When would you initiate
12 Class II testing?

13 MR. PIERCE: Objection to the form
14 of the question.

15 A. It'd depend on the status of a particular
16 material from the standpoint of production and
17 potential sales or utility.

18 Q. And then when would you initiate Class III?

19 MR. PIERCE: Objection to the form
20 of the question.

21 A. Depending upon the type of exposure
22 anticipated if this goes to a major product.

23 Q. Would you have been using the Class I,
24 Class II, Class III protocols for toxicity testing
25 that you've told us about in the 1950's?

1 A. Yes.

2 Q. Did you keep these protocols a secret at

3 Dow, or did you publish what you were doing or tell
4 others about it?

5 MR. PIERCE: Objection to the form
6 of the question.

7 A. I don't think I can answer your question as
8 phrased. If you'll break it up and - I'll do my best.

9 Q. Sure. Is it -- Can I call these protocols
10 "Class I," "Class II," and "Class III"?

11 A. There was never any set protocol.

12 Q. What would be a terminology you'd feel
13 comfortable with I can use in my questions for the
14 Class I, Class II, and Class III? I hesitate to say
15 "scheme" because it may give the wrong connotation.

16 MR. PIERCE: You want the witness
17 to phrase your questions for you,
18 Counselor?

19 MR. HOBSON: No, but I don't want
20 to use terminology that offends the
21 gentleman.

22 A. It would simply develop -- Your word
23 "protocol" was quite all right, except we did not
24 have what you might call a - the same protocol for
25 every problem. We modified our protocols depending

1 upon what the problems or anticipated problems would
2 be.

3 (By Mr. Hobson)

4 Q. This -- This concept of modifying your
5 protocols and fitting in the Class I, Class II,
6 Class III toxicity testing, is that something that you
7 published?

8 A. We published a great deal on the subject.

9 Q. And it was published in the 1950's - part of
10 it - was it not?

11 A. I don't remember the dates.

12 Q. You gave speeches, lectures at different
13 professional societies concerning this activity that
14 you followed with Dow concerning the toxicity testing
15 and the adaptation of these protocols to different
16 product - different products being developed, did you
17 not?

18 A. Yes.

19 Q. So, anyone who was following the medical and
20 scientific literature could learn the general
21 undertakings of Dow's toxicity testing of new products
22 as they were developed. Would that be accurate in
23 your view?

24 A. Yes.

25 MR. HOBSON: Dr. Rowe, if you'll

1 accept my apologies, I need to take a
2 short break, sir.

3 (SHORTLY AFTER THE RECESS WAS
4 CALLED, IT WAS DECIDED TO BREAK FOR
5 LUNCH. THEREFORE, AT APPROXIMATELY
6 11:15 A.M. THE DEPOSITION WAS RECESSED.
7 AT APPROXIMATELY 12:30 P.M. THE
8 DEPOSITION RESUMED AS FOLLOWS:)

9 (By Mr. Hobson)

10 Q. Dr. Rowe, before we took our luncheon break,
11 we were speaking a little bit about the work at the
12 biochemical research laboratories. I'd like to return
13 to that subject.

14 You told me about new product testing and
15 going through Class I, Class II, Class III testings.
16 Were there any other products besides new products
17 which you at the biochemical research laboratories did
18 toxicological evaluations of?

19 A. Yes. There could be. If we were using a
20 new raw material that was purchased from - new from
21 somebody and there was no literature or toxicological
22 data available, why, we would probably do it,
23 ourselves.

24 Q. Any other materials that you might do

25 testing on at your laboratory other than new products

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1 or purchased materials for which there was no

2 published toxicity testing data?

3 A. Not that I recollect.

4 Q. How would you know what materials were being

5 used? You talked about these purchased products. How

6 would you know what they were at Dow?

7 A. We had pretty close liaison with research

8 people, and they were pretty well programmed to let us

9 know when there were new materials coming forth.

10 Q. Was that formal or informal in letting you

11 know what purchased materials were going to be used in

12 Dow facilities?

13 MR. PIERCE: Objection to the form

14 of the question.

15 A. I would say some of each.

16 Q. Would you describe any formal procedures

17 that you had.

18 A. I don't -- Only that people in the plants

19 and the research laboratories were well aware of us

20 and what was expected; otherwise, I don't think there

21 was anything - no edict put out, if you know --

22 Q. Now, the purchased materials that you speak

23 of in this context, are these purchased materials that
24 are being used to manufacture items that are in
25 production or are these purchased materials that are

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1 for research purposes only or both?

2 MR. PIERCE: Objection to the form
3 of the question.

4 A. Could be either.

5 Q. Would you have been involved in the
6 biochemical research laboratory in evaluating the
7 toxicity of materials that were not used in - as
8 manufacturing materials or were not finished products;
9 for instance, intermediates?

10 MR. PIERCE: Is this at any time
11 with any product?

12 MR. HOBSON: We can start there.
13 If he says, "no," that answers the
14 question.

15 MR. PIERCE: Try to answer it, if
16 you can.

17 A. I guess I really don't understand your
18 question.

19 (By Mr. Hobson)

20 Q. All right. As I've understood what you've

21 told me so far, you've said that there are some
22 purchased materials that Dow would evaluate in your
23 laboratory. And you said that you evaluated new
24 products. It's my understanding that when you make
25 some products, you go through an intermediate step on

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1 occasion. You start off with something you buy, you
2 make an intermediate, you get to the finished
3 product. And my question to you, sir, is: Would you
4 evaluate the toxicology - the toxicity of the
5 intermediate product in this manufacturing process?

6 A. Yes. If there were opportunity and
7 likelihood of exposure to our people, yes.

8 Q. Would you evaluate the toxicity of any
9 materials that were involved in the manufacturing of
10 products but were not actually being used to make the
11 product, itself, as a purchased material?

12 MR. PIERCE: I object to that
13 question. It completely confuses
14 me. But if the witness can answer
15 it --

16 A. I don't understand the question.

17 Q. Would you look at catalyst, for instance?

18 A. That wouldn't be likely because of the very,

19 very small amounts of material. And usually they're

20 not new materials, they've been in use.

21 Q. Did you at the biochemical research

22 laboratories have a method of communicating your

23 knowledge about the toxicity of either products or

24 purchased materials to others within the corporation?

25 A. Yes.

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1 Q. What mechanism did you use?

2 A. We distributed our reports to every spot

3 that we knew the material might be encountered.

4 Q. Did your reports have a particular name or

5 format that you followed?

6 A. I guess again I don't know really what

7 you're asking.

8 Q. In more recent times we've seen Material

9 Safety Data Sheets. Would you have had some sort of a

10 forerunner to a Material Safety Data Sheet that you

11 would have used to communicate hazards to people in

12 the company?

13 A. That, I believe, was about the first form -

14 more formalized procedure, was a safety data sheet.

15 Q. Can you recall for me, as best you can,

16 about when you began to use these data sheets?

17 A. No. I don't. I can't remember when that
18 was.
19 Q. Can you remember the decade?
20 A. Not for sure.
21 Q. May I ask, sir, when did you leave Dow, what
22 year?
23 A. I retired in '79.
24 Q. Was that at the end of 1979?
25 A. It was July 1st, I believe.

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1 Q. What titles for your position did you hold
2 while you were at Dow, and approximately when did you
3 hold those?
4 A. I -- I don't remember them all. I think I
5 remember the first one. I was changed from a
6 biochemist to a toxicologist. And then I went up to
7 names such as "technical specialist" and "laboratory
8 director" and "assistant director of the - of
9 laboratory" and "head of health and environmental
10 sciences." I don't know -- Other administrative
11 titles.
12 Q. We've provided a request for certain
13 documents through the attorneys involved in the case.
14 Did that request make its way to you,

15 Dr. Rowe?

16 A. Yes.

17 Q. Did you bring anything responsive to that
18 request?

19 A. It was -- It is being brought by -- Someone
20 has it.

21 Q. May we have what you responded with, sir?

22 A. Yes.

23 MR. PIERCE: (Tendering a group of
24 documents to Mr. Hobson);.

25 Q. May I ask, Dr. Rowe, when is the first time

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1 you were aware of our request for documents?

2 A. Monday.

3 Q. And did you receive that request and review
4 it and go through your files and provide information
5 that was responsive to it?

6 A. Yes.

7 Q. Have you reviewed these articles or
8 documents that I've just been handed by Counsel?

9 A. I have not.

10 Q. Did you provide these to Counsel?

11 A. Yes.

12 Q. Do you know if I've been provided with what

13 you've provided them?

14 A. Have I checked the listing or anything like
15 that? No. I had copies made and, as far as I know,
16 that's - they're there.

17 MR. PIERCE: If you want a
18 representation, Mr. Hobson, you have
19 it.

20 MR. HOBSON: That...

21 MR. PIERCE: They have these other
22 copies of documents that Dr. Rowe
23 provided to us.

24 MR. HOBSON: And that's all -- You
25 gave me everything he gave you?

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1 MR. PIERCE: Right. That he said
2 he wanted to provide to you.

3 (By Mr. Hobson)

4 Q. Since your retirement, Dr. Rowe, have you
5 done any consulting?

6 A. Yes.

7 Q. With whom have you done consulting, sir?

8 A. I have limited any work that I have done in
9 recent years to those things associated with Dow's
10 operation when I was there.

11 Prior to that I was a consultant to the
12 University of California Department of Toxicology,
13 another firm in the East -- And I can't tell you -- I
14 don't remember the name of it. And I've been a
15 consultant to Government agencies.

16 Q. The firm in the East: what was the nature of
17 that consulting work?

18 A. It was on environmental control.

19 Q. You say that in recent times you've limited
20 your consulting?

21 A. That's right.

22 Q. Can you tell me the nature of that
23 consulting once you limited your consulting
24 activities?

25 A. Had to do with materials and practices that

1 I was familiar with when I was at Dow.

2 Q. Was this consulting always for Dow or Dow's
3 attorneys?

4 A. I don't understand your question.

5 Q. Yes, sir. You said that you've - at one
6 point in time here since your retirement you've
7 limited your consulting activities to what you did at
8 Dow, I think.

9 A. (Nodding affirmatively)

10 Q. And I'm wondering if that work once you
11 limited your consulting was always for Dow or for
12 Dow's attorneys.

13 A. I'm still confused with the question.

14 Q. Who employed you for your consulting once
15 you limited your consulting practice?

16 A. Dow Chemical.

17 MR. PIERCE: So long as you're
18 reviewing these documents now, let me
19 take this opportunity to note that the
20 production of these documents does in
21 no way indicate concurrence on the part
22 of myself, as attorney for Dr. Rowe,
23 nor does it, I believe, for the
24 attorney from The Dow Chemical Company,
25 that these are relevant documents; but

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1 these are the ones that Dr. Rowe
2 thought he should bring to your
3 attention in accordance with his review
4 of the draft subpoena.

5 Q. Dr. Rowe, I find in here a C.V. in the
6 stack. Perhaps we could ask the court reporter to

7 mark it as an exhibit - or we will here and then pass

8 it over to you. In the stack is there only one C.V.?

9 I haven't gone through the whole stack.

10 A. No. I think there's only one.

11 Q. Is that C.V. current?

12 A. I believe so.

13 Q. I meant as opposed to one you found in your

14 files from maybe some years back.

15 A. Well, it hasn't changed for quite a few

16 years.

17 (PLAINTIFFS' EXHIBIT 141005 ROW VK

18 WAS MARKED FOR IDENTIFICATION

19 PURPOSES. SAME WILL BE FOUND IN

20 THE EXHIBIT VOLUMES ATTENDANT TO

21 THIS DEPOSITION.)

22 (By Mr. Hobson)

23 Q. Your publications that are listed here, have

24 there been any others other than in the C.V.?

25 A. I -- I can't answer you. I don't know.

1 Q. We've marked this now as Plaintiffs'

2 Exhibit 141005 ROWE V. K. And I'll pass that over to

3 you, sir (tendering document). That's the C. V. you

4 provided --

5 A. That's the one I had in my file.

6 Q. Can you recall, from looking at this C.V.,

7 if there are any publications since your retirement

8 from Dow that might not have been included on it?

9 A. (Reviewing document) I do not recall any

10 (tendering document).

11 Q. Are you aware of some publications that you

12 might have written while you were a Dow employee that

13 didn't get on your C.V.?

14 A. I'm not aware of any.

15 Q. When you went to Dow in 1937 at the

16 biochemical research laboratory, was there a library

17 that you had access to?

18 A. Yes.

19 Q. What was your -- What's your best

20 recollection of the contents of that library?

21 MR. PIERCE: Objection to the form

22 of the question.

23 A. Well, it was a -- We thought it was a pretty

24 good library. I have no way of answering your

25 question in a quantitative or qualitative way, really.

1 Q. Was it a library that was for the use of the

2 biochemical research laboratory, or was this a general

3 plantwide or a corporatewide library?

4 A. There was a main library used - for anyone

5 within the company. Within the toxicology or

6 biochemical research laboratory, we maintained those

7 journals that were of particular interest to us.

8 There may well have been a duplicate copy in the main

9 lab - in the main library.

10 Q. The library that you kept at the laboratory,

11 did it include both texts and periodic journals?

12 A. Yes.

13 Q. Would you recall any of the texts that were

14 in use at the time that you first began at Dow in the

15 late Thirties in the area of toxicology that you would

16 have been using in your work?

17 A. No.

18 Q. Would you remember what publications were in

19 use there at the laboratory at the time you began at

20 Dow?

21 A. I don't remember.

22 Q. What was the general nature of the kinds of

23 texts and periodicals that you had at the biochemical

24 research laboratory library?

25 MR. PIERCE: In 1937?

1 MR. HOBSON: Yes, sir.

2 A. Could you please give me the date again?

3 (By Mr. Hobson)

4 Q. Yes, sir. When you began in 1937.

5 A. In 1937 the library - our local library

6 probably consisted no more than of what individuals

7 were subscribing to, themselves. Maybe Chemical

8 Abstracts, something of that nature, and maybe

9 The Journal of Industrial Hygiene or Toxicology, or

10 whatever was the name of it in those days. But those

11 well could have been just people's copies that they

12 put out - made available.

13 Q. You're familiar with the Industrial Hygiene

14 Foundation, are you?

15 A. Somewhat.

16 Q. Are you aware that at one time they

17 published a digest?

18 A. Yes.

19 Q. Was that a reference that Dow had at its

20 libraries, to your knowledge?

21 MR. PIERCE: Are you once again

22 asking in 1937?

23 MR. HOBSON: Well, if it was

24 available in 1937 or any time.

25 MR. PIERCE: But is there a time

1 frame for your question?

2 MR. BLANKS: This man's work life
3 would be fine.

4 MR. HOBSON: At any time.

5 A. I cannot give you a time reference; but I am
6 well aware that that was one that was circulated
7 within our laboratory, yes.

8 (By Mr. Hobson)

9 Q. Do you recall that it was circulated when
10 you first went to work at Dow?

11 A. No, I don't recall it.

12 Q. Is there any time that you can give me when
13 you do recall that it was circulated?

14 A. No.

15 Q. In other words, can you put a beginning time
16 on it?

17 A. No.

18 Q. Would you know one way or the other if
19 anyone at Dow had any connection with the Industrial
20 Hygiene Foundation as part of, like, being on its
21 board or being involved financially in supporting work
22 of the Industrial Hygiene Foundation?

23 MR. PIERCE: Objection to the form
24 of the question.

25 A. I don't know.

1 Q. Did you, yourself, attend any of the
2 Industrial Hygiene Foundation meetings?

3 A. Yes.

4 Q. What is the earliest time period you recall
5 attending those?

6 A. I have no recollection of time frame.

7 Q. Did you know any of the other people who
8 were involved in the Industrial Hygiene Foundation
9 when you first began going to their meetings, whenever
10 they were?

11 A. Dr. Brown comes to my mind.

12 Q. Would you recall his first name?

13 A. I -- I do not -- No.

14 Q. Do you remember any context of Dr. Brown's
15 activities?

16 A. No.

17 Q. Do you know a Vandiver Brown? Does that
18 ring a bell?

19 A. I don't know. It doesn't ring a bell.

20 Q. I believe you, yourself, were a member of
21 the American Chemical Society beginning in 1937; is
22 that right?

23 A. I'm not sure of the date, but I've been a

24 member of it for a long time.

25 Q. I think I've read in some of your

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1 biographies that it was 1937. Chemical Abstracts is
2 the publication of the American Chemical Society?

3 A. Yes.

4 Q. Would you have received copies of Chemical
5 Abstracts as part of your membership?

6 A. No.

7 Q. I take it that you were aware of Chemical
8 Abstracts' publication at least as early as your
9 formal education?

10 A. Yes.

11 Q. So, you were aware of them being in
12 existence by the time you got to Dow Chemical?

13 A. Yes.

14 Q. Was Chemical Abstracts a resource that you
15 used in your work at Dow Chemical in the 1930's?

16 MR. PIERCE: Objection to the form
17 of the question.

18 A. Yes.

19 Q. Do you recall if Chemical Abstracts was
20 divided into subject categories?

21 A. Yes.

22 Q. Was there a subject category for Chemical
23 Abstracts that you can recall was more attune to your
24 field of work in the 1930's?
25 A. I don't recall.

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1 Q. Was it your impression that - at the Dow
2 facilities there in Midland that there was an attempt
3 made to keep a current technical library for use by
4 the personnel?
5 A. Well, they made -- they made the library
6 available to anybody. No one I know of was forced to
7 go.
8 Q. But did it appear to you to be reasonably
9 current and reasonably thorough for the needs that you
10 had?
11 A. I would think so.
12 Q. You don't ever recall complaining that you
13 didn't have a particular resource or nobody would buy
14 a book that you wanted purchased or anything like
15 that?
16 A. I don't remember.
17 Q. Have you had any activities with the
18 American Standards Association?
19 A. I don't recall any of significance.

20 Q. Have you ever been nominated or considered
21 for one of their committees, to your knowledge?

22 A. Not that I recall.

23 Q. Have you ever done any work or had any
24 professional association with the American Petroleum
25 Institute?

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1 A. No.

2 Q. Would you know one way or the other if Dow
3 is a member of the American Petroleum Institute or has
4 ever been?

5 A. I do not know.

6 Q. Have you become familiar with any
7 publications in the area of health and safety or
8 toxicology published by the American Petroleum
9 Institute?

10 A. Yes. I'm -- I've seen them. I've seen
11 some, anyway. Very few, I expect.

12 Q. I think that I've read in your publications
13 that you were familiar with Professor Philip Drinker
14 at Harvard.

15 A. I know Philip Drinker, Dr. Drinker, yes.

16 Q. Are you aware that Dr. Drinker worked with
17 the American Petroleum Institute to prepare a series

18 called "Toxicological Reviews"?

19 A. I was not aware that he was associated with
20 the institute.

21 Q. Do you recall seeing a publications series
22 by the American Petroleum Institute called
23 Toxicological Reviews?

24 MR. PIERCE: Objection to the form
25 of the question.

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1 Are you asking him if he knows
2 Toxicological Reviews or if he knows
3 that it was prepared, as in your words,
4 by the American Petroleum Institute?

5 MR. HOBSON: I'm asking him if he
6 recalls ever seeing a series of
7 publications called "Toxicological
8 Reviews" published by the American
9 Petroleum Institute.

10 MR. PIERCE: What you're asking
11 him -- I mean, if he knows
12 Toxicological Reviews or if he knows
13 Toxicological Reviews is published by
14 the American Petroleum Institute?

15 MR. HOBSON: There might be more

16 than one Toxicological Reviews. I'm
17 trying to identify which ones, if there
18 are more than one. And I'm asking --

19 MR. PIERCE: I'm trying to show
20 the ambiguity in your question.

21 But let the witness answer it.

22 A. I don't -- I don't recollect.

23 (By Mr. Hobson)

24 Q. Just don't recall one way or the other?

25 A. I don't -- I don't remember anything

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1 specific about that.

2 Q. Did you know Dr. Drinker professionally?

3 A. I knew him. I never worked with him.

4 Q. Can you give me an idea of how it is that
5 you knew Dr. Drinker?

6 A. I had heard much about him. And, yes, I can
7 remember the first time I met Dr. Drinker. He was
8 chairman of a session, I believe, at the A.I.H.A.
9 where I gave the first paper I ever delivered. And he
10 kept telling me "Relax. Relax. Relax."

11 Q. I take it that after that you continued to
12 see Dr. Drinker from time to time.

13 A. No, except as we would meet in a meeting.

14 Q. What was your impression of Dr. Drinker's
15 professional abilities?

16 MR. PIERCE: Objection to the
17 form.

18 A. I had great respect for him.

19 Q. You have an interest and a professional
20 background in industrial hygiene, as well as
21 toxicology; is that right, Dr. Rowe?

22 A. Very limited.

23 Q. I understand that you're certified in
24 industrial hygiene in the toxicological aspects.

25 A. That's right.

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1 Q. And you've delivered papers at the American
2 Industrial Hygiene Association a number of times over
3 the years.

4 A. Yes.

5 MR. PIERCE: Objection to the form
6 of the question.

7 Q. When did you first get interested in
8 industrial hygiene, Dr. Rowe?

9 A. About 1940. As I recollect, probably the
10 first meeting. Dr. Irish was involved in it, and he
11 wanted us to become acquainted with it and participate

12 in it. And he took me to the -- I think that was not
13 the first meeting, the second meeting. Very early in
14 the formation of A.I.H.A.

15 Q. Do you recall what led to Dr. Irish being
16 interested in industrial hygiene, or would you know?

17 A. I think it was because of its thrust in
18 maintenance of healthful working conditions.

19 Q. Was there any function at Dow Chemical
20 Company, to your knowledge, up until this 1940
21 conversation that you recall with Dr. Irish that had
22 to do with industrial hygiene?

23 A. Would you please rephrase or restate that.

24 Q. Yes, sir. I'm trying to find out what, if
25 anything, was going on at Dow Chemical Company

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1 regarding industrial hygiene prior to 1940 when you
2 had this meeting with Dr. Irish that you would know
3 about.

4 MR. PIERCE: Is there a question
5 pending?

6 MR. HOBSON: Yeah. That's it.

7 A. Yes. When I arrived in '37 and in the first
8 years, Dr. Adams had fashioned a pump with a Wet-test
9 meter on it, which he had to have a truck practically

10 to haul various places, to take air samples in various
11 places. And I was aware of this. I helped him build
12 the pump.

13 (By Mr. Hobson)

14 Q. And Dr. Adams, then, was actually doing air
15 sampling after he devised his pump within Dow's
16 facilities?

17 A. Yes.

18 Q. Was it your impression that that was the
19 beginnings of air sampling for airborne contaminants
20 in Dow's facilities?

21 MR. PIERCE: Objection to the form
22 of the question.

23 A. As far as I know, yes.

24 Q. Can you remember what kinds of materials
25 Dr. Adams was sampling in those days, as you've

1 described?

2 A. One was methyl bromide.

3 Q. That's a material that Dow was manufacturing
4 at the time?

5 A. Yes.

6 Q. In Midland?

7 A. Yes.

8 Q. Any other materials you can recall being
9 sampled?

10 A. We sampled many materials. I don't know
11 what time or what he was working on at the time. I
12 can't answer the question sensibly.

13 Q. This beginning of building the pump that
14 you've told us about with the Wet-test meter, was that
15 shortly after you went to work at Dow?

16 A. Yes.

17 Q. What other activities, if any, did you have
18 in air sampling until you had the meeting with
19 Dr. Irish in 1940?

20 A. Would you restate that again, please.

21 Q. Yes, sir. All I understood you to tell me
22 that you did was help Dr. Adams build a pump. And I'd
23 like to know if you did anything else in connection
24 with industrial hygiene besides help Dr. Adams build
25 the pump.

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1 A. I helped him in the - when we were
2 sampling. I helped -- He was the primary; I was his
3 helper.

4 Q. So, you actually were involved in the air
5 sampling, itself.

6 A. Yes, yes.

7 Q. And, now, once you had the meeting with
8 Dr. Irish in 1940, can you pick up there and tell me
9 your involvement in industrial hygiene at Dow
10 following that meeting that you went to at the
11 American Industrial Hygiene Association?

12 MR. PIERCE: Objection to the form
13 of the question.

14 A. Well, my involvement in industrial hygiene
15 was cursory to my laboratory work in toxicology; but I
16 did on occasion visit plants and talk to them about
17 the problems they might have. I've been in the
18 plant. I've taken samples, myself - few, but I have.
19 And then we had people - gradually added a few
20 people. And it didn't really blossom until
21 Mr. Hoyle came with us. And from then on, I don't
22 recollect being in the plants, myself.

23 Q. So, would it be fair to characterize
24 Mr. Hoyle as your first designated full-time
25 industrial hygienist at Dow?

1 A. Yes.

2 MR. PIERCE: Objection to the form
3 of the question.

4 Q. Do you recall in this time period between
5 1937 and when Mr. Hoyle came into industrial hygiene
6 what kinds of air sampling capabilities you had at
7 Dow?

8 A. I'm not sure I can give you everything. We
9 tried to develop sampling procedures involving
10 halogenated hydrocarbons in which we would pass
11 material through a furnace, collect the halides, and
12 have it sent to the analytical lab for analysis, and
13 with a blood-test meter or some such matter guess or
14 estimate the volume of the sampling in monitoring
15 the - of the occupational exposure as best we could
16 with the techniques we had available at that time.

17 Q. Do you recall if you had the ability to
18 sample particulates from 1937 until Mr. Hoyle came on
19 board?

20 A. I don't remember the particulates. I had
21 nothing to do with them.

22 Q. Now, would there have been someone else who
23 would have been involved with particulates, then?

24 A. I don't know -- I don't think -- I don't
25 recollect.

1 Q. Do you recall having any discussions with

2 anyone outside of Dow about this industrial hygiene
3 activity - in other words, how to collect air samples
4 how to develop air sampling equipment - or was this,
5 something you did all internally at Dow?

6 MR. PIERCE: Objection to the form
7 of the question; lack of time frame.

8 Q. I'm interested while in this '37 time period
9 until when Mr. Hoyle came on board.

10 A. I don't recollect. I'm having a hard time
11 associating the various developments that were
12 occurring in that period of time. That's quite awhile
13 ago for me.

14 Q. I can appreciate it's a long time ago. Do
15 you have any recollection of anyone - for instance,
16 from the U. S. Public Health Service - working with
17 you in developing your program or methods?

18 A. No, I don't.

19 Q. How about from any of the universities? I
20 think you said that you knew about the activities at,
21 like, the University of Cincinnati and some other
22 places. Would you have worked with any university
23 personnel in developing an industrial hygiene program
24 before Mr. Hoyle came?

25 A. Not that I recollect.

1 Q. Were there any insurance carriers for Dow,
2 that you're aware of, in that time period from '37
3 until Mr. Hoyle came on who might have provided you
4 information about air sampling?

5 MR. PIERCE: Objection to
6 form.

7 A. I don't recollect any.

8 Q. Have you ever had any dealings with
9 insurance companies while you've been a Dow employee,
10 Dr. Rowe?

11 MR. PIERCE: That's a completely
12 ambiguous question.

13 But answer it if you can.

14 Q. I'm talking about professionally. Any
15 industrial hygienists from insurance companies come
16 into Dow?

17 A. No, except that I knew some of the people in
18 there. But just meetings, we never had -- I never had
19 any contact with them on the technicalities.

20 Q. Would you know one way or the other while
21 you were a Dow employee if any insurance company
22 industrial hygienist ever did any air sampling in Dow
23 facilities?

24 A. I can't recall any.

25 Q. Did Dow, to your knowledge, sir, have any

1 industrial hygiene consultants, people who were not
2 employees of Dow?

3 A. Not that I can recollect.

4 Q. Would you tell us --

5 MR. PIERCE: Could we knock off
6 the background chatter please?

7 I'm sorry. Go ahead.

8 MR. HOBSON: Okay. I didn't hear
9 any, so -- I'm sorry.

10 (By Mr. Hobson)

11 Q. Would you tell me, sir, how your job at
12 Dow once Mr. Hoyle was hired - how you would work with
13 Mr. Hoyle, if you did?

14 A. Well, my area was in charge of -- My area
15 was in charge of learning the facts as far as
16 toxicology was concerned and helping to interpret the
17 results that might come back from the field. We
18 conversed all the time. We were in the same building
19 together. So, sure, we talked about problems that we
20 had, what we might anticipate, and so on.

21 Q. That's -- What I'd like to know about,
22 Dr. Rowe, is what - how did you interface - not what
23 you necessarily said, but how did toxicology relate to

24 industrial hygiene?

25 MR. PIERCE: I object to the form

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1 of the question.

2 A. Well, I always have kind of looked at that
3 as "hand in glove."

4 Q. Can you explain what you mean by that?

5 A. Well, an industrial hygienist that doesn't
6 know anything about - does not have the background
7 information would have a hard time interpreting his
8 results, I think. And he relies on us for the
9 information.

10 Q. And what kind of information?

11 A. Toxicological information.

12 Q. And do you rely on the industrial hygienist
13 for any part of your work, then, as a toxicologist?

14 A. Yes.

15 Q. How does that work?

16 A. Well, to -- It comes to down whether or how
17 you comply with what you believe is a - is a safe
18 working atmosphere and what you know about the
19 toxicology, what the effects are, what kind of
20 symptoms you might expect to find in the people who
21 are working there, if any. It's a very close

22 relationship. An industrial hygienist without some
23 toxicological help ordinarily - in those days, at
24 least - was at great disadvantage. He was at that
25 point an empirical person.

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1 Q. And "in those days," you mean in the
2 Fifties?

3 A. Yes. Early in the -- Early in the days
4 industrial hygiene was not a very well-developed art
5 any more than industrial toxicology was.

6 Q. Did medicine play a part in your work in
7 toxicology and industrial hygiene?

8 A. Yes.

9 Q. How did that -- How did medicine fit in?

10 A. Well, the information that we developed on
11 animal work was always transmitted to the medical
12 department. And we had discussions with them. And if
13 they happened to see or to have workmen show up at the
14 office - at a medical office - with a particular
15 problem, they had no data. And they didn't have any
16 information on this - on what the exposure was. They
17 would come to us to find out. The first thing we
18 would probably do if we didn't have toxicological data
19 available would be to get something going or get the

20 information and find out what kind of exposures were
21 causing adverse effects. And we communicated freely
22 between the - those operations always.
23 Q. When you say that you would get the
24 information, would you ever get information about
25 toxicology of a material from other manufacturers?

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1 MR. PIERCE: You mean from
2 publications - scientific publications,
3 treatises?

4 MR. BLANKS: From other
5 manufacturers.

6 MR. PIERCE: That's completely --
7 Q. Telephone? By mail? Brochures? I mean,
8 would you relate with other manufacturers?

9 A. Well, at the time -- Well, what time frame
10 are you talking about now?

11 Q. Up until the -- From '37 until your
12 industrial hygiene program began to change.

13 A. Okay. I -- I don't recollect. But it would
14 be very logical, if there were information available;
15 and there wasn't much available in those days.

16 Q. As more information began to be available in
17 your own laboratories, would you have a way of

18 communicating with your customers what you learned
19 about your products?

20 A. Yes. We did this through our safety data
21 sheets. We did it through publications, talks,
22 presentations at meetings, and answering questions
23 when we got them on the telephone or by letter,
24 whatever.

25 Q. Were you involved, Dr. Rowe, in the

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1 preparation of safety data sheets?

2 A. Only peripherally. For the toxicological
3 information. This was Mr. Hoyle's primarily
4 responsibility.

5 Q. Did you have anything to do with the
6 distribution of the safety data sheets?

7 MR. PIERCE: Objection to the form
8 of the question.

9 A. No. That was pretty well standardized, I
10 think. I didn't -- Somebody wanted one special or
11 something like that, why, certainly we would just send
12 them one. That's all.

13 Q. I take it that from your early days in
14 involvement with the American Industrial Hygiene
15 Association you became aware of the American

16 Conference of Governmental Industrial Hygienists.

17 A. Yes.

18 Q. What is your earliest recollection of
19 learning about that organization's existence?

20 A. Probably about the time I went to the
21 A.I.H.A. meeting.

22 Q. Were you aware that there came a time when
23 the American Conference of Governmental Industrial
24 Hygienists published a list of chemicals and exposure
25 levels associated with those chemicals?

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1 A. Yes.

2 Q. How is it that you learned of this
3 information?

4 A. I can't answer you for sure because this was
5 common knowledge. Everybody that was working in the
6 A.C.G.I. started publishing the threshold limit
7 values. Anybody in the field was - became aware of
8 it. I don't even know when the first one was. It was
9 probably mid-Fifties or some such time; but everybody
10 in the field knew about that, I think.

11 Q. You're familiar with the National Safety
12 Council, are you?

13 A. Yes, to some extent, but not -- I never

14 worked with them real closely.

15 Q. Are you aware that the National Safety
16 Council used to publish the A.C.G.I.H. T.L.V. list in
17 its periodical?

18 A. I think there were a number of publications
19 that published that list.

20 Q. If anyone wanted to find the A.C.G.I.H.
21 T.L.V. list, would it have been hard to find if they
22 tried?

23 MR. PIERCE: Objection to the form
24 of the question.

25 A. I wouldn't think so.

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1 Q. I take it that being aware of that list and
2 familiar with it, you know that there's a section that
3 deals with mineral dust.

4 A. Yes.

5 Q. In your work at Dow, do you recall ever
6 being involved with any toxicity testing for asbestos?

7 A. No.

8 Q. Or of asbestos?

9 A. No.

10 Q. Do you recall that in the earliest of the
11 A.C.G.I.H. T.L.V. lists that you're familiar with that

12 asbestos was one of the mineral dusts that was listed?

13 A. I'm aware it was one, yes.

14 Q. Would you know one way or the other of any
15 evaluation of asbestos dust in the air at any Dow
16 facility?

17 MR. PIERCE: Objection to the form
18 of the question.

19 A. I guess I'd ask you to repeat, please.

20 Q. Yes, sir. I'm trying to find out if you
21 know one way or the other whether anyone has ever
22 conducted any air samples at a Dow facility for
23 asbestos.

24 A. I don't know.

25 Q. Would you know, Dr. Rowe, one way or the

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1 other if Dow has ever manufactured a product in which
2 asbestos was a component?

3 A. I don't recall.

4 Q. Did you have records available to you in
5 your work that would tell you what products Dow
6 manufactured and what their constituents were?

7 A. I think that that would be information that
8 was available. Whether I had it or not, I don't know.

9 Q. If we go back to the early part of your

10 career -- And I don't mean necessarily the first day
11 but the first few years - where would you have gone to
12 find out what materials Dow manufactured and what
13 their constituents were?

14 A. I don't know.

15 Q. I see from your C.V. that in 1954 it shows
16 that you were the director of toxicology research
17 section of the biochemical research laboratory.

18 If we go to that point in time or shortly
19 thereafter, would there be a place there that you
20 would know to go to find out products Dow manufactured
21 and what their constituents were?

22 A. Well, the Dow catalog would have given the
23 names of all the products and the constituents, what
24 information would have been available, if I had asked
25 for it from the - from the production plant or whoever

1 was involved.

2 Q. What do you mean by a "Dow catalog"?

3 A. Product catalog.

4 Q. There was in existence a Dow product catalog
5 that you recall?

6 A. Yes.

7 Q. How far back in time do you recall there was

8 a Dow catalog?

9 A. I don't know.

10 Q. Would you know one way or the other,
11 Dr. Rowe, if asbestos was used in your laboratory in
12 the late 1930's through 1954 when you became the
13 director?

14 A. No.

15 Q. Are you aware that asbestos was sometimes
16 used as a filtering agent in chemical testing?

17 MR. PIERCE: Objection --

18 A. Yes.

19 MR. PIERCE: -- to the form.

20 Q. You learned that as part of your training as
21 a chemist in chemistry?

22 A. Yeah. Occasionally used asbestos, yes.

23 Q. But do you recall one way or the other if
24 that was done at any Dow facility, the use of asbestos
25 as a filtering agent?

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1 MR. PIERCE: Asked and answered.

2 A. I don't know where all it was or wasn't
3 used.

4 Q. Do you recall if Dow was a manufacturer of
5 chlorine?

6 A. Yes.

7 Q. Have you, yourself, been to the facilities

8 where chlorine was manufactured?

9 A. I was never there.

10 Q. Would you know one way or the other if

11 asbestos was used as a membrane in the cells that were

12 used to make chlorine?

13 A. I don't know.

14 MR. PIERCE: Objection to the

15 form; asked and answered.

16 Q. I'm sorry. I didn't hear you. I didn't

17 hear your answer, sir.

18 A. I don't know.

19 Q. Was Dow a manufacturer of chlorine in the

20 1930's when you began there, to your knowledge?

21 A. My recollection is I -- Yes.

22 Q. And I think you told us that part of your

23 work was evaluating halogenated hydrocarbons; and

24 chlorine would be one of the halogen chemicals,

25 correct?

1 A. Yes.

2 Q. Are you familiar with what was called the

3 American Standards Association?

4 A. Peripherally.

5 Q. Are you aware that they in the past
6 generated consensus standards?

7 A. I don't recall what kind of standards they
8 were.

9 Q. But you do recall that they generated
10 standards?

11 A. The ANSI standards, yes.

12 Q. And A.S.A., the American Standards
13 Association, later became the American National
14 Standards Institute or ANSI. You know that?

15 A. No.

16 Q. Do you recall having access to any of the
17 A.S.A. standards while you were at Dow?

18 A. I remember seeing them. I couldn't tell you
19 when.

20 Q. Would you recall, Dr. Rowe, if you would
21 have known that asbestos was a component of any of the
22 thermal insulation materials used in any of Dow's
23 facilities from 1937 to 1954?

24 MR. PIERCE: Asked and answered.

25 A. Yes. It was a commonly used pipe

1 insulation.

2 Q. Do you recall seeing any - any information
3 from manufacturers of thermal insulation products
4 containing asbestos about any health hazards from
5 asbestos in your work at Dow up until 1960?

6 A. I don't recall specifically, no.

7 Q. Would you, Dr. Rowe, have ever been involved
8 as a Dow employee in visiting someone else's
9 operations other than Dow's where Dow products were
10 being used in evaluating either the toxicological or
11 industrial hygiene aspects of a Dow product?

12 A. Yes.

13 MR. PIERCE: Objection to the form
14 of the question; it's compound and it's
15 confusing.

16 But go ahead and answer it.

17 A. Yes.

18 Q. What do you recall in that regard, Dr. Rowe?

19 A. The one I recall was a visit - And this was
20 essentially an industrial hygiene visit - in the early
21 days in Texas in a flour mill which was using methyl
22 bromide. And I was asked to go down there and talk to
23 them about methyl bromide. And they wanted some air
24 samples taken, which I did.

25 Q. And about when would that have been, sir?

1 A. That would have been in the early Forties,
2 probably. Around '40 or somewhere after that.

3 No, no. I can't answer you exactly. It
4 would be early days.

5 Q. Methyl bromide was used as a fumigant for
6 grains?

7 A. Yes.

8 Q. Is part of evaluating the industrial hygiene
9 aspects of a product a consideration of how that
10 product is going to be used in the field?

11 MR. PIERCE: Objection to form of
12 the question.

13 A. Yes.

14 Q. And essentially what you were doing in 1940
15 or thereabouts whenever you made this trip to the
16 field in Texas was evaluating its use in the field:
17 is that accurate?

18 A. I guess I would agree that's part of the -
19 part of the program, yes.

20 Q. Did you have any involvement at Dow in
21 writing any kind of labeling or instructions that had
22 to do with health and safety in the use of products
23 that Dow manufactured?

24 A. At times.

25 Q. How far back would that go in your career at

1 Dow, as best you can recall, Dr. Rowe?

2 A. I cannot tell you. I don't know.

3 Q. In writing labeling or instructions for use
4 that have to do with health and safety of products, is
5 it important to know how those products are going to
6 be used in the field?

7 A. Insofar as reasonably possible.

8 Q. And how would you, as a manufacturer working
9 for a manufacturer of products, determine how products
10 are going to be used in the field?

11 MR. PIERCE: Objection to form of
12 the question.

13 A. Well, products are usually designed for a
14 particular use; but there are times when your
15 customers don't care about you knowing what they're
16 going to be used for.

17 Q. I'm not sure I understand how that fits into
18 your - the information you need to know to write
19 labeling and instructions for use.

20 A. Well, if you don't - if you're not sure
21 that - how it's going to be used, then you don't know
22 what kind of exposures to anticipate.

23 Q. And that's why you need to know how a
24 product is going to be used in the field?

25 A. Any bit of information is helpful.

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1 MR. PIERCE: Maybe this would be a
2 good time to take a brief recess.

3 We've been going more than an hour.

4 MR. HOBSON: That's fine. Take a
5 break.

6 (AT THIS TIME A BRIEF RECESS WAS
7 TAKEN, AND THE PROCEEDINGS THEREAFTER
8 RESUMED AS FOLLOWS:)

9 (By Mr. Hobson)

10 Q. Dr. Rowe, did you have any involvement in
11 your job at Dow in recommending that Dow have a person
12 designated as a full-time industrial hygienist?

13 A. No.

14 Q. Do you have any knowledge as to who it was
15 that did initiate the creation of an industrial
16 hygiene position at Dow?

17 A. Dr. Irish.

18 Q. Were you in on any of the discussions that
19 led up to the creation of the position?

20 A. I don't recall.

21 Q. Did you have anything to do with the
22 selection of Mr. Hoyle?

23 A. No.

24 Q. Did you know Mr. Hoyle before he became the
25 industrial hygienist?

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1 A. No.

2 Q. Did you have anything to do with any of the
3 training or orientation of Mr. Hoyle when he took the
4 industrial hygiene position?

5 A. Yes.

6 Q. What did you do in that regard, sir?

7 A. Acquainted him with the toxicological work
8 that we were doing and all in that area.

9 Q. Was it your impression that Mr. Hoyle was
10 not familiar with toxicology before he took the
11 position, or would you know one way or the other?

12 MR. PIERCE: Objection to the
13 form.

14 A. I don't believe he was.

15 Q. What did you do to orient or explain to
16 Mr. Hoyle about toxicology?

17 A. I don't recall.

18 Q. You, yourself -- Sir, I think you've said
19 that you began being involved in the American
20 Industrial Hygiene Association about 1940.

21 Did you go to other American Industrial
22 Hygiene Association meetings after the early 1940's?
23 A. Yes.
24 Q. Were you a regular attendee at those
25 meetings?

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1 A. Quite regular.
2 Q. Once Mr. Hoyle had the position, would he
3 have gone to the meetings, also --
4 A. Yes.
5 Q. -- to your knowledge? Was there anyone else
6 at Dow while it was just Mr. Hoyle being the
7 industrial hygienist and yourself that went to the
8 American Industrial Hygiene Association meetings on a
9 regular basis?
10 A. Other people went. I can't attest to how
11 regular.
12 Q. Did Dr. Irish go on several occasions, that
13 you're aware of?
14 A. He was a regular.
15 Q. Anyone else who went more than just once or
16 twice, that you recall, from Dow up until there were
17 other people hired in industrial hygiene for
18 Mr. Hoyle?

19 A. Dr. Adams went quite regularly.
20 Q. Do you recall if Dr. Irish or Dr. Adams made
21 presentations?
22 A. I don't recall.
23 Q. Has any of your interest as an industrial
24 hygienist professionally while you were at Dow dealt
25 with particulates?

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1 MR. PIERCE: Objection to the form
2 of the question and the
3 categorization. The witness has
4 already indicated his particular role
5 in industrial hygiene.
6 But go ahead and answer the
7 question.
8 A. I guess I'd like to have you repeat it.
9 Q. Yes, sir. I'm curious to know if you in
10 your position at Dow had any particular interest in
11 particulates from a toxicology standpoint.
12 A. No.
13 Q. Was there anyone else at Dow, to your
14 knowledge, whose interest was in the area of
15 particulate toxicology?
16 A. No.

17 Q. If you had occasion to need some information
18 about particulate toxicology, where would you go to
19 get that information?

20 MR. PIERCE: Object to the form of
21 the question.

22 A. I would expect that I would go to the
23 primary manufacturers of the particular product that -
24 if we had an interest.

25 Q. Was it your experience, Dr. Rowe, when you

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1 were at Dow that if a customer of Dow's came to you
2 and asked you for toxicity information regarding a Dow
3 product that they would be relying on you to provide
4 them with accurate and as complete information on the
5 toxicity of that product as you had available?

6 A. Yes.

7 MR. PIERCE: Objection to the form
8 of the question.

9 Q. I'm sorry, sir.

10 A. Yes.

11 Q. When you were doing your work at Dow, did
12 you ever do any human experimentation in your
13 laboratories, that you're aware of?

14 A. Yes.

15 Q. How far back in time do you recall there
16 being human experimentation at Dow's laboratories?
17 A. Probably 1940 --
18 Q. Is there -- I'm sorry. Go ahead. I didn't
19 mean to cut you off.
20 A. Roughly. I can't identify it specifically.
21 Q. What kinds of human experimentation was
22 being done in the approximately early 1940's, as best
23 you recall, sir?
24 A. Primarily odor thresholds, irritation
25 thresholds in the early days.

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1 Q. How would you go about conducting this work?
2 A. Well, you'd create a chamber, establish a
3 concentration, measure it, enter the chamber, and see
4 what happens.
5 Q. Who would be the the people who were
6 involved in actually entering the chamber and being
7 exposed to the materials?
8 A. Dr. Irish, Dr. Adams, and myself. Even
9 Mr. Hoyle or whoever else happened to be available.
10 Q. In essence you were doing human
11 experimentation on the staff of the laboratory.
12 A. That's all.

13 Q. And was this prior to Dr. Gay being hired by
14 Dow?

15 A. Yes.

16 Q. How long did you all continue to do
17 experiments on yourselves?

18 A. I can't answer you. Don't know.

19 Q. Would it have been more than ten years, you
20 think?

21 A. Oh, yes.

22 MR. PIERCE: By "experiments," you
23 mean threshold of odor and precisely
24 what Dr. Rowe described; is that
25 correct, Mr. Hobson?

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1 MR. HOBSON: Yes. Whatever they
2 did.

3 (By Mr. Hobson)

4 Q. Was there a point in time that you thought
5 better of the human experimentations on yourself and
6 stopped for that reason, or why did you stop?

7 MR. PIERCE: Objection to form of
8 the question.

9 A. I didn't know we stopped.

10 Q. Okay. As far as you know, when you left Dow

11 there was still the same kind of human experimentation

12 going on?

13 A. I -- I wasn't a part of it at that time

14 but -- I don't know.

15 Q. Do you recall that methyl bromide was one of

16 the materials that you would do human experimentation

17 on in the early 1940's?

18 A. No.

19 Q. And was it later done?

20 A. I don't think it was ever done.

21 Q. Did you, sir, yourself, ever while you were

22 a Dow employee get involved in any epidemiology

23 studies?

24 A. No.

25 Q. Would you know if there were any

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1 epidemiological studies done of Dow employees while

2 you were a Dow employee?

3 A. Yes.

4 Q. Who would have been doing those, sir?

5 A. Medical department and another M.D.,

6 epidemiologist, Dr. Cook.

7 Q. Would you recall Dr. Cook's first name?

8 A. No. Yes. Ralph.

9 Q. Can you give me the approximate time period,
10 as best you understand, when epidemiological studies
11 were begun at Dow?

12 A. No. I can't remember.

13 Q. Would you remember the decade?

14 A. Probably in the later Sixties.

15 Q. In the what, sir?

16 A. In the late Sixties.

17 Q. Did you have any role in giving input to the
18 epidemiologist or the medical department about what
19 should or should not be included in epidemiological
20 studies?

21 A. No.

22 Q. Did you provide any review of
23 epidemiological studies or drafts of epidemiological
24 studies for Dow?

25 MR. PIERCE: Objection to the form

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1 of the question.

2 A. I don't recall any.

3 Q. Basically you got the report when it was
4 finished, and that's about it as far as the
5 epidemiological work went on?

6 A. Yes.

7 Q. Would you know one way or the other if any
8 epidemiological studies were ever done of the Dow
9 Freeport facility or any groups within Dow Freeport?

10 A. I don't know.

11 Q. To your knowledge, were epidemiological
12 studies performed by Dow published?

13 A. I don't know.

14 Q. Were you ever involved personally with
15 communicating health hazards that might be associated
16 with a particular compound to workers who would be
17 handling that material?

18 A. Yes.

19 Q. How far back in your Dow history would that
20 go, sir?

21 A. Early Forties.

22 Q. I guess part of your trip to Texas where you
23 were dealing with methyl bromide included that
24 activity, did it not, telling workers about the
25 hazards of methyl bromide?

1 A. I don't recall just what we did.

2 Q. Did you find that it was good practice to
3 advise employees about potential health hazards
4 associated with products they would be handling?

5 MR. PIERCE: Objection to the
6 form.

7 A. We made that information available to
8 anybody.

9 Q. And, in fact, I think you have published,
10 have you not, that telling the worker about health
11 hazards is necessary to help gain the assistance of
12 the worker in controlling risks to occupational
13 hazards, correct?

14 MR. PIERCE: Objection to the
15 form.

16 A. I think so.

17 Q. Would that be your position still today, --

18 A. Yes.

19 Q. -- Dr. Rowe?

20 A. Yes, it would.

21 Q. Workers should be informed about potential
22 risks of the use of any materials that they work with?

23 A. Yes.

24 Q. As far as you're aware, Dr. Rowe, was that
25 Dow's practice for the time periods you worked at Dow

1 to inform its workers about any kind of health risks
2 associated with products the workers would be

3 handling?

4 A. It was a general policy.

5 Q. Are you aware of any instance where a
6 decision was made not to tell Dow employees of any
7 particular health risk associated with a product that
8 they would be handling?

9 A. No. I don't believe that ever happened
10 but -- Not to my knowledge.

11 Q. And certainly if it had come to your
12 attention, I think, based on what I've seen of your
13 writings, you would have taken any steps necessary to
14 prevent it, would you not have?

15 MR. PIERCE: Objection to the
16 form.

17 A. I probably would.

18 Q. Have you ever been accused of being bashful,
19 Dr. Rowe, in your professional activities?

20 A. No. I don't believe so.

21 Q. I understand that one of your interests in
22 the past has been occupational carcinogens; is that
23 correct?

24 A. Only as one facet of toxicology.

25 Q. What is your recollection of how early in

1 your career you began to be interested, as one facet
2 of toxicology, in occupational cancers?

3 A. I don't know.

4 Q. Was Dow, to your knowledge, ever a
5 manufacturer of aromatic amines?

6 A. Yes.

7 Q. Tell me what you're aware of as far as Dow
8 being a manufacturer of aromatic amines.

9 MR. PIERCE: Let me now interpose
10 an objection. Are aromatic amines a
11 part of this case? Are we going to go
12 through every product that Dow has ever
13 manufactured in its history? When are
14 we going to get to the relevant aspects
15 for which Dr. Rowe is here?

16 MR. BLANKS: What was that
17 objection? Is that one to form?

18 MR. PIERCE: Let's get to
19 relevance on this because we're really
20 getting to the point where it's way
21 beyond the toleration point in terms of
22 extraneous materials. Dr. Rowe is here
23 to provide you his answers to questions
24 related to a certain litigation, not on
25 a broad fishing expedition relating to

1 nothing even closely resembling
2 relevancy here. So, please, let's get
3 to the matters before us.

4 MR. BLANKS: Well, we are trying
5 to be tolerant of your repeated
6 objections and attempts to coach the
7 witness and instruct him; and we'll
8 proceed with our discovery deposition
9 of areas that the doctor has knowledge
10 of.

11 MR. PIERCE: Well, I've interposed
12 my objections; and I add another one
13 for your insinuations and your
14 outrageous statement that you just
15 made.

16 Q. I think we're back to my question, Dr. Rowe.
17 Can you tell me what you recall about Dow
18 having manufactured aromatic amines, please?

19 A. Well, aniline was a product, has been and
20 was for a long time.

21 Q. Was aniline a product back in the late
22 Thirties when you joined the company?

23 A. As far as I know.

24 Q. Would you have become aware, then, shortly

25 after you joined the company of an association between

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1 aromatic amines and bladder cancer in workers?

2 MR. PIERCE: Objection to the form
3 of the question.

4 A. At some time I became aware of it.

5 Q. Fairly early on in your career, you believe?

6 A. I have no recollection of time frame, no.

7 MR. PIERCE: Does that question
8 imply all aromatic amines? Are you
9 asking all aromatic amines or some
10 aromatic amines?

11 MR. HOBSON: I'm satisfied with
12 the question and answer.

13 MR. PIERCE: Okay.

14 (By Mr. Hobson)

15 Q. What is your earliest recollection,
16 Dr. Rowe, of learning of any association between
17 asbestos and cancer in humans?

18 A. I don't know. I can't recollect when.

19 Q. Can you even give me a decade?

20 A. No, I don't think so.

21 Q. Would the medical and scientific literature
22 as it was coming out in the area of occupational

23 carcinogens - is that something that you believe you
24 would have been trying to follow as closely as you
25 could, given your circumstances?

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1 A. No.

2 Q. Was cancer being caused by chemicals that
3 you were assessing in your laboratories at the
4 biochemical research laboratory at Dow anything that
5 you attempted to determine?

6 A. Yes.

7 Q. How early on would you recall that you at
8 the biochemical research laboratories were trying to
9 find out if chemicals that you were assessing could
10 cause cancer?

11 A. I don't know. Time frames are elusive.

12 Q. One of the items that you've brought here to
13 the deposition, Dr. Rowe, we've marked as Plaintiffs'
14 Exhibit 760600 Dow. And it's titled, "A Historical
15 Account of Dow's Environmental Stewardship," by Eugene
16 E. Kenega. Did I say that right?

17 A. "Ke-nig-a" is the way it's pronounced.

18 Q. I apologize. Is this the article that
19 you brought responsive to a subpoena (tendering
20 document)?

21 MR. PIERCE: (Reviewing document).
22 Counsel, may I ask, are the yellow
23 tabs yours?
24 MR. HOBSON: Yes. We've added
25 yellow tabs and --

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1 MR. PIERCE: And the blue
2 underlines?
3 MR. HOBSON: Yes.
4 MR. PIERCE: And the additional...
5 MR. HOBSON: We'll take off the
6 yellow tabs, but unfortunately we can
7 only mark on...
8 MR. PIERCE: Okay. I just wanted
9 it to be clear.
10 MR. HOBSON: Yes.
11 (By Mr. Hobson)
12 Q. That's one of the articles you brought,
13 Dr. Rowe?
14 A. I believe so.
15 Q. What led to the generation of this article,
16 if you know, sir?
17 A. I don't remember.
18 Q. Did you know the author?

19 A. Yes.

20 Q. What do you know about the author's work?

21 A. He was very much interested in environmental
22 issues.

23 Q. And he was an employee of Dow, was he?

24 A. Yes.

25 Q. Can you give me some time frame for how long

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1 this gentleman was employed by Dow?

2 A. No, I don't remember.

3 Q. I wanted to ask you -- And I think Counsel
4 may have another copy of it.

5 MR. HOBSON: You've got my only
6 one.

7 MR. PIERCE: (Tendering
8 document to Mr. Hobson)

9 (By Mr. Hobson)

10 Q. On the second page of this document, it

11 appears that it attributes a 1938 article to -- A

12 statement in 1938, I guess it is. Let me ask you,

13 sir, because I don't know what it implies. Looking at

14 this article that's Exhibit 760600 DOW, on page 173

15 there's a paragraph in the right-hand column that

16 starts out "1938." Could you take a look at that,

17 sir, and tell us what that means to you (tendering
18 document)?

19 A. (Reviewing document) I remember a meeting
20 with the F.D.A. I don't know what year it was, and I
21 don't recollect this particular situation.

22 Q. "This particular situation" being what, sir?

23 A. That we were testing materials for
24 carcinogenic - cancer-producing potential on
25 susceptible mice over a period of six months.

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1 I don't remember if we were doing that at
2 that time.

3 Q. Does this article appear to you to say that
4 this work was being done in 1938?

5 A. That I can't attest to. I don't remember
6 at - at that time.

7 Q. There's a name here of "H. C. Spencer." I
8 don't recollect that as being a name we've talked
9 about.

10 Can you tell us who Mr. Spencer was? - or
11 maybe you did. I'm sorry. Dr. Spencer. You did tell
12 us. I beg your pardon.

13 Sir, I need to ask your indulgence for a
14 moment on this. Is it your testimony that you just

15 don't recall that you did this work in 1938; or is it
16 your recollection that you recall it did not happen in
17 1938?

18 A. My recollection: I don't recall being
19 engaged in that in 1938 or that early.

20 Q. Can you tell us that it's wrong?

21 A. No.

22 Q. There's mention here of someone named Dorsey

23 R. Mussell, M-u-s-s-e-l-l. Can you tell me who that

24 is, sir?

25 A. He was -- He was a medical technologist who

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1 worked with Dr. Spencer.

2 Q. As a med. tech., what kinds of things would
3 Mr. Mussell have been doing?

4 A. Preparing tissues for microscopic
5 examination and doing blood tests - "Blood counts," I
6 should say.

7 Q. Dr. Rowe, I'd like to ask you some questions
8 about some of your work that might have involved the
9 American Conference of Governmental Hygienists.

10 Have you worked with their T.L.V. committees
11 in the past?

12 A. On occasion.

13 Q. Would you tell me what occasions you recall
14 that you've worked on their T.L.V. committees? - or
15 "worked with their T.L.V. committees," I should say.
16 A. I don't recall being a member of the T.L.V.
17 committee or anything. That would not have been --
18 They wouldn't have done that, anyway. But they would
19 frequently call and ask what we - what data we had on
20 a particular substance and what we would recommend,
21 and we never hesitated to talk to them.
22 Q. I'm sorry. I didn't mean to cut you off.
23 A. We tried to be helpful.
24 Q. I have heard it said that you are an
25 ex officio member of the T.L.V. committee. Is that a

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1 term you've ever heard?
2 A. I suppose if anyone sits down with them and
3 is not a member of that organization, that that's what
4 it would be called.
5 Q. Can you tell me approximately how many times
6 you recall sitting down with the T.L.V. committees?
7 A. I can't tell you.
8 Q. Would it have been probably more than ten
9 times?
10 A. I doubt it.

11 Q. Have you been present at a meeting of an
12 A.C.G.I.H. T.L.V. committee when a decision on a
13 T.L.V. was reached?

14 A. I don't remember.

15 Q. Can you remember any of the people that
16 you've met with in regards to the T.L.V.'s of the
17 American Conference of Governmental Industrial
18 Hygienists?

19 A. Professor Warren Cook. I don't recall
20 offhand members of the committee at that time other
21 than Warren.

22 Q. Have you ever opposed the adoption of
23 threshold limit values as exposure standards for laws?

24 A. Yes.

25 Q. Have you been involved in -- Strike that.

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1 I take it, Dr. Rowe, that you understand how
2 threshold limit values were intended to be used.

3 A. I can't answer that the way it's phrased.

4 Q. Do you understand, sir, that threshold limit
5 values were never intended to be exact cutoffs between
6 safe and hazardous?

7 A. I think that's a fair statement.

8 Q. And that exposures that occur at or even

9 below the threshold limit value may in some cases
10 still result in an occupational disease?

11 MR. PIERCE: Objection to form.

12 A. Anything is probable. "Possible," I should
13 say.

14 Q. There -- Certainly, as a toxicologist, sir,
15 I would believe that you would accept that there is
16 wide variation in individual susceptibility for human
17 beings.

18 A. Yes.

19 Q. And as such, then, it is impossible to
20 predict the outcome of an exposure for any given
21 individual.

22 MR. PIERCE: Objection to the
23 form; asked and answered.

24 A. It's not impossible to predict.

25 Q. But to predict with certainty, I guess, it's

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1 impossible.

2 A. Well, what degree of certainty?

3 Q. Have you been involved in any discussions
4 that concern the establishment of a threshold limit
5 value and how - what percentage or what portion of a
6 population that T.L.V. will protect?

7 MR. PIERCE: I'm going to object
8 to the form of the question in that a
9 portion of it is actually tes -
10 attempted testimony.

11 But go ahead.

12 A. I will have to have the question factored
13 before I can attempt to answer it.

14 Q. What kinds of factors would you need to
15 know, sir?

16 A. Well, restate it.

17 MR. HOBSON: Let me ask the young
18 lady to read it back. That way we'll
19 have it exact.

20 THE REPORTER: "QUESTION: Have
21 you been involved in any discussions
22 that concern the establishment of a
23 threshold limit value and how - what
24 percentage or what portion of a
25 population that T.L.V. will protect?"

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1 A. That's two questions. I can't answer two
2 questions at once.

3 (By Mr. Hobson)

4 Q. Which two questions do you see there,

5 Dr. Rowe?

6 A. You asked if I'm involved - been involved in

7 any of the - of the setting of threshold limits. I'll

8 have to answer that question "yes."

9 Q. All right, sir.

10 A. But with respect to percentile of control

11 people, I'll have to answer "no."

12 Q. My question really was intended to find out

13 if you had any discussions about what percentage would

14 be protected in discussing T.L.V.'s. And you're

15 telling me you've not had any such discussions; --

16 A. No.

17 Q. -- is that right?

18 A. Right.

19 Q. Do you know Mr. Hill who was an industrial

20 hygienist at one time for Dow at Rocky Flats in the

21 Boulder, Colorado, area?

22 A. I do not.

23 Q. Don't recall having met him?

24 A. No.

25 Q. I believe, sir, that you have played some

1 part in formulating air sampling strategies for

2 control of occupational diseases as part of your

3 professional work. Is that right?

4 A. That's right.

5 Q. And I understand from your - from your

6 writings that you are a firm believer in area

7 monitoring of industrial operations.

8 MR. PIERCE: Objection to the form

9 and to what you do or do not

10 understand.

11 Q. Is it true, Dr. Rowe, that you are an

12 advocate of area sampling in industrial operations?

13 A. Yes, sir.

14 Q. And if I've read your writings correctly,

15 you are an advocate of doing as much area sampling as

16 possible. Is that right?

17 A. I can't answer that quite that exact in that

18 respect. Anything is possible. You can spend a

19 hundred percent of your time, that's possible; but

20 it's impossible to do so.

21 Q. You're an advocate of doing a great deal of

22 area air sampling in industrial operations, correct?

23 A. As much as is reasonably possible.

24 Q. Why is that, sir?

25 A. Because in any area - occupational area -

1 that I'm aware of, concentrations fluctuate and

2 duration of exposure fluctuates.

3 Q. And why would area sampling be preferable to

4 you over personnel sampling, then?

5 MR. PIERCE: Objection to form.

6 A. I didn't say that.

7 Q. Would it be?

8 A. I think the best monitor is personnel

9 sampling, but that's difficult in many instances to do.

10 Q. Why do you think that area sampling gives

11 you a good handle on exposure variations?

12 A. It tells you what areas are - what the

13 fluctuations are within particular given areas of the

14 workplace; and it will identify leaks, anything else

15 that may happen.

16 Q. Identify intermittent activities?

17 A. I don't know what you mean by that.

18 Q. Something that doesn't happen all the time?

19 A. Yeah. Yes.

20 Q. Do you know -- You're familiar with the term

21 "biological monitoring," are you not?

22 A. Yes.

23 Q. How does biological monitoring work with

24 doing area sampling and toxicology in protecting a

25 worker's health?

1 A. It's another parameter.

2 Q. And how would you, sir, as a health
3 professional, utilize biological monitoring in
4 protecting a worker's health?

5 A. Well, biological monitoring measures the
6 integrated exposure to the individual, if it's - if
7 it's predicated upon blood concentrations, urine
8 analyses, breath samples; and it can tell you whether
9 people are doing their job correctly.

10 Q. And I think you've also published that
11 biological monitoring can indicate whether or not your
12 exposure level is adequate or not; isn't that true?

13 MR. PIERCE: Objection to the form
14 of the question.

15 A. It is one parameter.

16 Q. So, if you're using known toxic materials,
17 would you agree, sir, that biological monitoring is
18 important to incorporate into the overall health and
19 safety activity to know whether or not your exposure
20 levels are adequate?

21 A. It's one parameter.

22 Q. An important one?

23 MR. PIERCE: Objection to the
24 form.

25 A. It's not possible with everything; but where

1 it is reasonably possible and analytical methods are
2 available, it's helpful. It's a parameter in total
3 evaluation.

4 Q. Would you include chest X ray as one method
5 of biological monitoring?

6 A. I'll leave that to the radiologists.

7 Q. You're not familiar with industrial hygiene
8 programs - occupational safety and health programs -
9 that incorporate chest X rays into biological
10 monitoring?

11 A. Oh, yes.

12 Q. So, in some cases chest X rays are included
13 in biological monitoring in health and safety
14 programs.

15 A. It can be.

16 Q. Are you familiar with the term
17 "pneumoconiosis-producing" dust?

18 A. Somewhat.

19 Q. Would you know one way or the other if a
20 chest X ray could be one of the appropriate biological
21 monitoring tools for a pneumoconiosis-producing dust
22 exposure?

23 A. If they were positive, it would probably

24 indicate - it would indicate something had happened

25 there. If they're negative, it doesn't mean anything

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1 except nothing has happened. It doesn't tell me what

2 the exposure would be.

3 Q. Yes, sir. And to get the exposure, that's

4 the reason you would go do air sampling. If I

5 understood you, you told me that finding - the

6 findings of a chest X ray will not tell you the

7 quantity of exposure to that individual. And my

8 question to you, sir, is in order to get the quantity

9 of exposure, that requires some sort of air sampling,

10 does it not?

11 MR. PIERCE: Let me object to the

12 repetitive nature of the questioning

13 and remind you that Dr. Rowe has

14 identified himself as a toxicologist.

15 But go ahead and answer.

16 A. A chest X ray only would be -- Well, I

17 shouldn't say "only" - would not indicate when

18 necessarily an exposure occurred or what intensity the

19 exposure was. So, it's qualitative and certainly

20 could not be used to quantitate what an exposure was

21 at some previous period of time.

22 Q. And if we wanted to know the answer to when
23 the exposure occurred and how much the exposure was,
24 the way to find the answer to those questions is to do
25 air sampling; is that correct?

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1 MR. PIERCE: Objection; it's a
2 compound question.

3 A. It's kind of like getting the horse before
4 the cart. You can't retrospectively conduct air
5 samples.

6 Q. I understand that, sir. But what my
7 question is, is that if you wanted to know how much a
8 person was exposed to of a pneumoconiosis-producing
9 dust, the way to answer that question is to do air
10 sampling, isn't it?

11 MR. PIERCE: Continue the
12 objection.

13 A. I still don't understand -- I'm trying to
14 explain, but I'm not getting through. Tell me again.
15 Air -- Go ahead.

16 Q. All right, sir. If we wanted to know how
17 much a person was going to be exposed to and we're
18 talking about a pneumoconiosis-producing dust, the way
19 to find out that question is to do air sampling while

20 they're doing their work, correct?

21 A. That's prospective, yes, sir.

22 Q. And if we're doing our air sampling

23 prospective and we're taking chest X rays of the

24 potentially exposed people as we go, then you can have

25 an assessment as to whether or not the exposures the

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1 person is receiving is responsible for a lung

2 disease. Do you agree with that?

3 A. Well, yes.

4 Q. And as I've understood your writings, Would

5 you agree that, then, if you've got historical air

6 sampling information and you've got historical

7 biological monitoring, it's the combination of the two

8 that gives you a handle on whether or not your

9 exposure levels that you're setting in the workplace

10 are adequate?

11 MR. PIERCE: Once again I'd like

12 to object to questions phrased in terms

13 of your understanding.

14 But go ahead and answer the

15 question.

16 A. It will give you -- No. It will give you an

17 indication of whether you're within an acceptable

18 range on the basis of judgment of peers or others.

19 Q. Doing the biological monitoring along with

20 the air sampling is part of the checking of the

21 judgment of the peers as to the adequacy of the

22 exposures levels, correct?

23 A. It's one of the parameters.

24 Q. Have you ever had any discussions with any

25 of the A.C.G.I.H. T.L.V. committees regarding

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1 asbestos?

2 A. No.

3 Q. How about with any pneumoconiosis-producing

4 dust?

5 A. Not that I recollect. I don't recollect

6 any.

7 Q. Dr. Rowe, do you know or did you know

8 Jim Hammond?

9 A. Yes. I know Jim Hammond.

10 Q. Have you ever had any professional dealings

11 with Professor Hammond while he was an employee of

12 Exxon and while you were an employee of Dow that

13 involved company business?

14 A. I don't recollect any.

15 Q. Yours has been through professional

16 associations, --

17 A. Yes.

18 Q. -- your association with him? Do you know

19 Arthur Pabst?

20 A. Who?

21 Q. Arthur Pabst, P-a-b-s-t.

22 A. That doesn't ring any bells.

23 Q. He was an industrial hygienist at Mobil or

24 was --

25 A. I don't --

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1 Q. -- predecessor --

2 A. I don't know him.

3 Q. Do you recall having any professional

4 dealings that were part of your work at Dow, not

5 through the professional associations, with any of the

6 oil company industrial hygienists?

7 A. With Dr. White.

8 Q. Dr. Norman White?

9 A. I don't recall others.

10 Q. What was your business dealing with

11 Dr. White, as you recall?

12 A. I don't recall. We were -- We were

13 schoolmates. We have known each other for 55 years -

14 60 years. We've talked about business at times. I
15 don't recollect what we talked about.
16 Q. Would you recall Allan Dooley?
17 A. I knew Allan -- I knew the name. I know --
18 I know Allan Dooley.
19 Q. Did you ever have any Dow company business
20 dealings with him?
21 A. Not that I know of.
22 Q. Did you know Lucian Renes?
23 A. Who?
24 Q. Lucian Renes, R-e-n-e-s, who was at
25 Phillips?

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1 A. No, I did not.
2 Q. Would you have known Mr. Dooley when he was
3 working for the State of Pennsylvania before he went
4 to Texaco?
5 A. I -- I did not know Al closely at all.
6 We -- Typical meeting acquaintances.
7 Q. I take it that you knew Warren Cook.
8 A. Yes.
9 Q. He was located in Michigan for some time; is
10 that right?
11 A. Yes.

12 Q. Did you know him before he moved to
13 Michigan?
14 A. I don't know if I can answer your question.
15 Q. Do you recall ever talking to Dr. Cook about
16 asbestos at all?
17 A. No.
18 Q. Did you know Dr. Wilhelm Hueper?
19 A. I had met him. That's all.
20 Q. Can you recall what context you met
21 Dr. Hueper in?
22 A. No.
23 Q. Do you know of his work at all?
24 A. Yes. I know a little of it. Very little of
25 it.

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1 Q. Is his work something you particularly
2 followed or just happened to come across it in the
3 literature?
4 A. No. We didn't follow it.
5 Q. I asked you about Dr. Drinker at Harvard.
6 Did you work with anyone at Harvard?
7 A. I don't think so. I don't recall any...
8 Q. Harvard was never a contractor for any
9 purpose to Dow, that you're aware of?

10 A. I don't think so, no.

11 Q. Would you recognize the name John - I think

12 it's "Staudt," S-t-a-u-d-t?

13 A. No.

14 Q. Other than Harvard at the school of public

15 health there, can you tell me what other public health

16 or occupational health programs you recall were in

17 place in the late Thirties and early Forties?

18 A. I don't recall.

19 Q. Do you recall Dow using any consultants from

20 any of the schools of public health while you were --

21 A. I beg your pardon.

22 Q. Do you recall Dow using any consultants in

23 the area of health and safety from any of the schools

24 of public health while you were at Dow?

25 A. I don't recall any.

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1 Q. Did you know Dr. Carl Nau, N-a-u?

2 A. Yes.

3 Q. How did you know Dr. Nau?

4 A. Met him in a meeting.

5 Q. When you were just beginning your career at

6 Dow, you began to publish some of your findings, I

7 believe. Is that right?

8 A. Yes.

9 Q. Were you encouraged to publish your results
10 at Dow?

11 A. Yes.

12 Q. How were you encouraged to publish?

13 A. Executives of the company - particularly
14 Willard Dow - wanted it to be published.

15 Q. And who was Mr. Dow?

16 A. He was president of Dow Chemical Company.

17 Q. How is it that you understood that Mr. Dow
18 wanted this information published?

19 A. My understanding is that he is the
20 individual who initiated the creation of the Dow
21 Chemical research laboratory because he was concerned
22 about occupational health and product safety, as well.

23 Q. Did you ever try to publish any of your
24 findings at Dow and were prohibited from doing so?

25 A. No, sir.

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1 Q. When articles that you were going to publish
2 were being considered for publications, who within Dow
3 would review those articles before being published?

4 MR. ALMQUIST: Object to the
5 question. It assumes somebody would

6 review it before he submitted it for
7 publication.

8 Q. I'll ask the question, Dr. Rowe. Did anyone
9 review your work prior to it being submitted to
10 publication at Dow?

11 A. Yes.

12 Q. May I know who?

13 A. Well, our close colleagues in the
14 laboratory; if there was anything involving the legal
15 side of it, the legal department it would be passed
16 through; and the manufacturing operation product
17 manufacturing plant superintendent if it involves his
18 product.

19 Q. And I take it each one of those reviews
20 would generate comments to you, and then you would
21 make an election about incorporating those comments or
22 not?

23 A. I can't ever having - remember changing
24 anything unless it was a technicality.

25 Q. Did they just never make any changes in

1 substance - recommendations to you, that you can
2 recall?

3 A. No, except to compliment us on getting the

4 information out.

5 Q. What other companies do you recall in the
6 same time frame - the late Thirties, early Forties,
7 into the Fifties - doing the same thing, having a
8 toxicological laboratory and having published a great
9 deal of information about their work?

10 A. Dr. Smyth at Mellon Institute on behalf of
11 Carbide and Carbon published a certain amount, not as
12 much in the early days as they did later.

13 Q. If we talk about up until 1960, would you
14 know from your review of the literature who would have
15 generated the most information, comparing Dow and
16 Mellon and Du Pont?

17 A. I think I pub - we published more than
18 anyone.

19 Q. Would you publish your methods as well as
20 your results?

21 A. I don't know what you mean.

22 Q. When you would do a toxicological test and
23 publish the results would you tell the reader how you
24 did the test?

25 A. I believe those were - that was automatic in

1 the introduction as to what was done and how it was

2 done, as best we could describe it.

3 Q. So, if anyone wanted to do similar-type
4 toxicity testing of materials, right there in your
5 works were the means and the techniques to be used to
6 do the tests?

7 A. I would think so.

8 Q. And those were published in the open and
9 scientific literature for anyone to find who cared to
10 look?

11 A. Yes.

12 MR. HOBSON: I understand we're
13 out of tape; so, let's take a break.

14 MR. PIERCE: No. Let's -- If
15 we're out of tape, it's appropriate --
16 In accordance with the agreement, the
17 two hours are up for the afternoon
18 session; and we can continue tomorrow.

19 (REPORTER'S NOTE: AT
20 APPROXIMATELY 2:40 P.M., ON OCTOBER 1,
21 1992, THE DEPOSITION WAS RECESSED.
22 AT APPROXIMATELY 9:00 A.M. ON
23 OCTOBER 2, 1992, WITH ALL PARTIES
24 PRESENT, THE DEPOSITION RESUMED AS
25 FOLLOWS:)

1 RESUMPTION OF EXAMINATION BY MR. HOBSON:

2 Q. Good morning, Dr. Rowe.

3 A. Good morning.

4 Q. I've had a chance to look through some of
5 the documents that you brought yesterday, and I have a
6 few questions for you about the documents.

7 When you retired from Dow, sir, I take it
8 that some of the files that you had maintained at your
9 offices you kept with you after your retirement. Is
10 that correct?

11 A. Yes.

12 MR. PIERCE: Objection to form
13 of the question, as to whether you take
14 or not.

15 Q. Would you be kind enough to tell me, sir,
16 what documents you have at your home that came from
17 your work at Dow?

18 A. I went through what I had that --

19 MR. PIERCE: Excuse me. Could I
20 have a clarification on this question?
21 When you say that came from his work at
22 Dow, you mean his personal materials
23 that he may have collected or official
24 documents from Dow? I think that
25 question is ambiguous and vague, and I

1 object to it for those reasons.

2 A. I tried to keep a library. I have no
3 official documents from Dow. I have not even a
4 complete listing of publications. I have some of
5 them. Those that were even vaguely related to this
6 action I pulled out for reproduction for you.

7 Q. When you were still working at Dow and you
8 would generate correspondence, did you maintain any
9 kind of a chronological file of your correspondence as
10 opposed to a subject filing?

11 A. No.

12 Q. So, each bit of correspondence that you
13 would generate day to day would be filed by its
14 subject?

15 MR. PIERCE: Objection to the
16 form.

17 A. That was my general practice, yes.

18 Q. You say that you tried to maintain a
19 personal library while you were at Dow; is that right?

20 A. I beg your pardon.

21 Q. You said that you tried to maintain a
22 personal library while you were at Dow? Is that what
23 you said, sir?

24 A. I suppose you could call it that.

25 Q. What would you have included in your

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1 personal library while you were at Dow?

2 MR. PIERCE: Objection to the form

3 of the question.

4 A. Reprints of copies of talks that I gave,

5 talks and papers of other people that I thought might

6 be useful to me in the future.

7 Q. How did you have those reprints and talks

8 organized while you were at Dow, those that were in

9 your personal library? Were they by subject or some

10 other way?

11 A. General practice was by subject.

12 Q. Did you tend to have subjects that were

13 specific chemicals or specific substances or were they

14 broad categories like toxicology, industrial hygiene,

15 or did it include both?

16 MR. PIERCE: Objection to the form

17 of the question.

18 A. It was some of each.

19 Q. Did you maintain any bound textbooks that

20 were yours personally while you were at Dow?

21 A. I don't remember whether they -- I had

22 access to the library. And at that time I probably
23 had a text of my own on Patty's Industrial Hygiene and
24 Toxicology which was my personal copy.
25 Q. Would you recall which edition you had, sir,

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1 As your personal copy?

2 A. At that time it was the first edition.

3 Q. Do you still have your first edition?

4 A. Yes.

5 Q. Do you have any other textbooks now that
6 were available to you while you were at Dow?

7 A. I don't recall.

8 Q. In going through some of the documents that
9 you brought yesterday I have found some I'd like to
10 ask you about. There's two pages here, Dr. Rowe, that
11 I can't connect to anything.

12 Can you tell me, sir, what they - what they
13 are and where they came from (tendering document)?

14 MR. PIERCE: Mr. Hobson, are you
15 marking this for identification?

16 MR. HOBSON: Well, I might. It
17 depends on what it is. I want to make
18 sure it really is something he brought,
19 though.

20 A. (Reviewing document) I cannot tell you

21 where I got that.

22 (By Mr. Hobson)

23 Q. What is it, sir?

24 A. It's a discussion of - of occupational

25 controls, T.L.V.'s, and the like.

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1 Q. Can you place it in time for us at all?

2 A. No, I can't.

3 Q. Would you recall who was having the

4 discussion or --

5 A. I have no recollection of having put this in

6 my file. When I went through it, it looked like

7 something that might have some interest. So, like I

8 said, I pulled things like that out.

9 Q. Can you tell from where you had it filed

10 whether this is something you had while you were at

11 Dow?

12 A. I can't tell, no.

13 Q. Was it your practice after you left Dow to

14 add things to your files from time to time?

15 A. Yes (tendering document).

16 Q. Thank you. Here's another document, sir.

17 And I'd ask the same questions. Can you tell by

18 looking at this where it came from or what it is

19 (tendering document)?

20 MR. PIERCE: (Reviewing document)

21 MR. BLANKS: Don't you all have
22 your own stack of documents over there
23 that you can look at?

24 MR. PIERCE: Mr. Hobson, I notice
25 that this has a sticker for Plaintiffs'

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1 Exhibit; but there's no number there.

2 MR. HOBSON: Yes, sir. We are
3 trying to identify documents with a
4 certain series that, if we can, will
5 include the date so that you can
6 organize documents chronologically.
7 That's why we haven't put a number on
8 it yet.

9 MR. PIERCE: Thank you (tendering
10 document to the witness).

11 A. (Reviewing document) Do you have a
12 question?

13 (By Mr. Hobson)

14 Q. I think we do. Can you recognize this
15 document, Dr. Rowe; or can you tell us anything about
16 it?

17 A. I can't tell you where or when it was
18 presented. It's obviously a draft of a presentation
19 that Dr. Schwetz was - made at some meeting.
20 Q. And who was the author, sir?
21 A. Dr. Schwetz.
22 Q. And what capacity did Dr. Schwetz have when
23 you knew him?
24 A. He was basically a teratologist.
25 Q. Who was his employer, sir?

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1 A. Beg pardon?
2 Q. Who was his employer?
3 MR. PIERCE: At what point in
4 time?
5 A. He was a Dow employee in toxicology.
6 Q. Do you believe that this is a paper that was
7 likely drafted by this gentleman while he was a Dow
8 employee?
9 A. I'm quite certain it was.
10 MR. HOBSON: Perhaps Counsel could
11 indicate on that "Rowe 2" as the
12 exhibit number; or I will if you want
13 to pass it back.
14 MR. PIERCE: I don't want to mess

15 up your system (tendering document to
16 Mr. Hobson).
17 MR. HOBSON: It's not easy to
18 keep...
19 (PLAINTIFFS' EXHIBIT ROWE 2
20 WAS MARKED FOR IDENTIFICATION
21 PURPOSES. SAME WILL BE FOUND IN
22 THE EXHIBIT VOLUMES ATTENDANT TO
23 THIS DEPOSITION.)
24 (By Mr. Hobson)
25 Q. All right, sir. I've marked here as Rowe 2

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1 Dr. Schwetz' paper; is that correct, sir?
2 A. Yes.
3 Q. And you found this paper by Dr. Swetz in
4 your files?
5 A. I found it in my category of general
6 toxicology.
7 Q. The first document I asked you about here
8 this morning I've now marked as Exhibit 1 and just
9 want to identify the fact that we did mark that
10 document as Exhibit 1.
11 MR. BLANKS: Why don't you make it
12 Exhibit 3, and we'll mark the notice as

13 Exhibit 1.
14 MR. HOBSON: Okay. Well, let me
15 have it back and I'll redo it.
16 MR. PIERCE: May I interject
17 something? How did you mark --
18 Yesterday you marked some document. I
19 believe it was a C.V. of Dr. Rowe.
20 MR. HOBSON: Right. It has 141005
21 Rowe VK.
22 MR. PIERCE: I give up.
23 MR. HOBSON: Well, he was born in
24 1914.
25 MR. PIERCE: Oh, I see.

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1 MR. HOBSON: It happens to be the
2 first date that appears on the
3 document.
4 (PLAINTIFFS' EXHIBIT ROWE 3
5 WAS MARKED FOR IDENTIFICATION
6 PURPOSES. SAME WILL BE FOUND IN
7 THE EXHIBIT VOLUMES ATTENDANT TO
8 THIS DEPOSITION.)
9 (By Mr. Hobson)
10 Q. Sir, we've marked as Rowe 3 the document I

11 questioned you about earlier. That's a document that
12 I think you told us some information about you
13 couldn't identify where it came from other than it was
14 in your files. There's a name that appears there on
15 the first page. Do you recognize the name at the
16 bottom of the first paragraph?

17 A. No, I do not.

18 Q. All right, sir. Thank you. Dr. Rowe,
19 here's another document that you brought yesterday.
20 And again I can't find a date on it; or for this one I
21 can't find the source, either. Could you look at
22 that, sir, and see if you could help me with either
23 one of those or both (tendering document)?

24 A. (Reviewing document) I can't tell you where
25 that was published.

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1 Q. It appears that it could be a chapter from a
2 text.

3 A. Yes.

4 Q. Could you tell us if that's what it was?

5 A. That would be my assumption (tendering
6 document).

7 (PLAINTIFFS' EXHIBIT ROWE 4
8 WAS MARKED FOR IDENTIFICATION

9 PURPOSES. SAME WILL BE FOUND IN
10 THE EXHIBIT VOLUMES ATTENDANT TO
11 THIS DEPOSITION.)

12 (By Mr. Hobson)

13 Q. Doctor, this exhibit that you just looked at
14 we've now put an exhibit sticker on it, Plaintiffs'
15 Exhibit Rowe 4. And it's Chapter 8, "Pharmacokinetic
16 Studies in Evaluation of the Toxicological and
17 Environmental Hazards of Chemicals." (Tendering
18 document) And that would be a document that you
19 brought as part of your response to the request; is
20 that right, sir?

21 A. Yes, sir.

22 Q. If I could, sir, let me show you another
23 document which again I could not place in time and ask
24 you if you would look at that document and tell us
25 what it is, as best you can, sir (tendering

1 document).

2 A. (Reviewing document) This -- I cannot put a
3 time frame on it, either, at least not accurately.
4 Obviously this is an outline of a talk I was giving to
5 some group within Dow (tendering document).

6 Q. There are some what appears to be

7 handwritten notes or something. Can you tell us,
8 Dr. Rowe, if these two go together (tendering
9 document)?

10 MR. PIERCE: When you say "these
11 two," the document that Dr. Rowe just
12 reviewed?

13 MR. HOBSON: Yes.

14 MR. PIERCE: Because that's
15 unmarked right now.

16 MR. HOBSON: Right. I want to
17 know whether we need to put them
18 together and mark them as one or
19 two (tendering document to witness).

20 A. (Reviewing document) I do not believe that
21 these go together.

22 (By Mr. Hobson)

23 Q. All right, sir.

24 (PLAINTIFFS' EXHIBIT ROWE 5
25 WAS MARKED FOR IDENTIFICATION

1 PURPOSES. SAME WILL BE FOUND IN
2 THE EXHIBIT VOLUMES ATTENDANT TO
3 THIS DEPOSITION.)

4 (By Mr. Hobson)

5 Q. All right, sir. I have put a sticker on
6 this exhibit, Plaintiffs' Exhibit Rowe 5, which has a
7 heading, "Mission of Health and Environmental
8 Research." Sir, that's, I believe, the document that
9 you told us represented a presentation that you gave
10 sometime within Dow. Is that right?

11 A. Yes.

12 Q. This presentation that's Rowe 5, can you
13 place that in a decade at all for us; or can you tell
14 us what job title you might have had at the time you
15 gave that, Dr. Rowe?

16 MR. PIERCE: Objection to the form
17 of the question.

18 A. This would probably have been in the
19 mid-Eighties - or mid-Seventies.

20 Q. Thank you.

21 (PLAINTIFFS' EXHIBIT ROWE 6
22 WAS MARKED FOR IDENTIFICATION
23 PURPOSES. SAME WILL BE FOUND IN
24 THE EXHIBIT VOLUMES ATTENDANT TO
25 THIS DEPOSITION.)

1 (By Mr. Hobson)

2 Q. On the handwritten notes we've now put

3 sticker exhibit Rowe 6. Let me hand that back to you,

4 sir. Are those your notes? Is that your handwriting,

5 Dr. Rowe (tendering document)?

6 A. Yes.

7 Q. Can you tell us what this dealt with? What

8 does this mean to you, sir?

9 A. I don't know.

10 Q. Would you know if this was an outline for a

11 presentation or dealt with a paper you were going to

12 write, or can you tell us at all?

13 A. It -- It looks as though it was an outline I

14 used in making a presentation to a group that - I

15 don't know where.

16 Q. And since the last date at the top is 1975,

17 would it be fair to say that that was after 1975 you

18 gave this, or at least 1975 or later?

19 A. In that framework, yes.

20 Q. (Tendering document) Another document, sir,

21 that came yesterday from the attorneys -- I haven't

22 marked it yet because, again, I can't date it.

23 Could you look at that and tell us if you

24 can date it or place it anywhere, sir (tendering

25 document)?

1 A. (Reviewing document)

2 MR. PIERCE: You have a question,

3 Mr. Hobson?

4 MR. HOBSON: Yeah. I was waiting

5 for the answer. I'm sorry.

6 MR. PIERCE: If there's a question

7 pending, could you please read it

8 back (directed to the reporter)?

9 MR. HOBSON: I'll just ask another

10 one to save a little time.

11 (By Mr. Hobson)

12 Q. Can you place this document in time or tell

13 us what it is, Dr. Rowe?

14 A. This again would have been in the - in the

15 mid-Seventies.

16 Q. What kind of -- What was the purpose of the

17 document, as best you recall?

18 A. It was obviously a - a draft of a speech

19 that Dr. Blair wished to make somewhere. I don't know

20 where.

21 Q. This was not your speech?

22 A. No.

23 Q. Dr. Blair's speech?

24 A. Yes.

25 Q. There's handwriting on here. Can you tell

1 tell whose handwriting it is?

2 A. It looks like mine.

3 Q. Do you expect, then, that Dr. Blair gave you
4 his proposed speech and asked for your comments?

5 A. That would be my supposition.

6 Q. Let us put a stick on it, then, sir, if we
7 may, so as to make sure we have it identified.

8 (PLAINTIFFS' EXHIBIT ROWE 7
9 WAS MARKED FOR IDENTIFICATION
10 PURPOSES. SAME WILL BE FOUND IN
11 THE EXHIBIT VOLUMES ATTENDANT TO
12 THIS DEPOSITION.)

13 (By Mr. Hobson)

14 Q. We've marked as the document you've just
15 told us was a proposed presentation by Dr. Blair with
16 your handwritten notes on it as Rowe 7; is that right,
17 sir?

18 A. Yes.

19 Q. Thank you. Dr. Rowe, I have another
20 document I'd like for you to examine. I have done
21 some highlighting on this document which is mine; but
22 I'd like for you to identify this document for us, if
23 you could, please, sir.

24 A. (Reviewing documents)

25 MR. PIERCE: Do you have a

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1 question, Mr. Hobson?

2 MR. HOBSON: Seem to be doing this

3 repeatedly. Yes, sir.

4 (By Mr. Hobson)

5 Q. I think the question on the floor was can

6 you identify this document for us.

7 A. It is a draft of a talk I gave.

8 Q. Can you place it in time, sir?

9 A. It, again, would have been in the

10 mid-Seventies.

11 Q. Would you know where this talk was given, if

12 it was given?

13 A. I believe it was given in a symposium in

14 Midland.

15 Q. Would this have been a Dow symposium?

16 A. It was a Dow symposium, but there may well

17 have been others - other people present. I don't know

18 (tendering document).

19 (PLAINTIFFS' EXHIBIT ROWE 8

20 WAS MARKED FOR IDENTIFICATION

21 PURPOSES. SAME WILL BE FOUND IN

22 THE EXHIBIT VOLUMES ATTENDANT TO

23 THIS DEPOSITION.)

24 (By Mr. Hobson)

25 Q. All right, sir. I've now put "Exhibit

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1 Rowe 8" on the paper that I think you said was given
2 in the Mid-Seventies at a Dow symposium; is that
3 right, sir (tendering document)?

4 A. (Reviewing document) This is the one that I
5 just looked at.

6 Q. Yes, sir.

7 A. Yes. Okay (tendering document)

8 (PLAINTIFFS' EXHIBIT 400600 DOW
9 WAS MARKED FOR IDENTIFICATION
10 PURPOSES. SAME WILL BE FOUND IN
11 THE EXHIBIT VOLUMES ATTENDANT TO
12 THIS DEPOSITION.)

13 (By Mr. Hobson)

14 Q. Sir, let me show you Exhibit - We've put
15 "400600 Dow" as the exhibit number. I'll ask you,
16 sir, if you can identify that for us, please
17 (tendering document).

18 MR. PIERCE: (Reviewing document)

19 Is this one of the documents that
20 Dr. Rowe provided?

21 MR. BLANKS: This entire stack is
22 of that set.
23 MR. PIERCE: (Tendering document
24 to the witness)
25 Q. I think the question is, can you identify

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1 that for us, Dr. Rowe.
2 A. Yes.
3 Q. What is it, please?
4 A. It's a reprint of a publication, an article
5 entitled, "The Response Attending Exposure of
6 Laboratory Animals to Vapors of Methyl Bromide."
7 Q. This would be a reprint from the scientific
8 literature where it was published; is that right?
9 A. It's a reprint from The Journal of
10 Industrial Hygiene and Toxicology, Volume 22, No. 6,
11 June, 1940.
12 Q. Do you know The Journal of Industrial
13 Hygiene and Toxicology where this article was
14 published?
15 A. Would you repeat, please.
16 Q. Yes, sir. Do you know of this journal where
17 this article was published?
18 A. Do -- I don't -- I guess I don't understand

19 yet what you're --

20 Q. Probably just too simple a question,

21 Dr. Rowe. I'm just trying to find if you, in fact, do

22 know about this journal where you published your

23 article.

24 A. Oh. Yes.

25 Q. Would you tell us what this journal is, or

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1 what it was in 1940?

2 A. It's just an ordinary scientific pub -

3 journal that publishes scientific papers.

4 Q. Was there any affiliation of this journal

5 with any group?

6 A. I don't believe so. It may -- It possibly

7 may have been associated with -- I'm not aware of

8 that.

9 Q. I think you've published in this journal on

10 more than just this one occasion, have you not?

11 A. Yes.

12 Q. Did you pick the journals that you submitted

13 your publications to in this time period of this first

14 exhibit here we're talking about of your publications?

15 A. At that date I probably did not.

16 Q. Who would have been selecting the journals

17 for publication in 1940?

18 A. I would expect Dr. Irish.

19 Q. Because you selected this journal to publish

20 in in 1940, do you think it likely that you had this

21 journal in your library at Dow?

22 MR. PIERCE: Objection to the form

23 of the question. The witness has

24 testified that he did not pick any

25 journal but that Dr. Irish did.

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1 A. Yes, we had this journal.

2 Q. Do you recall how much before 1940 you would

3 have had this journal at Dow?

4 A. No.

5 Q. Which volume of the journal was this 1940

6 article published in?

7 A. Volume 22.

8 Q. Is it your experience that the usual

9 practice of these scientific publications is that they

10 change the volume number each year?

11 A. Not necessarily.

12 Q. Can you tell us approximately when this

13 journal began its publications?

14 A. No.

15 Q. Is this a journal that you in your work at
16 Dow relied upon for information about toxicology?

17 A. Yes.

18 Q. Is that article published in 1940 the same
19 reference here, then, that's number one in your
20 bibliography (tendering document)?

21 A. Yes.

22 Q. And I take it since it's number one, that's
23 your first scientific publication that you ever had
24 published.

25 A. Yes.

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1 Q. Were there scientific publications coming
2 from other Dow scientists in the area of toxicology
3 that predated your 1940 article with Dr. Irish and
4 others, or would you know?

5 A. I don't know.

6 Q. Could this very well be, then, the first
7 scientific article on toxicology published at Dow, or
8 do you know?

9 MR. PIERCE: Objection to the form
10 of the question.

11 A. I don't know.

12 Q. What kinds of tests in forms of category

13 were you reporting on here in 1940 for methyl bromide?

14 A. The results of single vapor exposures,

15 repeated vapor exposures. (Reviewing document)

16 That's all.

17 Q. Would you categorize the tests that were

18 done reported here in this 1940 article as acute or

19 short-term testing?

20 A. Both.

21 Q. And that would be something different than

22 what would ordinarily be called "chronic" or more

23 long-range type testing; would that be right?

24 A. Not necessarily.

25 Q. How did the two overlap?

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1 A. Basically in concept.

2 Q. Would you explain that, please.

3 A. Acute exposures are generally considered to

4 be single exposures. Chronic exposures can vary

5 anywhere from repeated - short-term repeated exposures

6 to long-term repeated exposures.

7 Q. And to qualify as chronic, do you have some

8 length of time that you continue the repeated

9 exposures in your definitions?

10 A. No. Really, one should not set a specific

11 time period for chronic -- "Chronic" is a very poor
12 word. It should be "repeated exposures over a
13 particular duration."

14 Q. Do you use the term "subacute" in
15 categorizing toxicity testing?

16 A. At some stages, yes.

17 Q. How would you use the term "subacute"?

18 A. Short-term repeated exposures.

19 Q. And what would be the proper category, then,
20 for long-term repeated exposures, if there is one?

21 A. Simply describing the duration of exposure
22 period.

23 Q. Are you aware of any reported associations
24 between methyl bromide and cancer today?

25 MR. PIERCE: Objection to the form

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1 of the question. Objection to the
2 relevancy of this matter.

3 Go ahead and answer.

4 A. Would you repeat the question, please.

5 Q. Yes, sir. I'd like to know if you're now
6 aware of any reports of connection between methyl
7 bromide and cancer.

8 A. No.

9 (PLAINTIFFS' EXHIBIT 421200 DOW
10 (JIHT) WAS MARKED FOR IDENTIFICATION
11 PURPOSES. SAME WILL BE FOUND IN
12 THE EXHIBIT VOLUMES ATTENDANT TO
13 THIS DEPOSITION.)

14 (By Mr. Hobson)

15 Q. Another document that I believe you brought
16 yesterday, Dr. Rowe, we've marked as Exhibit 421200
17 DOW and in parentheses "JIHT," end parentheses
18 (tendering document). And I wonder, sir, is that
19 another one of the articles that you published in the
20 scientific literature while you were an employee of
21 Dow (tendering document)?

22 A. (Reviewing document) Yes.

23 Q. On the front page of that document there's a
24 handwritten number. I believe it's "121"; is that
25 right, sir?

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1 A. Yes.

2 Q. Would you have any recollection of what that
3 means or why it's there?

4 A. Yes.

5 Q. What is it, sir?

6 A. That is a number that our toxicology file

7 room used to designate different publications that
8 were filed by - by number. In other words, this was
9 the hundred and twenty-first publication that was
10 filed in that compilation.

11 Q. I'm not sure I understand what the
12 compilation consisted of. Would you --

13 A. It was a file of publications by Dow people.

14 Q. Were all of these publications in this file
15 in the medical and scientific literature, or were
16 these internal to Dow, as well?

17 A. I don't know.

18 Q. Did the compilation have a name?

19 A. Not that I know of.

20 Q. And you say this was in a library. Was this
21 the library that you had at the biochemical research
22 laboratory, or was this the bigger library you told us
23 about that was available at Midland?

24 MR. PIERCE: Objection to the form
25 of the question; mischaracterization of

1 the previous statement of the witness
2 in use of terminology he did not use -
3 and that it's compound.

4 A. This was in the biochemical research

5 laboratory. This was not designated -- This
6 designation has no reference to the general large
7 library - company library.
8 (PLAINTIFFS' EXHIBIT 480621 DOW
9 WAS MARKED FOR IDENTIFICATION
10 PURPOSES. SAME WILL BE FOUND IN
11 THE EXHIBIT VOLUMES ATTENDANT TO
12 THIS DEPOSITION.)

13 (By Mr. Hobson)

14 Q. Sir, I have another document that, I
15 believe, you brought yesterday. We've put Exhibit
16 Sticker on it 480621 DOW. And I would ask you, sir,
17 if you could look at that and tell us if you can
18 identify it (tendering document).

19 A. (Reviewing document) Yes.

20 Q. What is it, please?

21 A. It's a reprint of an article entitled,
22 "Toxicological Studies on Certain Commercial
23 Silicones."

24 Q. And you are one of the authors of that?

25 A. Yes.

1 Q. I noticed that the cover page of this
2 document differs from the previous one we talked

3 about. Can you tell me if there's any significance to
4 the cover page of this document (indicating document)?

5 A. Yes.

6 Q. What is that, sir?

7 A. The indication that reprints were purchased
8 by the Dow Corning Corporation for their distribution.

9 Q. What's the Dow Corning Corporation, as you
10 understand it?

11 A. It's a separate corporation called "Dow
12 Corning."

13 Q. Did you do any work that involved the Dow
14 Corning Corporation or its activities?

15 A. Yes.

16 Q. Was that why you were at Dow?

17 A. Yes.

18 Q. And your employer, now, was Dow Chemical
19 Company?

20 A. Right.

21 Q. Would you tell me about how you did your
22 work that involved the Dow - I'm sorry. I can't see.

23 Is it "Corning Company"?

24 A. We did it on a work order from them.

25 Q. They were essentially purchasing your

1 services?

2 A. Yes.

3 Q. And what kind of services would Dow Corning
4 have been buying from Dow Chemical?

5 A. Well, Dow Corning did not have any facility
6 at that time for this sort of work. And inasmuch as
7 it was owned in part by Dow Chemical, our services
8 were made available to them on an as-needed basis.

9 Q. Can you remember what time period Dow
10 Chemical would have been selling services to Dow
11 Corning?

12 A. It would have been at the - at the very
13 inception or creation of the Dow Corning corporation
14 and for a few years after that. I can't tell you how
15 many.

16 Q. Up here at the top of this document that
17 we've been examining that dealt with Dow Corning,
18 there's a number that's been stamped on it.

19 Do you know what that number represents,
20 Dr. Rowe?

21 A. I have no knowledge.

22 Q. That number was there in your file?

23 A. I presume so.

24 Q. Okay. Were there other business entities
25 besides Dow Corning that Dow Chemical provided

1 toxicity testing services to?

2 A. Not that I can recollect.

3 Q. Are you aware of any kinds of services

4 besides toxicology - toxicological services that the

5 biochemical research laboratory provided to any other

6 business entities besides Dow Corning?

7 A. I don't know.

8 Q. Dr. Rowe, have you ever heard of a company

9 called "Dowell"?

10 A. Yes.

11 Q. In what context have you heard of that

12 company, sir?

13 A. It was a subsidiary company of Dow.

14 Q. Of Dow Chemical Company, --

15 A. Yes.

16 Q. -- as you understand it?

17 A. It was a subsidiary of Dow Chemical.

18 Q. Did you provide toxicity testing services

19 for subsidiary companies at the biochemical research

20 laboratory?

21 A. On occasion.

22 Q. And I take it if -- Would it be correct,

23 sir, then, that if it was a subsidiary company, you

24 would not be selling those services?

25 MR. PIERCE: Objection to the form

1 of the question.

2 A. I guess I don't understand your question.

3 Q. Well, I'm a bit confused. I asked you
4 earlier if you sold any services to any other business
5 entity besides Dow Corning, and you said that you
6 couldn't recall any. And now I've asked about Dowell,
7 and you say you've provided some services to them.
8 I'm wondering if they were sold to Dowell.

9 A. Well, Dowell is a part of Dow Chemical
10 Company. And when we did work for a - any subsidiary,
11 it was on a work order basis; and they would reimburse
12 us for that just on an accounting basis.

13 Q. Were there other subsidiaries of Dow
14 Chemical Company that you recall that you provided
15 services to at the biochemical research laboratory?

16 A. I don't recall any.

17 Q. Do you understand that Dowell - part of its
18 business involved doing work in the oil patch?

19 A. Do I understand what --

20 MR. PIERCE: Objection to the form
21 of the question.

22 Q. Do you understand that a part of Dowell's
23 business was providing services in the oil patch?

24 A. Yes.

25 Q. Would that include drilling muds, to your

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1 knowledge?

2 A. I don't know.

3 Q. Has any of the work that you've been

4 involved with at Dow from a toxicological standpoint

5 dealt with drilling muds or their constituents, that

6 you're aware of?

7 A. I don't recollect.

8 (PLAINTIFFS' EXHIBIT 481100 DOW

9 (JIHT) WAS MARKED FOR IDENTIFICATION

10 PURPOSES. SAME WILL BE FOUND IN

11 THE EXHIBIT VOLUMES ATTENDANT TO

12 THIS DEPOSITION.)

13 (By Mr. Hobson)

14 Q. Let me show you another exhibit, if I could,

15 Dr. Rowe. It's 481100 DOW (JIHT).

16 A. (Reviewing document)

17 Q. Do you recognize this document, sir?

18 A. Yes.

19 Q. What is it, please?

20 A. The title is "Toxicological Studies on

21 Certain Commercial Silicones and Hydrolyzable Silane

22 Intermediates."

23 Q. And you're one of the authors?

24 A. Yes.

25 Q. And this is a reprint of its publication in

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1 the scientific literature; is that right?

2 A. Yes.

3 Q. On the first page of the document - not the

4 page you're looking at, but the blank page that

5 precedes the one you're looking at - I see another

6 penciled number there. Do you see it toward the top?

7 A. Yes.

8 Q. And what number is it? I can't see it from

9 here.

10 A. One two four.

11 Q. Is that the same pencil numbering system

12 that you told us about a few moments ago with another

13 document where your library kept track of the

14 reprints?

15 A. I'm quite sure it is.

16 MR. PIERCE: Objection to the form

17 and to the characterization of the

18 previous testimony.

19 But go ahead and answer.

20 Q. I'm sorry, sir. I need your answer.
21 A. I'm quite sure it is.
22 Q. The previous document that - that we have
23 here - 421200 DOW (JIHT), had "121" on it. Are those
24 filed chronologically or with time by number?
25 A. Generally speaking, but I can't vouch for

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1 that being - always being the case because this was
2 clerical work (tendering document).
3 Q. The document that has "121" on it was
4 published in 1942, and the document that has "124" on
5 it was published in 1948. Would that indicate to you,
6 sir, that if they followed the system, they - that you
7 understood was in place, that there would have been
8 two publications in between these that were kept in
9 the Dow files?

10 MR. PIERCE: Objection to the
11 form.

12 A. I don't know.

13 MR. PIERCE: You're asking for
14 sheer speculation but...

15 Q. Was there a list kept that told you what
16 Document No. 124 was or what Document No. 121 was?

17 A. Yes.

18 Q. What would you call that list, sir, if we
19 were to describe it?

20 A. I can't tell you whether it was a list. It
21 was an open folder with strips that were replaceable
22 in it with numbers on them and the titles on it. It
23 was not a compilation of such as you're looking at
24 there.

25 MR. ALMQUIST: Before we go on to

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1 the next one -- We've been at this
2 an hour now. I think we might want to
3 take a 15-minute break right now.

4 MR. HOBSON: Okay.

5 (AT THIS TIME A BRIEF RECESS WAS
6 TAKEN, AND THE PROCEEDINGS THEREAFTER
7 RESUMED AS FOLLOWS:)

8 (By Mr. Hobson)

9 Q. Dr. Rowe, we'll begin again, if we could.

10 Dr. Rowe have you heard the term "central
11 research index" at Dow?

12 A. Yes.

13 Q. What is the central research index, as you
14 understand it, sir?

15 A. It was a repository for reports and

16 publications and the like.

17 Q. What is your understanding of what went into

18 the central research index?

19 A. I really don't recall what all went in

20 there.

21 Q. Did some of your work at the biochemical

22 research laboratories go into the central research

23 index?

24 A. I believe so.

25 MR. PIERCE: Objection to the

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1 form.

2 Q. I'm sorry. I didn't hear your answer, sir.

3 A. I believe so.

4 Q. What kinds of things do you remember from

5 the biochemical research laboratory going into the

6 central research index?

7 A. Reports.

8 Q. Any particular kinds of reports or all

9 reports? Can you give me a definition of that?

10 A. I -- I don't recollect what criteria we even

11 used; but most all reports that were written and

12 circulated, a copy was put in the central file.

13 Q. Where was the central research index kept,

14 sir?

15 A. I don't remember.

16 Q. Were there other research indexes besides
17 the central research index? I've seen reference to a
18 western research index.

19 MR. PIERCE: Objection to the form
20 of the question, if there is one.

21 A. I don't know.

22 Q. Would you, sir, have had access to the
23 central research index?

24 A. Yes.

25 Q. Was there a listing somewhere of what was in

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1 the central research index, that you recall?

2 A. I don't know.

3 Q. Who maintained the central research index?

4 A. I don't know.

5 Q. Would you know which grouping within the
6 company maintained the central research index?

7 A. No.

8 Q. If you wanted access to something in the
9 central research index, how would you go about getting
10 it, sir?

11 A. I'd have probably asked my secretary to get

12 it for me.

13 Q. And where she went to get it, you would not
14 know?

15 A. No. I do not know.

16 (PLAINTIFFS' EXHIBIT 511100 DOW
17 WAS MARKED FOR IDENTIFICATION
18 PURPOSES. SAME WILL BE FOUND IN
19 THE EXHIBIT VOLUMES ATTENDANT TO
20 THIS DEPOSITION.)

21 (By Mr. Hobson)

22 Q. Let me show you, sir, what we've marked as
23 Exhibit 511100 DOW and ask you if you can identify
24 that, please, sir (tendering document).

25 A. (Reviewing document) Yes.

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1 Q. What is it, sir?

2 A. It's a reprint entitled, "Vapor Toxicity of
3 Trichloroethylene Determined by Experiments on
4 Laboratory Animals."

5 Q. It's a paper that you were one of the
6 authors on?

7 A. Yes.

8 Q. And this came from your files that you've
9 been keeping at your home?

10 A. I beg your pardon.

11 Q. This came from your files that you've been
12 keeping at your home?

13 A. Yes.

14 (PLAINTIFFS' EXHIBIT 520700 DOW
15 WAS MARKED FOR IDENTIFICATION
16 PURPOSES. SAME WILL BE FOUND IN
17 THE EXHIBIT VOLUMES ATTENDANT TO
18 THIS DEPOSITION.)

19 (By Mr. Hobson)

20 Q. Let me show you, sir, what we've marked as
21 Exhibit 520700 DOW and ask you if you can identify
22 this document (tendering document).

23 A. (Reviewing document) Yes.

24 Q. What is it, sir?

25 A. Vapor toxicity of -- It's a reprint of an

1 article entitled, "Vapor Toxicity of Carbon
2 Tetrachloride Determined by Experiments on Laboratory
3 Animals."

4 Q. And are you one of the authors of that
5 article?

6 A. Yes.

7 Q. And this is one of the documents that you've

8 brought with you to the deposition from your files you
9 keep at home?

10 A. Yes.

11 (PLAINTIFFS' EXHIBIT 551000 FDCLJ
12 WAS MARKED FOR IDENTIFICATION
13 PURPOSES. SAME WILL BE FOUND IN
14 THE EXHIBIT VOLUMES ATTENDANT TO
15 THIS DEPOSITION.)

16 (By Mr. Hobson)

17 Q. Let me hand you a document, sir, that we've
18 put a sticker on. It's Exhibit 551000 FDCLJ and ask
19 you if you can identify that, please (tendering
20 document).

21 A. (Reviewing document) Yes.

22 Q. And what is it, sir?

23 A. It's a reprint of an article entitled,
24 "Procedures for the Appraisal of the Toxicity of
25 Chemicals in Foods, Drugs and Cosmetics."

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1 Q. You brought this to the deposition from your
2 files, sir, that you've kept at your home; is that
3 right?

4 A. Yes.

5 Q. You're not one of the authors of this

6 document, are you, sir?

7 A. No, sir.

8 Q. Could you recall how you came into
9 possession of this document?

10 A. I -- I don't recall.

11 Q. Is this a document that you had while you
12 were a Dow employee?

13 A. Yes, yes.

14 Q. Thank you, sir.

15 (PLAINTIFFS' EXHIBIT 560425 CARB
16 WAS MARKED FOR IDENTIFICATION
17 PURPOSES. SAME WILL BE FOUND IN
18 THE EXHIBIT VOLUMES ATTENDANT TO
19 THIS DEPOSITION.)

20 (By Mr. Hobson)

21 Q. Let me show you Document 560425 CARB and ask
22 you if you can identify that document, sir.

23 MR. PIERCE: (Reviewing document)

24 Mr. Hobson, there are some
25 markings on this document that

1 obviously were not there when provided
2 to you. You want to identify these for
3 the record, please?

4 MR. BLANKS: Sure. They're
5 obvious. We'll just agree that the
6 markings are obvious and they weren't
7 there when it was provided. The blue
8 highlighting on the document was not
9 there when you gave it to us. And that
10 will be the case on all of them where
11 we've put markings on them. And we'll
12 stipulate to that right now.

13 MR. PIERCE: The difficulty,
14 Mr. Blanks, is that, of course, there
15 will be copies made of this; and I
16 don't know -- If the blue shows up on
17 those copies, all we will see is an
18 underlining.

19 MR. HOBSON: It won't show up.

20 MR. PIERCE: It will not show up?

21 MR. HOBSON: On the copies, no.

22 And by the way, if anyone has any
23 concerns that the highlighting might
24 show up, I think you all have other
25 copies. If you want to substitute them

1 with the same exhibit sticker, that's

2 fine with me.

3 (By Mr. Hobson)

4 Q. I'm sorry. Dr. Rowe?

5 A. Yes?

6 Q. Would you identify that for us, please,
7 sir.

8 A. This is a reprint of an article entitled,
9 "The Interpretation of Threshold Limits for
10 Inhalation of Chemical Substances, Excluding Mineral
11 Dusts, with Recommendations for Improvement."

12 Q. And that's a document that you brought to
13 the deposition from your files kept at your home?

14 A. Yes.

15 Q. Do you recall how you came into possession
16 of this document?

17 A. No.

18 Q. Is this a document that you had while you
19 were a Dow employee?

20 A. I'm sure -- Yes.

21 Q. Is this the Dr. Smyth that you mentioned
22 yesterday that, I think, was associated with Mellon?

23 A. Yes.

24 Q. Do you recall using this document any way in
25 your work at Dow, Dr. Rowe?

1 A. I don't recall any specifics.

2 Q. Thank you, sir.

3 (PLAINTIFFS' EXHIBIT 560425 DOW
4 WAS MARKED FOR IDENTIFICATION
5 PURPOSES. SAME WILL BE FOUND IN
6 THE EXHIBIT VOLUMES ATTENDANT TO
7 THIS DEPOSITION.)

8 (By Mr. Hobson)

9 Q. Let me show you a document that's marked
10 560425 DOW and ask if you can identify that, please,
11 sir (tendering document).

12 A. (Reviewing document) Yes.

13 Q. What is it, sir?

14 A. It's a copy of an article entitled,
15 "Toxicological Information Useful for Industrial
16 Hygiene Purposes with Emphasis on Topical Contact."

17 Q. Are you the author of that paper, sir?

18 A. Yes.

19 Q. In what context was it written, please?

20 A. It was written for a presentation at the
21 American Industrial Hygiene Association Annual
22 Meeting, April 25th, 1956.

23 Q. And was it delivered there --

24 A. Yes.

25 Q. -- in the format that's set out here in the

1 paper? This is the speech you gave?

2 A. To the best of my knowledge.

3 Q. I mean, you would typically present the text
4 as it's written to the group when you delivered the
5 speech. Is that right?

6 MR. PIERCE: Objection to form
7 of the question.

8 A. Yes.

9 Q. Looking back for a moment, sir, in 560425
10 CARB, the paper that we previously spoke of by
11 Dr. Henry Smyth, Jr., it says "Presented as part of
12 the Donald E. Cummings Memorial Lecture at
13 Philadelphia, Pennsylvania, April 25th, 1956, before
14 The American Industrial Hygiene Association."

15 What is that lecture, sir, as best you
16 understand?

17 A. It's -- It's an award presented each year,
18 or almost every year, by the American Industrial
19 Hygiene Association, recognizing an individual's
20 contributions to the field.

21 Q. And is it your understanding, then, that
22 this text by Dr. Smyth is what was presented at that
23 lecture in 1956 at the American Industrial Hygiene

24 Association?

25 A. I cannot attest to that.

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1 Q. Is that what it indicates to you on the face
2 of the document?

3 MR. PIERCE: Objection to the
4 form. The witness has answered the
5 question. The document speaks for
6 itself.

7 A. I do not know whether it was presented in
8 its entirety. It would have been difficult, I think.

9 Q. Would you recall, sir, if you attended the
10 American Industrial Hygiene Association meeting in
11 Philadelphia in 1956?

12 A. I don't recall.

13 Q. Did you usually attend the Cummings
14 Lectures --

15 A. Yes.

16 Q. -- when you went to the association
17 meetings?

18 A. Yes, I did.

19 Q. Did those meetings tend to be - those
20 lectures tend to be well attended?

21 MR. PIERCE: Objection to form

22 of the question. It's vague and
23 ambiguous.
24 A. Would you restate your question, please.
25 Q. Yes, sir. When the American Industrial

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1 Hygiene Association would meet and the Cummings
2 Lecture would be presented, was it well attended, as
3 you observed?
4 A. I -- In my opinion, yes.
5 Q. Do you have a recollection of Dr. Smyth
6 making this lecture - the Cummings Lecture - in 1956
7 in Philadelphia?
8 A. I don't recall it specifically.
9 (PLAINTIFFS' EXHIBIT 560800 DOW
10 WAS MARKED FOR IDENTIFICATION
11 PURPOSES. SAME WILL BE FOUND IN
12 THE EXHIBIT VOLUMES ATTENDANT TO
13 THIS DEPOSITION.)
14 (By Mr. Hobson)
15 Q. Let me hand you, sir, what's been marked as
16 560800 DOW (AMA-AIH) and ask you if you can identify
17 that, please (tendering document).
18 A. (Reviewing document) Yes.
19 Q. What is it, sir?

20 A. It's a reprint of an article entitled,
21 "Toxicity of Paradichlorobenzene."
22 Q. Are you one of the authors of this paper?
23 A. Yes.
24 Q. Thank you. I don't recall that we talked
25 about this name, although I may have forgotten.

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1 F. Oyen, O-y-e-n. Could you tell us who that is,
2 please, sir?
3 A. Mr. Oyen was a pathologist.
4 Q. An employee of Dow, I assume.
5 A. Yes.
6 Q. Would you know if he's still living?
7 A. No. He is not living.
8 Q. Thank you.
9 (PLAINTIFFS' EXHIBIT 581000 DOW
10 (AIHAJ) WAS MARKED FOR IDENTIFICATION
11 PURPOSES. SAME WILL BE FOUND IN
12 THE EXHIBIT VOLUMES ATTENDANT TO
13 THIS DEPOSITION.)
14 (By Mr. Hobson)
15 Q. Let me show you Exhibit 581000 DOW (AIHAJ)
16 and ask you if you can identify that, sir (tendering
17 document).

18 A. (Reviewing document) Yes.
19 Q. What is it, please, sir?
20 A. It's a reprint of an article entitled,
21 "Toxicity of 1,1,1-Trichloroethane as Determined on
22 Laboratory Animals and Human Subjects."
23 Q. And is that an article that you're a
24 coauthor on?
25 A. Yes.

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1 Q. Thank you. Dr. Rowe, if I could, I want to
2 return to the previous article I asked you about,
3 560800 DOW (AMA-AIH) (tendering document). The
4 journal that this article is published in, could you
5 identify that for us, please, sir?
6 A. (Reviewing document) It's a reprint from
7 the A.M.A. Archives of Industrial Health.
8 Q. Are you familiar with that journal?
9 A. We used to publish in it.
10 Q. The A.M.A.: that's the American Medical
11 Association?
12 A. Yes.
13 Q. Are you familiar with the Journal of the
14 American Medical Association, as well?
15 A. Vaguely (tendering document).

16 Q. There's a number right here that is not real
17 legible on the side of the document. Can you tell us
18 what that number is, sir (tendering document)?

19 A. I don't know.

20 Q. Do you know what it symbolizes? It seems to
21 be in a different format than the others I asked you
22 about.

23 A. That's why I don't recognize it.

24 (PLAINTIFFS' EXHIBIT 561000 DOW
25 (AMA-AIH) WAS MARKED FOR IDENTIFICATION

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1 PURPOSES. SAME WILL BE FOUND IN
2 THE EXHIBIT VOLUMES ATTENDANT TO
3 THIS DEPOSITION.)

4 (By Mr. Hobson)

5 Q. Let me show you the next article here marked
6 561000 DOW (AMA-AIH) and ask you, sir, if you can
7 identify that document for us (tendering document).

8 MR. PIERCE: (Reviewing document)

9 There's a stick-on on the last
10 page of this article which I assume is
11 yours, Mr. Hobson.

12 MR. HOBSON: That's right. We'll
13 take that off before it gets copied.

14 It was just a reference note, but
15 that -- If you want to leave it there,
16 it will help Dr. Rowe find the question
17 I want to ask.
18 MR. PIERCE: Fine (tendering
19 document to witness)
20 A. (Reviewing document) Yes?
21 Q. What is that article, sir?
22 A. It's a reprint of an article entitled,
23 "Toxicological Studies of Certain Alkylated Benzenes
24 and Benzene."
25 Q. And you're one of the authors on that

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1 article, are you?
2 A. Yes.
3 Q. Who is the lead author on that article, sir?
4 A. It says Mr. Mark - M. A. Wolf.
5 Q. And that's -- One of the gentlemen you told
6 us about yesterday, I believe, was Mark Wolf, who was
7 a Dow employee?
8 A. Yes.
9 Q. The bibliography that's in the back of this
10 particular article, sir, I asked you some questions
11 yesterday about the Toxicological Reviews of the

12 American Petroleum Institute. And I happened to find
13 here that some of those are referenced.

14 Do you see the reference there where I've
15 put the little --

16 A. Yes.

17 Q. -- sticky? When you referenced an article
18 like that in a publication that you were a coauthor
19 on, would that indicate that you had access to that
20 article and reviewed it in preparing this article?

21 A. Yes.

22 Q. Thank you.

23 (PLAINTIFFS' EXHIBIT 590425 DOW
24 WAS MARKED FOR IDENTIFICATION
25 PURPOSES. SAME WILL BE FOUND IN

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1 THE EXHIBIT VOLUMES ATTENDANT TO
2 THIS DEPOSITION.)

3 (By Mr. Hobson)

4 Q. Let me hand you, sir, Exhibit 590425 DOW and
5 ask you if you can identify it. Again, we have some
6 highlighting on there which we have added.

7 A. (Reviewing document) Yes.

8 Q. What is it, please, sir?

9 A. It's a reprint entitled, "Toxicological

10 Basis of Threshold Limit Values: 2. Pathological and
11 Biochemical Criteria."

12 Q. Are you an author on this article?

13 A. Yes.

14 Q. All right, sir. Thank you.

15 (PLAINTIFFS' EXHIBIT 600000 DOW
16 WAS MARKED FOR IDENTIFICATION
17 PURPOSES. SAME WILL BE FOUND IN
18 THE EXHIBIT VOLUMES ATTENDANT TO
19 THIS DEPOSITION.)

20 (By Mr. Hobson)

21 Q. Let me hand you what we've marked as
22 Exhibit 600000 DOW and ask you if you can identify
23 that, sir (tendering document).

24 MR. PIERCE: (Reviewing document)

25 MR. HOBSON: And, again, the

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1 highlighting is mine.

2 MR. PIERCE: There is highlighting
3 on this one, also?

4 MR. HOBSON: In a few places.

5 A. (Reviewing document) Yes.

6 Q. What is that item, please, sir?

7 A. It's a copy of a symposium. It's entitled,

8 "Symposium on Toxicology."

9 Q. And can you tell us where this symposium was
10 presented?

11 A. This symposium, as I recollect, was
12 presented in Houston.

13 Q. And who presented it, please, sir? Was
14 there a company sponsor, or was this a Dow symposium?

15 A. This was a Dow symposium. And as I
16 recollect, Texas management had invited other people
17 from outside of Dow to attend it.

18 Q. When you say "Texas management," who do you
19 mean there, sir?

20 A. I'm thinking particularly of Mr. Beutel.

21 Q. And who is Mr. Beutel?

22 A. He was general manager of the Texas
23 division.

24 Q. Of Dow Chemical Company?

25 A. Yes.

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1 Q. Did this symposium actually get held, to
2 your knowledge?

3 A. Yes.

4 Q. You were there and were a presenter?

5 A. Yes.

6 Q. Who else attended who was not a Dow
7 employee; can you recall?

8 A. I don't recall.

9 Q. Can you recall approximately how many people
10 were in attendance at that symposium?

11 A. I don't know how many there were there.

12 Q. And would it -- Can you categorize it at
13 all? Was it more than a hundred?

14 A. It would be up in that neighborhood
15 somewhere.

16 Q. Do you remember where in Houston it was
17 held?

18 A. I can't tell you where it was.

19 Q. Some meetings are held at the Shamrock
20 Hilton, the old Shamrock Hilton or Shamrock Hotel in
21 Southwest Houston. Could that have been it?

22 A. I don't know.

23 Q. The presenters at this symposium, were they
24 all Dow employees?

25 A. May I refer to the --

1 Q. Yes, sir. Here's the contents page
2 (tendering document).

3 A. Yes (tendering document).

4 Q. Were all of the presenters from Dow in
5 Midland, or were there some Dow employees from other
6 locations?

7 A. These were all Midland people.

8 Q. You say that there were people who were not
9 Dow employees who were invited to attend?

10 A. Yes.

11 Q. Did some actually attend who were not Dow
12 employees?

13 MR. PIERCE: Objection to the
14 form; asked and answered several
15 times.

16 A. I presume so.

17 Q. Would you recall who was responsible for
18 sending out invitations to the meeting - the
19 symposium?

20 A. They were sent at the instigation of
21 Mr. Beutel. That's all I can tell you.

22 Q. The papers that are listed here in the
23 exhibit, is this the content of what was actually
24 presented at the symposium?

25 A. Best of my knowledge.

1 Q. Would you recall if Jim Hammond attended

2 this meeting?

3 A. I don't recall.

4 (PLAINTIFFS' EXHIBIT 601200 DOW

5 (I&EC) WAS MARKED FOR IDENTIFICATION

6 PURPOSES. SAME WILL BE FOUND IN

7 THE EXHIBIT VOLUMES ATTENDANT TO

8 THIS DEPOSITION.)

9 (By Mr. Hobson)

10 Q. Let me hand you, sir, Exhibit 601200 DOW

11 (I&EC) and ask you if you can identify that for us,

12 please.

13 A. (Reviewing document) Yes.

14 Q. What is it, please, sir?

15 A. It's a reprint of an article entitled,

16 "Evaluating the Industrial Hazards of New Chemicals."

17 Q. Are you one of the authors of that?

18 A. Yes.

19 Q. The cover page again seems to be different

20 from some of the other exhibits we've talked about.

21 Is there a reason for the cover page being different?

22 A. Well, it looks like it may have been

23 reprinted at the request of somebody. "Industrial and

24 Engineering Chemistry," I believe, I.E.C. would stand

25 for. It was presented at the National Safety Congress

1 in Chicago. I don't know.

2 Q. Did you present the paper at the National
3 Safety Congress?

4 A. Dr. Olson presented that paper.

5 Q. At the National Safety Congress?

6 A. Pardon?

7 Q. He did present it at the National Safety
8 Congress?

9 A. To the best of my recollection.

10 Q. Do you know this organization, Industrial
11 and Engineering Chemistry?

12 A. Well, that's a -- That's a journal. I
13 believe it's one of the many journals put out by the
14 A.C.S.

15 Q. American Chemical Society?

16 A. Yes.

17 (PLAINTIFFS' EXHIBIT 611000 DOW
18 (AIHAJ) WAS MARKED FOR IDENTIFICATION
19 PURPOSES. SAME WILL BE FOUND IN
20 THE EXHIBIT VOLUMES ATTENDANT TO
21 THIS DEPOSITION.)

22 (By Mr. Hobson)

23 Q. Now, let me show you Exhibit 611000 DOW
24 (AIHAJ) and ask you if you can identify that, please,
25 sir (tendering document).

1 A. (Reviewing document) Yes.

2 Q. What is it, please, sir?

3 A. It's a reprint of an article entitled, "The
4 Toxicity of Vinyl Chloride as Determined by Repeated
5 Exposure of Laboratory Animals."

6 Q. Are you one of the authors of that paper,
7 sir?

8 A. Yes.

9 Q. Thank you.

10 (PLAINTIFFS' EXHIBIT 611000 DOW
11 (RSCH) WAS MARKED FOR IDENTIFICATION
12 PURPOSES. SAME WILL BE FOUND IN
13 THE EXHIBIT VOLUMES ATTENDANT TO
14 THIS DEPOSITION.)

15 (By Mr. Hobson)

16 Q. Let me show you Exhibit 611000 DOW (RSCH)
17 and ask you if you could identify that, sir.

18 MR. HOBSON: The highlighting is
19 mine.

20 MR. PIERCE: Thank you,
21 Mr. Hobson.

22 A. (Reviewing document) Yes.

23 (By Mr. Hobson)

24 Q. What is it, please, sir?

25 A. It's a reprint of an article entitled,

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1 "Evaluating the Toxicity and Hazards of Chemicals."

2 Q. And are you one of the authors?

3 A. Yes.

4 Q. I notice the last item in the bibliography

5 is a text by von Oettingen, I believe, if I recall

6 right. Do you see it there, sir, a text called

7 "Poisoning"?

8 A. Yes.

9 Q. Is that a text that you recall being in

10 Dow's library?

11 A. I don't recall it.

12 Q. If it's referenced there in your

13 bibliography, is it a reference that at least you and

14 your co-workers were aware of and utilized?

15 A. It probably was. I just don't recall it.

16 Q. Thank you, sir.

17 (PLAINTIFFS' EXHIBIT 670300 USSR

18 WAS MARKED FOR IDENTIFICATION

19 PURPOSES. SAME WILL BE FOUND IN

20 THE EXHIBIT VOLUMES ATTENDANT TO

21 THIS DEPOSITION.)

22 (By Mr. Hobson)

23 Q. Let me show you, sir, a document that we
24 have marked 670300 USSR and ask if you can identify
25 that for us (tendering document).

229

1 A. (Reviewing Document) Yes.

2 Q. What is it, please, sir?

3 A. It's a reprint of an article entitled,
4 "Industrial Toxicology and the Prevention of
5 Occupational Poisonings in the Chemical Industry."

6 Q. This is a translation from a foreign
7 article, correct?

8 A. It's a translation from a Russian article.

9 Q. Do you recall how you came to have this
10 article, Dr. Rowe?

11 A. No, I don't.

12 Q. This is one you brought from your personal
13 library at home to the deposition?

14 A. Yes.

15 Q. Would you have had this article while you
16 were still at Dow?

17 A. Yes.

18 Q. Can you recall if you ever utilized this
19 article in any of your work?

20 A. We always considered it for information that

21 we could glean from the literature.

22 Q. In what way do you recall having considered
23 this article, sir?

24 A. I beg your pardon.

25 Q. In what way do you recall having considered

230

1 this article?

2 A. It was of particular interest to me because
3 I knew Professor Letavet and Dr. Korbakova.

4 Q. And you met them on one of your visits to
5 Russia?

6 A. Yes.

7 Q. When was that visit, sir?

8 A. I think that was in 1963.

9 Q. This original Russian article was printed in
10 1967; so, it would have been printed after - published
11 after your visit there, then?

12 A. Must have been.

13 MR. BLANKS: It's a good witness.

14 Q. I apologize, Dr. Rowe. You didn't seem to
15 be as sure about the '63 date, is why I ask. I
16 apologize. I'm not trying to be cute or anything with
17 you.

18 Was there any particular part of this

19 Russian article that you found particularly
20 interesting in your work that you utilized?

21 A. I don't recall.

22 Q. Did you maintain correspondence with either
23 of these gentlemen after your visit in Russia?

24 A. No.

25 (PLAINTIFFS' EXHIBIT 730409 DOW

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1 WAS MARKED FOR IDENTIFICATION
2 PURPOSES. SAME WILL BE FOUND IN
3 THE EXHIBIT VOLUMES ATTENDANT TO
4 THIS DEPOSITION.)

5 (By Mr. Hobson)

6 Q. Let me hand you Exhibit 730409 DOW and ask
7 you if you can identify this article, sir (tendering
8 document).

9 MR. PIERCE: (Reviewing document)

10 MR. HOBSON: It would help speed
11 things along if Dr. Rowe would look at
12 the first part after you've looked at
13 it, Counsel.

14 MR. PIERCE: No. I don't want to
15 do that. Did you make any markings in
16 this, Mr. Hobson, or your colleagues?

17 MR. HOBSON: I don't recall that I
18 did, but I won't tell you I didn't.
19 MR. PIERCE: Then I'd like to
20 check it through.
21 MR. BLANKS: In the event, what
22 should we do then?
23 MR. PIERCE: Excuse me?
24 MR. BLANKS: Well, on the
25 assumption that there might be some in

232

1 there, what about it? I mean, we
2 already said we marked these --
3 MR. PIERCE: I don't care what you
4 said, Mr. Blanks.
5 MR. BLANKS: Pardon me?
6 MR. PIERCE: I don't care what you
7 said, Mr. Blanks. I'd like to find out
8 if there are markings. You assure me
9 there are none - make that
10 representation - that's fine.
11 MR. BLANKS: Well, I don't think
12 that any that are in there were made by
13 me, if there are any. That paper looks
14 so boring I don't think I've even made

15 any.

16 MR. PIERCE: Want to start looking

17 through (directed to the witness)?

18 A. (Reviewing document)

19 (By Mr. Hobson)

20 Q. All right. Do you recognize that document,

21 Dr. Rowe?

22 A. I can honestly say that I don't recognize it

23 as such.

24 Q. Can you tell us -- Is this something you

25 brought from your library at home?

233

1 A. Yes.

2 Q. Would you have any recollection of why it's

3 in your library?

4 A. Yes. It's -- It's a general compilation of

5 methodology and examples of it in various categories

6 of toxicological evaluation.

7 Q. And do you know what it was used for, this

8 document?

9 A. My memory is vague about this, but I do

10 remember that - It must have been in 1973 because

11 that's when it's dated - that we tried to get our

12 experts in each of the fields of toxicology to write

13 up a comprehensive piece that could be used in

14 educating our other people.

15 Q. And by "our other people," who do you mean,

16 sir?

17 A. Whoever.

18 Q. Any Dow employee?

19 A. Anybody that -- If we happened to want to

20 use it for a symposium or education of new employees

21 and so on.

22 Q. The last sheet that's there, I think, is

23 handwriting.

24 A. Yes. I remember that.

25 Q. Can you tell me whose handwriting that is,

234

1 sir?

2 A. No, I can't.

3 Q. It's definitely not yours, though?

4 A. It's not mine.

5 Q. All right, sir. Do you recall, sir, ever

6 participating in any training sessions, yourself,

7 dealing with toxicology and what I'll call "hourly

8 workers" of Dow Chemical Company?

9 MR. PIERCE: Objection to the form

10 of the question.

11 A. Yes.

12 Q. How far back in your career at Dow does that

13 go, sir?

14 A. Probably started in the Nineteen - around

15 1940.

16 Q. And what do you recall about those sessions?

17 What did they deal with, sir?

18 A. The purpose was to acquaint people -

19 employees in one area or another - salespeople, other

20 research people - about the significance of - or

21 existence of the biochemical research laboratory.

22 Q. And why would you want to do that?

23 A. Education.

24 Q. And what was the value to you in your work

25 in providing this education?

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1 A. Well, people can't do anything about what

2 they don't know about.

3 Q. Could you tell me more what you mean by

4 that, sir?

5 A. Toxicology was unknown to almost even most

6 chemists.

7 Q. And, so, you were trying to get information

8 about toxicology to chemists and to people working

9 with chemists about the problems - the hazards of
10 chemicals that you dealt with.

11 MR. PIERCE: Objection to the form
12 of the question.

13 But go ahead and answer.

14 A. I don't know what limitations you are
15 referring to or what -- We -- We conducted safety
16 meetings throughout the plant, various groups, from
17 time to time, impromptu, some scheduled, where we
18 tried to explain the - what we did in the toxicology
19 section of the biochemical research laboratory.

20 Q. And as early as the 1940's, you found that
21 to be a good practice to follow, I take it.

22 A. Very, very, very good.

23 Q. And what I'm trying to learn, sir, in your
24 words, is why you found that to be a good practice.

25 MR. PIERCE: Objection.

236

1 Q. Why did you find it necessary to do?

2 MR. PIERCE: Objection to the
3 form.

4 A. We made every effort to create a
5 consciousness among employees about the safe handling,
6 proper procedures to use, and so forth in handling

7 chemicals.

8 Q. And in your words, sir, would you tell us
9 why that was something you found important to do at
10 Dow.

11 MR. PIERCE: Asked and answered.

12 Q. What was the benefit, sir?

13 A. We sought --

14 MR. PIERCE: Objection.

15 A. -- to make it a safer place - a safer
16 workplace.

17 Q. Does your --

18 MR. ALMQUIST: If you're switching
19 gears, we've been going for an hour.

20 Continue? Okay.

21 MR. PIERCE: How much do you have
22 left? Okay.

23 MR. ALMQUIST: We'll finish.

24 Q. Let me ask you one question, I guess,
25 Dr. Rowe. I've looked through your bibliography

1 that's attached to your C.V.; and I don't find listed
2 a chapter that I think you wrote in the second edition
3 of Patty. Did you write a chapter in the second
4 edition of Patty?

5 A. Yes.

6 Q. I may have missed it. Would you recall if

7 it's there? I didn't find it (tendering document). I

8 found the third edition but not the second edition.

9 1958.

10 A. (Reviewing document) I guess I don't

11 understand your question, then.

12 Q. Did you write a section of the second

13 edition of Patty that would have been published about

14 1958?

15 A. Your dates are -- I don't remember what all

16 was in the first edition and the second edition.

17 Q. Did you write a portion of the first

18 edition, as well?

19 A. I don't remember which edition it is.

20 That's my problem.

21 MR. HOBSON: All right, sir. I

22 think we're out of tape; so, I'll stop

23 at that point.

24 (SHORTLY AFTER THE RECESS WAS

25 CALLED, IT WAS DECIDED TO BREAK FOR

1 LUNCH. THEREFORE, AT 11:20 A.M. THE

2 DEPOSITION WAS RECESSED AND AT 12:30

3 P.M. RESUMED AS FOLLOWS:)

4 (By Mr. Hobson)

5 Q. Dr. Rowe, just before we broke for lunch, I
6 was asking you about your authorship in sections of
7 the various editions of the Patty's Industrial Hygiene
8 and Toxicology. In your bibliography you referenced
9 the third edition which was edited by George Clayton
10 and his wife.

11 Do you recall if you did have a chapter in
12 the earlier editions of Patty?

13 A. My confusion is with -- Which edition is
14 which?

15 Q. All right sir. The third edition that
16 Mr. and Mrs. Clayton did was published in 1981.

17 A. Okay.

18 Q. The earlier editions of Patty - I believe
19 the first edition was '48 and the second edition was
20 about 1958.

21 A. Okay.

22 Q. I thought that you had a chapter in at least
23 the 1958 Patty's.

24 A. Yeah.

25 MR. PIERCE: If you recall,

1 Doctor. All you can do is the best you
2 can do.

3 A. I had several chapters in that edition. I
4 don't remember the date. That was right around 1960,
5 though, --

6 Q. Yes, sir.

7 A. -- the one I'm referring to.

8 Q. I didn't find those chapters referenced in
9 your bibliography, though, the ones that would have
10 been around 1960. Is that just something you didn't
11 put in your bibliography that's your C.V.?

12 A. I don't -- I don't know. Is the volume as a
13 whole listed? I --

14 Q. I don't know, sir. Let me give it back to
15 you (tendering document).

16 MR. PIERCE: You have a stick-on
17 with arrows. Do you want those there?

18 MR. HOBSON: You can pull them
19 off, if you like.

20 A. (Reviewing document) It's not there. I
21 don't know why.

22 (By Mr. Hobson)

23 Q. All right, sir. One of the things that I
24 believe you were asked to bring to the deposition,
25 Dr. Rowe, was industrial hygiene and occupational

1 medicine texts. And I didn't find, when I went
2 through the stack, any texts. Some people who have
3 come to the depositions have only brought copies of,
4 perhaps, the cover page or something to the published
5 text. I was wondering if -- I didn't see those in
6 here.

7 Did you bring anything - any textbooks or
8 any parts of textbooks?

9 A. No, I did not.

10 Q. Do you have any some texts that were written
11 before 1965 on these subjects?

12 A. I have Patty. I don't know that I have any
13 other texts that were written that early.

14 Q. All right, sir. And you have Patty's first
15 edition?

16 A. No, I don't think I have the first edition.
17 I have the one that - that was published in about
18 1960's, around there.

19 Q. All right, sir. I'm sorry. I thought you
20 told --

21 A. And the - that's a one-volume deal. And the
22 next volume was a three-volume deal. I have -- I have
23 both of those but not the first edition.

24 Q. All right, sir.

25 MR. HOBSON: We want to attach as

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1 Rowe Exhibit 1 the notice for the
2 deposition, and it does say with
3 subpoena duces tecum. And I think our
4 earlier discussion about the fact that
5 Dr. Rowe was not served with a subpoena
6 but his appearance is by agreement --
7 We will note that exception, but we
8 will ask that the notice of the
9 deposition be attached as Exhibit 1.

10 (PLAINTIFFS' EXHIBIT ROWE 1
11 WAS MARKED FOR IDENTIFICATION
12 PURPOSES. SAME WILL BE FOUND IN
13 THE EXHIBIT VOLUMES ATTENDANT TO
14 THIS DEPOSITION.)

15 (By Mr. Hobson)

16 Q. Dr. Rowe, does the term "environmental
17 stewardship" have meaning to you, sir?

18 A. Yes.

19 Q. What does it mean to you?

20 A. It means to me that - that almost anything
21 that has an impact on the environment ought to be
22 considered and handled in the - in the best way

23 available.

24 Q. Was environmental stewardship a term that
25 was in use at Dow?

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1 A. I don't know whether that term specifically
2 was used or not.

3 Q. Were you at Dow practicing what you've just
4 described as "environmental stewardship" for your
5 products?

6 MR. PIERCE: Objection to the
7 form.

8 A. I believe so.

9 Q. How were you doing that, sir?

10 A. We were trying to convey all the information
11 that we had relative to downstream uses of products.
12 And I guess I don't know exactly what - what you're
13 referring to from the standpoint of specifics.

14 Q. Well, sir, I'd really like to know how the
15 description of environmental stewardship that you gave
16 me was practiced in general at Dow, if it was.

17 MR. PIERCE: Objection to the
18 form. The witness testified that
19 he doesn't even know if that term was
20 employed at Dow.

21 A. We're very conscious of by-product waste and
22 this sort of thing that can contaminate the
23 environment; and we did what I believe was -
24 everything we had available to us, technology and so
25 forth, to avoid environmental contamination.

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1 Q. You used the terminology a moment ago
2 "downstream uses." What did you mean by that, sir?

3 A. Well, you dispose of a material, you sell a
4 product, and you do everything you can to avoid having
5 it misused or, for example, dumped in a - in a dump or
6 whatever.

7 Q. How would you at Dow, in your own words,
8 deal with those kinds of problems for Dow Chemical
9 products?

10 A. Labeling, product brochures, following
11 regulations as close as we could, contacts with other
12 people in an attempt to avoid everything that we could
13 reasonably avoid in contamination of the environment.

14 Q. Would you know, sir, did Dow ever have as a
15 practice evaluating a potential customer before you
16 sold the product to the customer to make sure that
17 customer knew how to properly deal with the chemical
18 from a health and safety standpoint?

19 MR. PIERCE: I'll object to the

20 form of that question.

21 A. Yes. We had situations like that.

22 Q. Would you give me some of those examples
23 that you remember, sir.

24 A. I recollect one very early in which a
25 company wished to use methyl bromide as a fire

244

1 extinguisher. And we, even under threat of suit,

2 refused to sell it for that purpose.

3 Q. Are you saying that the company that wanted
4 to buy the material threatened to sue Dow if you
5 wouldn't sell it to them?

6 A. Yes.

7 Q. And even in the face of that, the decision
8 was made not to sell the product to the company?

9 A. That's my understanding.

10 Q. And what was the reason the decision was
11 made not to sell the product for that purpose?

12 MR. PIERCE: Asked and answered.

13 A. Because we believed that it was too
14 hazardous to use for such a purpose.

15 Q. What was the approximate time frame of that,
16 Dr. Rowe?

17 A. I can't be sure, but it would have been in
18 the early Forties.

19 Q. Would you have been maintaining a file of
20 customer inquiries or customer correspondence about
21 different Dow products?

22 A. I didn't.

23 Q. If -- Would it occur from time to time that
24 a customer would write to Dow and ask for information
25 about the safe use of a product and you would be asked

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1 to respond?

2 A. It's possible.

3 Q. I know that it's possible, but do you recall
4 that actually happening?

5 A. Specifics I don't remember. I don't
6 remember, but I'm sure the situation did exist.

7 Q. And when you would respond, would you have
8 done that in writing occasionally?

9 A. In either writing or conversation.

10 Q. If you did it in writing, would you have
11 kept a record of that written correspondence?

12 A. I don't know. I might -- I don't imagine
13 that I would have. I don't know.

14 Q. When you would write a letter -- Strike

15 that. Let me ask this: If you wrote a letter while
16 you were an employee of Dow to someone outside the
17 company, could you put your name on that letter?

18 A. Yes.

19 Q. Was there ever a time when you weren't
20 authorized to sign your own letters, that someone
21 above you had to put their name on a letter that you
22 had written?

23 A. I don't recollect any.

24 Q. Was it your general practice to keep copies
25 of letters that you had written in the Dow files?

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1 MR. PIERCE: Objection to the form
2 of the question.

3 A. I had a correspondence file, yes; but it
4 was -- I'd usually clean my files once a year and
5 discarded the - that which was of no longer any
6 significance.

7 Q. When you would do your toxicity testing work
8 at the biochemical research laboratories on Dow
9 products, would you know, sir, if that was carried as
10 just a general overhead charge; or would that charge
11 be billed back to certain groups within Dow Chemical
12 Company?

13 MR. PIERCE: I'm going to object
14 to the form of the question.
15 A. It's two questions.
16 Q. All right, sir. If you could, give me the
17 answer to each one, then, please, sir.
18 A. Some were billed as an overhead to our
19 department. Others were agreed to -- The financing
20 was agreed to by product departments or subsidiaries
21 or what.
22 Q. Would this be the case back in as early as
23 the 1930's - about late 1930's - when you began in the
24 biochemical research laboratory?
25 A. I don't know.

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1 Q. Can you tell me, based on your knowledge,
2 approximately when this practice began?
3 A. I don't recall.
4 Q. Could you initiate toxicity testing on a
5 material at the biochemical research laboratory
6 without one of the other groups within Dow requesting
7 that work be done?
8 A. Yes. At times.
9 Q. You didn't have to wait for some other
10 entity in Dow, then, to ask you to begin a project?

11 A. No.

12 MR. HOBSON: Dr. Rowe, I

13 appreciate your patience with me.

14 That's all the questions I have on this

15 subject right now, sir. Thank you very

16 much.

17 THE WITNESS: You're welcome.

18 MR. PIERCE: Anyone else have any

19 questions?

20

21 EXAMINATION BY MR. BLANKS:

22 Q. Dr. Rowe, I wanted to visit with you about

23 some of these same areas, hoping not to repeat too

24 much.

25 Where and how did you get your training to

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1 do toxicology work? I understood that you graduated

2 with degrees in biochemistry.

3 A. That's right.

4 Q. And I'm just wondering what more you needed

5 to learn to do toxicology.

6 A. That's a long story. There weren't

7 anything - or no one existed that - except for,

8 perhaps, a very few who would call themselves

9 "toxicologists" when I began to do this sort of
10 thing. So, what was -- It was really we developed, I
11 think, in many instances the discipline of what is now
12 known as industrial toxicology. There were forensic
13 toxicologists but very, very few people who would
14 consider themselves as industrial toxicologists. So,
15 we grew with it, saw the need, tried to invent means
16 and methods to answer the pertinent questions. So, we
17 grew up doing it.

18 Q. Did you have any jobs between your graduate
19 work and beginning with Dow?

20 A. No.

21 Q. Was it, then, Dr. Irish who was in a way
22 your initial teacher into the area of industrial
23 toxicology?

24 A. Dr. Irish and Dr. Adams.

25 Q. So, they were in some respect your mentors,

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1 then; and I suppose --

2 A. Yes.

3 Q. -- in a way you all grew together in the
4 field. What were the pertinent questions in 1937 in
5 your field?

6 MR. PIERCE: I'm going to object

7 to the form of the question.

8 But try to answer it.

9 A. I don't know that I knew enough in 1937 to
10 identify them.

11 Q. Well, looking back with what you learned
12 over the following years as you matured in your field,
13 what you perceived it to have been, then.

14 A. Well, the problems that we were looking at
15 are identified by our publications and the problems
16 that The Dow Chemical Company had. We were interested
17 in the halogenated hydrocarbons; so, much of our
18 effort went into that. This was in those days quite
19 colloquial.

20 Q. Meaning -- Meaning what?

21 A. Meaning the problems that were surrounding
22 us - immediately surrounding us rather than the world
23 problems.

24 Q. I don't think that Mr. Hobson asked you, but
25 I'd appreciate it if you could give the jury just a

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1 plain understandable definition of what toxicology is
2 and what it involves.

3 A. Our efforts at toxicology, perhaps, would
4 explain what I'm trying to say; but basically we would

5 expose animals to various compounds to try to learn
6 the amounts that were required under what conditions
7 to identify the areas of target organs, so to speak,
8 and apply the qualitative and quantitative aspects to
9 the - give it to the medical people, others involved
10 in - in the minimizing of occupational exposures.

11 Q. Okay. Well, that's --

12 A. And that was foundation that we looked to
13 apply. It involved various types of exposures that I
14 have described elsewhere there we've talked about.

15 Q. Thank you. And I think that is helpful.
16 In growing into your field, I would suspect that you
17 did a lot of reading along the way after you went to
18 work at Dow in areas that would be related to
19 toxicology in the work you were doing; wouldn't that
20 have been true?

21 A. No. I don't believe that I ever did a lot
22 of reading.

23 Q. Would you and your colleagues have at the
24 least been following the literature in the
25 occupational health field and industrial hygiene and

1 toxicology field?

2 MR. PIERCE: Objection to the form

3 of the question.

4 A. Yes. We tried to do that.

5 Q. And at that time in 1937, the volume of
6 publications and articles was certainly less than it
7 was in the last years that you worked, was it not?

8 A. Oh, yes.

9 Q. So, at that time, in fact, it was practical
10 for one to be pretty well abreast of the published
11 literature in his professional field.

12 MR. PIERCE: Objection to the form
13 of the question.

14 Q. Would you agree?

15 MR. PIERCE: It requires
16 speculation on the part of the witness
17 as to what affects someone else and
18 what someone else does.

19 A. We tried to do that.

20 Q. At any rate, it was easier to do then than,
21 say, in 1977, 40 years later, when there were more
22 journals, more articles, more presentations, and so
23 on: would that be fair to say?

24 A. I think so.

25 Q. Have you given any -- any kind of testimony

1 for Dow before at any time?

2 A. I beg your pardon.

3 Q. Have you given testimony for Dow at any
4 time?

5 A. Yes.

6 Q. Would that have been in lawsuits or in front
7 of regulatory bodies or Government groups or both?

8 MR. PIERCE: Objection to the form
9 of the question.

10 A. Yes.

11 Q. All of the above?

12 A. Yes.

13 Q. Okay. What -- What sort of litigation
14 topics have you given testimony on, sir?

15 A. Agricultural chemicals, chlorinated
16 hydrocarbons, 2,4,5-T, dioxin. I don't know any...

17 Q. Have you ever testified in any case
18 involving any sort of mineral dust exposure at a Dow
19 facility?

20 A. No.

21 Q. You've testified, I suppose, before some
22 governmental groups, committees, agencies?

23 A. Yes.

24 Q. Would that be so? And what was the subject
25 matter of those appearances?

1 A. 2,4,5-T and - and dioxins were one of the
2 major ones. But I was a member of a number of
3 committees, and I can't remember all the things we
4 talked about.

5 Q. Did your committee membership carry on after
6 you left Dow, or did you withdraw from your
7 professional association?

8 A. I withdrew from that.

9 Q. I'm sorry. I talked over you.

10 A. I withdrew.

11 Q. Okay. So, while connected with committees
12 and testifying before Government groups, you were
13 still a Dow employee?

14 A. Yes.

15 Q. And were there testifying at Dow's behest, I
16 would suppose. Is that true?

17 MR. PIERCE: Objection to the form
18 of the question.

19 A. I don't know how to answer that because I
20 was a Dow employee, but I was given the privilege of
21 testifying and discussing problems with the committee
22 as an independent person.

23 Q. So, you weren't necessarily expressing Dow's
24 view when you'd testify? Well, you might have been?

25 A. That would have my background of most of my

1 opinions; but I was speaking, not for Dow, but for
2 myself.

3 Q. Did some of your testimony involve efforts
4 to oppose or resist changes in regulations about
5 occupational health --

6 MR. PIERCE: Objection to the form
7 of the question.

8 Q. -- and industrial hygiene standards?

9 MR. PIERCE: Continue the
10 objection.

11 A. Yes.

12 Q. And some of that testimony involved
13 resisting tightening up standards as to suspected
14 human carcinogens, did it not?

15 MR. PIERCE: Objection to form
16 of the question.

17 A. I don't really -- Can you be more specific?

18 Q. Well, unfortunately, since I don't know what
19 you testified on, I can't be specific about what
20 materials might have been involved.

21 A. Maybe it would help me if you could tell me
22 what you mean by "testifying."

23 Q. Well, I meant where you appeared in front of

24 OSHA regulatory hearings or some Congressional
25 committee or something of that sort.

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1 A. I see. Okay. Yes. I have -- I have -- The
2 first one I was interested in mentioning was with the
3 T.L.V. committee. And I remember distinctly of -
4 urging that committee to lower the level on carbon
5 tetrachloride because I felt that the standards were
6 excessive.

7 Q. In what decade do you recollect doing that
8 service in?

9 A. Probably the Forties.

10 Q. And, indeed, it was probably your opinion
11 that there were other T.L.V. standards that were
12 excessive, as well, during those years; isn't that
13 true?

14 MR. PIERCE: Objection to the
15 form.

16 A. I -- I don't believe I ever testified in
17 that sense. I provided data for the committee to use
18 in making evaluations.

19 Q. In fact, though, many of the T.L.V.'s that
20 the American Congress of Governmental Industrial
21 Hygienists had originally set out were not supported

22 by the quantity or quality of data such as you were

23 providing on particular substances, were they?

24 MR. PIERCE: Object to the form

25 of the question. It's argumentative

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1 and speculative.

2 A. I think that's correct.

3 Q. In fact, they originated just as a

4 benchmark, something that was in the nature of being

5 better than nothing to provide some guidelines to

6 people in industry to protect workers from exposures.

7 MR. PIERCE: Objection to the form

8 of the question.

9 Is there going to be a question?

10 MR. BLANKS: Well, if the

11 objection does not interrupt it.

12 (By Mr. Blanks)

13 Q. Isn't that so, sir?

14 A. I think we always have looked at the

15 A.C.G.I.H. threshold limit values as the best estimate

16 of a basis of the information that was available at

17 that particular time.

18 Q. You mean at the time they were initially

19 promulgated?

20 A. Yes.

21 Q. And over the course of the years that
22 followed, the - additional information came to light
23 with respect to different substances which did not
24 immediately show up in terms of changes of the
25 T.L.V.'s; isn't that right?

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1 MR. PIERCE: Objection to the form
2 of the question; leading.

3 It's just really a speech; but
4 deal with it, sir.

5 A. As new information becomes available,
6 there's always some lag time before it is accepted.
7 In that sense, surely, we're always going to have
8 change.

9 Q. And with respect, for instance, to the
10 mineral dust, the lag time was on the order of many
11 years and not just a few; isn't that right? Those
12 topics -- Those materials weren't revisited by the
13 committee until many years - some decades after the
14 standards had originally been set. Isn't that so?

15 MR. PIERCE: Objection to form of
16 the many questions at the same time,
17 all of which were compound.

18 MR. ALMQUIST: And I'll join in
19 that objection and also raise the
20 objection it's an argumentative
21 question.
22 A. I do not know. I was - never believed that
23 I was an expert or really knowledgeable in the area of
24 particulate toxicology.
25 Q. So, that was something that you never really

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1 concerned yourself with at Dow?
2 A. I -- I didn't.
3 Q. Isn't it the case that Dow was one of the
4 first few companies to actually set up a toxicology
5 department and laboratory?
6 A. One of the first.
7 Q. One of the first of maybe half a dozen in
8 the United States; is that about right?
9 A. Perhaps.
10 Q. Well, you've mentioned Carbide's efforts
11 through the Mellon Institute and, I think, Du Pont at
12 the Haskell Laboratory, and maybe a couple others; but
13 Dow was certainly one of the leaders in that area,
14 correct?
15 A. We thought so.

16 Q. And to whom do you attribute this - the
17 foresight that led to the creation of an industrial
18 toxicology department and laboratory?
19 A. To Willard H. Dow.
20 Q. And was he a doctor, a Ph.D., a scientist?
21 A. He received honorary doctorate degree.
22 Q. He wasn't a physician?
23 A. No.
24 Q. Was it a matter of scientific curiosity that
25 led him to do this, or was it more a concern for the

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1 health and safety of the people that worked --
2 MR. PIERCE: Objection.
3 Q. -- for his company?
4 MR. PIERCE: Objection to form of
5 the question; it's compound. Objection
6 that you're asking Dr. Rowe to
7 speculate on the thoughts of Willard
8 Dow.
9 But go ahead.
10 A. Willard Dow, president and the founder, was
11 a very people-oriented person. And we had an accident
12 in the plant where a man was killed from a splash of
13 phenol. No one knew at that particular time the

14 toxicity of phenol when applied to the skin. As a
15 result of that, my understanding: that Dr. Dow wanted
16 that never to happen again and he tried to and did
17 create the biochemical research laboratory to study
18 materials that Dow people were handling so that such a
19 thing would not happen again to the best of his
20 ability.

21 Q. And it was around that time that he hired
22 Dr. Irish to set up the laboratory and get the program
23 going, correct?

24 A. That's right.

25 Q. Did I understand that the goal then was to

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1 know at Dow about the hazards, the toxicity of all the
2 materials that were being handled in the plants in
3 order to protect the safety of the people in the
4 plants?

5 MR. PIERCE: Objection to form of
6 the question.

7 A. As far as that was humanely possible with
8 the resources available.

9 Q. And as I think you've testified, the
10 resources were made available and in steadily
11 increasing amounts over the decades that you were with

12 the company.

13 A. That's right.

14 Q. Would that be true?

15 A. Yes.

16 Q. Starting with one man in 1933 or '34 and

17 growing up to over a hundred late in your career,

18 correct?

19 MR. PIERCE: Mr. Blanks, could you

20 ask a single question, allow the

21 witness to answer it instead of

22 continually piling question on question

23 as he tries to answer the first one.

24 Please attempt that.

25 Go ahead, Dr. Rowe.

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1 A. Would you please start over your - that

2 question.

3 Q. Dow did, indeed, apply resources to the area

4 of occupational health, beginning with the hiring of

5 one - one scientist in 1933 or '34 in the person of

6 Dr. Irish and continuing over the decades you were

7 with the company to build a staff that approached or

8 exceeded even a hundred people, correct?

9 A. Yes.

10 Q. Would you say, sir, that Dow had a
11 state-of-the-art biochemical research and toxicology
12 program in 1937 when you joined the company?

13 MR. ALMQUIST: I'm going to
14 object --

15 MR. PIERCE: Objection to form of
16 the question.

17 MR. ALMQUIST: I'm also going to
18 object to the form of the question
19 because of the use of the term "state
20 of the art" which has a legal
21 connotation in the sense it calls for a
22 legal conclusion on the part of this
23 witness.

24 A. That was not possible with our staff.

25 Q. It was not possible with your staff in 1937

1 to have a - a program that - that was what we call
2 "state-of-the-art" for that time?

3 MR. PIERCE: Continue the
4 objection.

5 MR. ALMQUIST: And also I want
6 to - if possible, Mr. Blanks to have
7 your agreement to a running objection

8 to state-of-the-art questions again
9 because --
10 MR. BLANKS: That's fine because I
11 don't understand that it is a legal
12 term unless you've just invented it.
13 It's certainly in common usage, and I'm
14 using it in that respect. And I think
15 if Dr. Rowe doesn't understand it that
16 way, he'll tell me; but you have a
17 running objection.

18 (By Mr. Blanks)

19 Q. I'm sorry, sir. I'm not meaning to belittle
20 your program or to criticize it. I'm trying to get an
21 understanding of it, and I mean that sincerely. But
22 in 1937 when you joined Dow, was the Dow toxicology
23 program at the biochemical research laboratory
24 comparable to the other good programs - the few good
25 programs - that existed in the Country then?

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1 A. I don't know.

2 Q. Did you learn over the next three or four
3 years, say up before World War II, that it was on a
4 par with those of some of your competitors?

5 A. Yes. In -- In areas in which we were

6 primarily concerned, in organic chemicals, I think
7 that was true.

8 Q. Now, your charter from Dr. Dow had been to
9 know the hazards in the plant, as I understood your
10 testimony, so that you would not have repeat -
11 repeated deaths and injuries to workers there from
12 exposures in the plant, --

13 MR. PIERCE: Objection to the --

14 Q. -- correct?

15 MR. PIERCE: -- characterization
16 of the witness' prior statements.

17 A. To the limit of our capabilities.

18 Q. Yes, sir. And certainly you weren't
19 expected to go out and reinvent the wheel and do tox.
20 studies on materials about which there was already
21 reported information in the literature, were you? I
22 mean, you could rely on what others had already
23 published about some materials and concentrate your
24 efforts on those that - about which little was known.
25 True?

1 MR. PIERCE: Objection to the form
2 again. Please ask a single question,
3 allow the witness to answer it. Nobody

4 can answer it if you ask a question --

5 The witness tries to begin to answer

6 it, and you continue with a second

7 question and put them together.

8 Please.

9 Q. Dr. Dow didn't tell you to go out and

10 reinvent the wheel and do toxicology work on every

11 material used in a Dow plant, did he?

12 A. No.

13 Q. You were, though, concerned to investigate

14 materials about which there was not existing

15 toxicological data in the literature, weren't you?

16 A. I'm -- I'm sorry. I don't think I heard all

17 of what you said.

18 Q. All right. The scope of your interest in

19 the tox. department, even in 1937, was first limited

20 to materials that were used in the Dow facilities.

21 A. To very few of them.

22 Q. But that defined the set or the universe of

23 materials to even consider studying, right, that were

24 used in your plants or came out the end of it as a

25 product?

1 A. Yes.

2 Q. You focused your efforts, I think, not on
3 materials about which information already existed, but
4 rather on those about which the toxicological
5 information was either limited or nonexistent; is that
6 true?

7 A. That's right.

8 Q. Such as the phenol, correct?

9 A. Yes.

10 Q. Okay. And relied, then, on the existing
11 literature in the medical journals and toxicology
12 journals and so on for those other materials that you
13 could look to the work of others on?

14 MR. PIERCE: Objection to the form
15 of the question. It's ambiguous and
16 it's compound.

17 A. Yes.

18 Q. Okay. Because you had limited resources and
19 you had to use them in the most efficient way,
20 correct?

21 A. Right.

22 Q. And the contributions that you and your
23 colleagues made in the field of toxicology are well
24 recorded in the articles that you and the other
25 gentlemen you worked with published over the years.

1 True?

2 A. Yes.

3 Q. And for the most part they provided new
4 insights and new data about the materials that you
5 reported on, right? You were breaking new ground?

6 MR. PIERCE: Please just - just
7 keep it to one question. Don't keep
8 adding that second question to each of
9 your questions.

10 A. We were plowing new ground in some areas.
11 We were extending knowledge in others.

12 Q. Okay. Now, as to those materials that were
13 used in the Dow plants which you did not study, where
14 did you look to get the toxicological or hazard
15 information about - about those materials?

16 A. The literature - available literature - at
17 the time or by correspondence or inquisition - verbal
18 inquisition - with people who were supposed to know.

19 Q. Such as perhaps the people that sold some of
20 the raw materials to Dow?

21 A. I'd presume so. I wasn't involved in that
22 particular part of the game at that stage.

23 Q. Now, how did the biochemical research
24 laboratory share the information it gleaned from the
25 literature with the Dow employees who would be

1 interested in knowing about particular hazards?

2 A. What we learned we tried to use in our
3 normal distributions which were, of course, quite
4 limited in those days.

5 Q. But the biochemical research laboratory
6 staff did, I suppose, make it a point to get the
7 material hazard information to the appropriate Dow
8 employees that would benefit from knowing it, correct?

9 A. I don't believe it was that extensive at
10 that time. Plant superintendents and people who were
11 in charge of operations were the channels through
12 which we worked.

13 Q. So, you'd communicate with the plant
14 superintendents, and then they would just share the
15 information with the people working in their plants.
16 Right?

17 A. I don't know what happened after that -
18 after our communications or discussions.

19 Q. Did you ever have any reason to think that
20 the plant superintendents weren't disseminating the
21 product and material hazard information that you
22 provided?

23 A. I don't know -- I don't -- I don't know.

24 Q. You recall no instances where you learned
25 that something that your department had reported on

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1 had not reached the field?

2 A. I don't remember ever particularly looking
3 at it.

4 Q. I'm sorry.

5 A. I say I don't remember particularly looking
6 for it.

7 Q. All right, sir. Have you ever taught any
8 courses in - at Dow or in colleges or universities?

9 MR. PIERCE: Objection to form of
10 the question.

11 Q. Have you ever taught?

12 A. Well, I've done - given -- I've given
13 lectures to lots of groups at our - in our
14 organization. I have -- I don't believe I could say
15 that I ever taught a course.

16 Q. So, the teaching you did was in Dow and it
17 was limited to presentations on a particular topic?

18 A. As far as I can recall.

19 Q. Okay. Did you ever belong to the American
20 Public Health Association?

21 A. Beg your pardon.

22 Q. Did you ever belong to the American Public
23 Health Association?
24 A. No, I did not.
25 Q. Ever attend any of their meetings, sir?

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1 A. Don't recollect that I did.
2 Q. Is Fred Meyers still living?
3 A. I don't know.
4 MR. PIERCE: Objection to form.
5 A. Are you speaking of the Fred Meyer who was
6 in our laboratory?
7 Q. Yes, sir.
8 A. I don't know.
9 Q. Do you have a recollection of when you met
10 Jim Hammond - James Hammond?
11 A. I beg your pardon.
12 Q. Do you recall when you met James Hammond?
13 A. No.
14 Q. Did you know him before he went to work with
15 the Exxon company or its - what its predecessor was
16 then?
17 A. I don't know.
18 Q. Did you actually have a librarian at the
19 library at the Dow plant in Midland where you worked?

20 Was there a technical librarian there?

21 A. I don't know.

22 Q. You don't recall?

23 A. I don't know what her qualifications were.

24 Q. There was a librarian at the company

25 library?

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1 A. Oh, yes.

2 Q. Company library?

3 A. Yes.

4 Q. Did you have to go to university libraries

5 to find the - all of the literature that you might

6 want to review on a particular material, or was it

7 present in the Dow library?

8 MR. PIERCE: Objection to form of

9 the question.

10 A. I recall one instance in which I went to

11 another library to find something. That's all I can

12 remember about it. I don't know what - what it was

13 and I can't remember where it was. In Chicago, I

14 believe. But I don't remember the name of the

15 library.

16 Q. But otherwise you were able to find what you

17 needed in the Dow company library?

18 A. I can't answer that.

19 Q. What other toxicology laboratories has Dow
20 had over the years that you were with the company
21 besides the one in Midland?

22 A. There was a laboratory established at
23 Freeport, Texas.

24 Q. When would that have been, approximately?

25 A. I don't remember when it was started.

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1 Q. Do you recall who staffed it originally?

2 A. I'm not sure.

3 Q. What kind of work did they do there?

4 A. They did primarily what we referred to
5 before as Class I type work.

6 Q. The preliminary investigations?

7 A. Yes.

8 Q. Was it specialized as to any particular type
9 of products or materials?

10 A. Not to my knowledge.

11 Q. Was it -- Was the Freeport lab doing the
12 same kind of work that you were doing in Michigan?

13 Let me do that again. Was the Freeport lab
14 looking at the same materials as you were
15 investigating in Michigan?

16 A. No. No necessarily.

17 Q. Were they to some extent duplicating your
18 work, or were they set up just to deal with a
19 specialized separate line of materials and products?

20 MR. PIERCE: Objection to the form
21 of the question.

22 A. The problem of transporting research
23 quantities of materials back and forth became a
24 logistic problem; so, we established a laboratory to
25 avoid that. They were trying to use the same

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1 methodology that we used.

2 Q. So, they were concerned with the materials
3 that were being used or produced in Freeport, correct?

4 A. Yes.

5 Q. Okay. Did they have the capacity in
6 Freeport to do any kind of dust studies or dust
7 inhalation studies?

8 A. Not to my knowledge.

9 Q. Do you recall approximately how many people
10 staffed that facility at Freeport? Was it a very
11 small lab, two or three; or more than that?

12 A. I don't know what the range was.

13 Q. Did you ever visit the laboratory there?

14 A. Yes.

15 Q. Several times?

16 A. Yes.

17 Q. What decades would you have gone there in?

18 A. Again I can't be specific, but it must have

19 been in the Sixties.

20 Q. Now, Doctor, would you have been down there

21 to consult with them on some particular problems; or

22 would this just have been a courtesy call?

23 MR. PIERCE: Objection to the form

24 of the question.

25 A. We tried to get together with the group down

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1 there maybe once a year or oftener if there was

2 something specific, but I don't recall anything other

3 than normal-type conversation, I guess, about what was

4 going on at the moment. And it wasn't on an

5 inspection-type basis.

6 Q. Did the Freeport laboratory come under the

7 biochemical research laboratory in Midland? Was it

8 subordinate to your laboratory?

9 A. No.

10 Q. Just more parallel to it?

11 A. Yes.

12 Q. So, to whom would the chief of the Freeport
13 laboratory have reported, to his plant superintendent?

14 MR. PIERCE: Objection to form of
15 the question.

16 A. I don't remember.

17 Q. How frequently would you Dow scientists meet
18 to exchange ideas and information? And I don't mean
19 in your own office, but like companywide.

20 A. I don't believe I can answer that unless you
21 become more specific.

22 Q. Well, did you have a custom or a practice of
23 getting together periodically with the other Dow
24 people that were working in your field and related
25 fields?

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1 A. Yes.

2 Q. And how frequently would that happen?

3 A. I don't know that it was on any planned
4 basis.

5 Q. On an unplanned basis how frequently did it
6 happen over the years you were with the company?

7 A. Well, it didn't happen at all in the early
8 times because there wasn't anybody except our local
9 people to go to it. We did meet with the Texas people

10 and medical directors, safety department people,
11 industrial hygienists, toxicologists. Met maybe once
12 a year, usually under the auspices of the medical
13 departments.

14 Q. How old is the Freeport plant?

15 A. That was started in 1940. I don't know what
16 stage of construction it was. I wasn't there.

17 Q. Would you know when they got a medical
18 doctor at that plant like you had at Midland?

19 A. Yes.

20 Q. Could you tell us when?

21 A. Excuse me. Rephrase your question. Maybe I
22 answered it incorrectly.

23 Q. Okay. Do you know if and when the Freeport
24 plant had a full-time doctor hired?

25 A. No, I do not know.

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1 Q. Don't know if they ever did?

2 A. Yes.

3 Q. Just don't know when?

4 A. Yes.

5 Q. Okay. Do you know who the first one was?

6 A. My recollection was Dr. Kilian.

7 Q. Were there any other toxicology laboratories

8 in the Dow company besides Midland and Freeport?

9 A. You'll have to give me a time frame.

10 Q. Well, any time you know of because I don't
11 know where your other plants were.

12 A. There was a toxicology laboratory at the -
13 at the drug laboratory in Indianapolis.

14 Q. Any others, sir?

15 A. There was a drug laboratory in Livorno, I
16 believe, in Italy, LePetite, which was at one time a
17 subsidiary of Dow.

18 Q. Was Lapatee the name of the subsidiary or
19 the town? You lost me there.

20 A. That was a drug company, an Italian drug
21 company.

22 Q. And what was the subsidiary in Indiana that
23 had the drug lab?

24 A. That was the Dow Pharmaceutical.

25 Q. Are those the only ones you recall, Doctor?

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1 A. That's the only ones I recall.

2 Q. Did your department ever report to the
3 medical department, or were you separate?

4 A. No.

5 Q. You never reported to the medical

6 department?

7 A. That's right.

8 Q. What relationship did you have with the
9 safety department?

10 A. A working relationship.

11 Q. They would come to you with problems
12 occasionally, and you'd provide information and
13 advice?

14 A. We com - communicated, I think, routinely.

15 Q. Did the safety department handle industrial
16 hygiene tasks before you hired industrial hygienists
17 at Dow?

18 A. Not to my knowledge.

19 Q. Is it so that there was no industrial
20 hygiene work being done, then, in 1937 when you joined
21 Dow?

22 A. Not to my knowledge.

23 Q. And you and Dr. Adams were the initial
24 practitioners in the field for Dow?

25 A. Dr. Adams, not me.

1 Q. And you assisted him in some of that work,
2 didn't you, sir?

3 A. Later on.

4 Q. Including designing the air sampling device
5 and taking samples?

6 A. Yes.

7 Q. And then but it really wasn't until
8 Mr. Hoyle was hired that you had industrial
9 hygienists?

10 A. I don't think any of us could qualify as
11 that.

12 Q. Well, did Mr. Hoyle qualify as that when he
13 was hired; or was that something he - he sort of
14 learned his way into?

15 MR. PIERCE: Objection to the form
16 of the question.

17 A. He learned his way in like the rest of us.

18 Q. What specifically was being done at Dow in
19 1937 when you joined the company to protect people in
20 the Dow plants from toxic mineral dust, --

21 MR. PIERCE: Objection.

22 Q. -- if anything?

23 MR. PIERCE: Objection to form of
24 the question. It's overly broad. It's
25 ambiguous.

1 A. I don't know.

2 Q. When did you first become aware that
3 anything was being done at Dow to protect people
4 working in the plants from exposures to toxic mineral
5 dust?

6 MR. PIERCE: Objection to the
7 form.

8 A. I don't remember.

9 Q. Is it your recollection that this is not a
10 matter that Dr. Adams worked on while you were working
11 with him, assisting him in industrial hygiene-type
12 work?

13 MR. PIERCE: Objection to the
14 form --

15 A. I don't know.

16 MR. PIERCE: -- of the question.
17 It assumes facts not in evidence.

18 Q. I'm sorry.

19 A. I don't know.

20 Q. Being as there were only, like, three or
21 four of you there in the biochemical research lab in
22 the beginning, isn't it likely that you would have
23 known at least the general areas Dr. Adams was working
24 on in 1937- '38?

25 A. I'd doubt it necessarily, that stage of the

1 game, because I was preoccupied with other things.

2 Q. And those are the things that show up in
3 your early articles?

4 A. Yes.

5 Q. Did you ever or do you speak any foreign
6 languages, Dr. Rowe?

7 A. No.

8 Q. Did you ever learn to read any foreign
9 languages?

10 A. Elementary, I guess.

11 Q. Which would that be?

12 A. French.

13 Q. So, in terms of following the literature
14 that was published in foreign journals, sir, you would
15 have relied on translations or Digest abstracts that
16 had been - from translations without reading it,
17 yourself?

18 MR. PIERCE: Objection; to the
19 form.

20 A. Yes. And even any French articles.

21 Q. Okay. Dr. Rowe, do you believe that Dow
22 needed to be told by the manufacturers of insulation
23 products about the dangers of asbestos in 1937?

24 MR. PIERCE: Objection to form of
25 the question.

1 A. I would ask you if you would repeat that.

2 Q. Is it your belief that Dow required to be
3 informed - to be told by the makers of asbestos
4 insulation about the dangers of asbestos, say, in 1937
5 when you joined the company?

6 A. I don't know.

7 Q. Would you say that Dow needed to be told by
8 the manufacturers of asbestos products about the
9 health hazards of asbestos ten years later in 1947?

10 MR. PIERCE: Objection again.

11 A. Well, I think that anybody that was
12 getting a product would like to know what - what's
13 known about it at the time, so -- I don't know.

14 Q. So, that would have been beneficial to Dow
15 to have been informed by the manufacturers about what
16 they did know about asbestos health hazards?

17 MR. PIERCE: I'm going to object
18 to the form and continue the objection
19 for this type of question.

20 A. The question relates to something that one
21 would have to answer philosophically. You also would
22 have to have someone that understood the other side of
23 it. Whether or not that was in existence, I don't
24 know.

25 Q. You mean whether the information was in

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1 existence in 1937 or 1947?

2 A. No. On the receiving end.

3 Q. I see.

4 MR. ALMQUIST: We've been going
5 about an hour - a little bit over an
6 hour now. You want to take a short
7 break?

8 Q. You want to stop now, sir?

9 MR. PIERCE: Yeah. We'll take a
10 short break now.

11 MR. BLANKS: I was asking
12 Dr. Rowe.

13 THE WITNESS: I would
14 like to relax for a few minutes.

15 MR. BLANKS: All right, sir.

16 (AT THIS TIME A BRIEF RECESS WAS
17 TAKEN, AND THE PROCEEDINGS THEREAFTER
18 RESUMED AS FOLLOWS:)

19 (By Mr. Blanks)

20 Q. Dr. Rowe, besides the folks working at the
21 biochemical research laboratory, was there anyone else
22 who had the responsibility at Du Pont - at Dow --

23 MR. BLANKS: All right. Go ahead
24 and laugh.
25 Q. Dr. Rowe, I'll start over, sir. He's trying

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1 to mess me up here (indicating Mr. Pierce).
2 MR. PIERCE: You do very well by
3 yourself.
4 (By Mr. Hobson)
5 Q. Were there any persons at Dow besides you
6 gentlemen in the biochemical research laboratory who
7 were responsible to look for health hazards in Dow
8 plants before the War?
9 A. Yes.
10 Q. What positions would those people have been
11 in?
12 A. Medical people, nurses, safety people.
13 Q. And the safety people looked to health
14 hazards as well as what would be the more ordinary
15 mechanical safety hazards at Dow?
16 A. Yes.
17 Q. This was so when you joined the company in
18 1937?
19 A. I don't know.
20 Q. Do you know when it became so?

21 A. No, because I can't speak for the safety
22 people.
23 Q. You remember them being there early on in
24 your career at Dow, though, and that you did see them
25 routinely or frequently?

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1 MR. PIERCE: Objection to the form
2 of the question.
3 Q. I think you told us that earlier, didn't
4 you?
5 A. Yes.
6 Q. Who was responsible at Dow for following the
7 medical and scientific literature that pertained to
8 occupational health matters?
9 A. I don't know.
10 Q. Now, you've told us that you and the other
11 doctors with whom you worked in the early years did,
12 indeed, try to follow the literature; but I'm
13 wondering if there was any person who had that as
14 their specific responsibility.
15 A. Not to my knowledge.
16 Q. So, that obligation fell upon the shoulders
17 of each professional, then, to try and stay abreast in
18 his field?

19 MR. PIERCE: Objection to the
20 form; leading, really testimony.
21 A. Yes.
22 Q. Was the term "product stewardship" one used
23 at Dow?
24 A. I beg your pardon.
25 Q. Was the term "product stewardship" one that

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1 was used at Dow?
2 A. Yes.
3 Q. And could you explain to the jury what that
4 concept means?
5 A. It was a program designed to acquaint people
6 within Dow in the production plants relative to the
7 consequences or hazards associated with the various
8 chemical products and their undesirable effects either
9 to people within the plant or without the plant and
10 to - I guess one could say nature, herself - streams
11 fish, desirable plants, and so forth.
12 Q. And how long has Dow been following this
13 philosophy?
14 A. Well, it was not anything organized until -
15 I suspect it was in the neighborhood of the Seventies.
16 Q. But Dow had, in fact, been doing many of

17 these things before the Seventies, had it not?

18 A. It had been doing things, yes; but it wasn't

19 at all formalized.

20 Q. So, it was put into a policy then in the

21 Seventies, --

22 A. Yes.

23 Q. -- what had been done informally before

24 then?

25 MR. PIERCE: Objection to the

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1 form.

2 Q. "Yes"?

3 A. More or less.

4 Q. Do you recall that Dow or its employees or

5 the people working in its plants ever had the benefit

6 of this sort of product stewardship from the

7 manufacturers of asbestos materials used in Dow

8 facilities?

9 A. I don't -- I don't know anything about it.

10 Q. You don't know anything about any asbestos

11 health information that may have been provided to Dow

12 by the manufacturers of those products?

13 MR. PIERCE: Asked and answered.

14 Q. Is that what you meant, sir?

15 A. I don't know, no.

16 Q. Did you, yourself, ever inquire of any of

17 the asbestos insulation manufacturers about the

18 hazards of their products?

19 A. I don't recall that I did.

20 Q. Is that something that would have been more

21 in the realm of Mr. Hoyle's responsibilities or one

22 that would have fell in your area?

23 MR. PIERCE: Objection to the form

24 of the question.

25 A. I wouldn't want to infer that it was

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1 anybody's direct responsibility. I'd have to say that

2 I was not particularly concerned in those days about

3 asbestos. I have relied, more or less, on the

4 observations that if things were under control as

5 recommended by the various agencies that -- And that

6 was Mr. Hoyle's job to see that that was the case.

7 And I did not have any direct operation or function

8 there.

9 Q. Would that also have been true with respect

10 to silica dust hazards that might occasionally be

11 created in your plants?

12 A. Yes.

13 MR. PIERCE: Objection to the form

14 of the question and --

15 Q. Sir?

16 MR. PIERCE: Assumes facts not

17 evidence.

18 A. Yes.

19 Q. So, you have no knowledge about what

20 particular brands of asbestos insulation might have

21 been used in Dow facilities?

22 A. I do not.

23 Q. Did you ever see in the Dow plant the

24 handling of asbestos insulation material by Dow

25 employees or other persons working there?

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1 A. I don't recall any.

2 Q. In fact, most of your work was, in fact,

3 done in the laboratory, wasn't it?

4 A. That's right.

5 Q. Very little fieldwork involved?

6 A. Very little.

7 Q. So, you're not really in a position to tell

8 us much at all about the methods of handling asbestos

9 insulation or other materials, are you?

10 MR. PIERCE: Objection to the form

11 of the question. It's argumentative
12 and also asked and answered as to what
13 he could tell you before.

14 Q. Was there a time, Dr. Rowe, when you were
15 responsible for running the industrial hygiene program
16 at Dow?

17 A. Administratively, yes.

18 Q. And would that have been when you were the
19 director of toxicology and industrial hygiene?

20 A. Yes.

21 Q. That was, according to your C.V., 1970 to
22 1973. Is that --

23 A. Yes.

24 Q. That's your recollection? Now, after you
25 became the research scientist-director of

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1 toxicological affairs, health and environmental
2 research, was the industrial hygiene work at Dow still
3 under your supervision or responsibility
4 administratively?

5 A. Administratively, yes.

6 Q. Was 1970, then, the first year that you were
7 administratively responsible for industrial hygiene?

8 A. No. I can't recall.

9 Q. Would you have had that responsibility as -
10 while serving as the assistant director of the
11 biochemical research laboratory?

12 A. Yes.

13 Q. Would you have had responsibility
14 administratively for industrial hygiene while serving
15 as the director of toxicology research section?

16 A. No.

17 Q. And it was Mr. Hoyle, of whom we've spoken
18 several times, who was then the man that reported to
19 you on industrial hygiene during those years that you
20 had administrative responsibility for it?

21 A. Yes.

22 Q. Would you agree, sir, that it was desirable
23 and, indeed, the right thing for Dow to know how many
24 cases of occupational disease were occurring in its
25 work force in the plants?

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1 MR. PIERCE: Objection to form of
2 the question.

3 A. Well, I don't believe that any time you can
4 say that it's undesirable to have information that's
5 available.

6 Q. And would it not also have been desirable to

7 know how many cases of suspected occupational cancer
8 were taking place among people working in your plants?

9 MR. PIERCE: Objection to the form
10 of the question.

11 A. It's always well to have information, but
12 there is more to that than just the fact that...

13 Q. Yes, sir. What more?

14 A. The quantitative aspects are usually missing
15 in that sort of thing.

16 Q. You mean quantitative in terms of the
17 exposure levels --

18 A. Yes.

19 Q. -- that the men may have had?

20 A. That's what I'm referring to.

21 Q. And I think we talked about that yesterday.
22 Not meaning to repeat unduly; but you would obtain
23 this quantitative information through doing
24 monitoring, correct, sir?

25 MR. PIERCE: Objection to the

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1 form.

2 A. I'm going to ask you to repeat that, please.

3 Q. The quantitative information that you said
4 was part of the equation, you obtained that by doing

5 monitoring whether it's air monitoring or

6 environmental monitoring?

7 A. Yes.

8 Q. Or even biological monitoring?

9 A. In some instances, yes.

10 Q. When did Dow begin to collect information on

11 the incidence of occupational diseases in the work -

12 workers in Dow plants?

13 A. I don't know.

14 Q. When did it begin to collect information on

15 the occupational cancers among people who worked in

16 Dow plants?

17 MR. PIERCE: Objection to form.

18 A. That would have probably have been in the

19 late Fifties.

20 Q. And did not some of Dow's studies in this

21 area lead to discovering a connection between arsenic

22 and cancer? Do you recall that, sir?

23 A. No, I don't.

24 Q. Do you recall a Gerald M. Ott, O-t-t?

25 A. Yes.

1 Q. And an H. L. Gordon?

2 A. Yes.

3 Q. A B. B. Holder?

4 A. Yes.

5 Q. What were these men?

6 A. Dr. Holder and Dr. Gordon were physicians,
7 and Ott was a statistician.

8 Q. And they're the men that instituted the
9 program of computerizing the data from death
10 certificates, were they not?

11 A. That type of work would have been conducted
12 mostly through the medical department, yes.

13 Q. And it was certainly the case that the
14 medical department shared the results of these type of
15 studies with you in your department, correct?

16 A. I'm sure they would - did.

17 Q. Was that the kind of information that would
18 be helpful to you in the biomedical research
19 laboratory?

20 MR. ALMQUIST: I think perhaps the
21 question -- You just said "biomedical"
22 or "biochemical"?

23 Q. I'm sorry, sir.

24 A. We didn't have a biomedical laboratory as
25 such.

1 Q. My apologies. But information about the
2 incidence of disease and causes of death in your work
3 force would be valuable to you in the work you were
4 doing in the biochemical research lab?

5 A. Sure.

6 Q. When did Dow begin to use industrial hygiene
7 standards or maximum allowable concentrations as for
8 mineral dust?

9 MR. PIERCE: Objection to form.

10 A. I don't know.

11 Q. Do you recall when Dow began to use T.L.V.'s
12 for mineral dusts like asbestos and silica?

13 A. I don't remember.

14 Q. Would this have been done, sir, during the
15 time that you were administratively responsible for
16 industrial hygiene?

17 MR. PIERCE: Objection to form;
18 asked and answered.

19 A. I think it would have been done any time,
20 but I just don't recall all of Mr. Hoyle's duties in
21 this respect. So, I can't tell you when.

22 Q. All right, sir. Well, not -- I accept you
23 can't tell me when, but can you tell me whether you
24 remember that any one of these three - either I. H. -
25 industrial hygiene standards or maximum allowable

1 concentrations or threshold limit values - were used
2 with respect to mineral dust during the years you
3 had administrative responsibility for industrial
4 hygiene?

5 A. I can't tell you.

6 Q. Do you recall, sir, how any of these
7 standards, if they were used, were implemented or
8 enforced at Dow?

9 MR. PIERCE: Objection to form
10 of the question.

11 A. I don't know.

12 Q. Can you tell us, sir, what was the maximum
13 allowable concentration for asbestos or silica dust
14 during the years that you were administratively
15 responsible for industrial hygiene?

16 A. No.

17 Q. How many plants and facilities did your
18 responsibilities involve when you were in charge of
19 industrial hygiene?

20 MR. PIERCE: Administratively? Is
21 that what you mean, Mr. Blanks?

22 MR. BLANKS: Well, that's the only
23 way he's described it. I'm not sure
24 what it means but...

25 A. Just the Midland location.

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1 (By Mr. Blanks)

2 Q. So, it was the case, then, at least during
3 the years you were administratively in charge of
4 industrial hygiene that Freeport had its own
5 industrial hygiene program and that wasn't part of
6 your responsibility?

7 A. That's right.

8 Q. Would that Freeport program whenever it
9 existed have been under the toxicology laboratory
10 there?

11 A. My recollection is that it was under the
12 medical department in Texas.

13 Q. Can you tell us, sir, when during your time
14 of being administratively in charge of industrial
15 hygiene at Dow that air monitoring for mineral dust
16 was implemented?

17 A. I cannot.

18 Q. Was it done at all during the time that you
19 were administratively in charge of industrial hygiene?

20 A. I didn't participate in any. I don't know.

21 Q. Would not the people who reported to you
22 have been responsible for that?

23 MR. PIERCE: Objection to form.

24 A. Yes.

25 Q. And isn't this a matter that would have been

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1 of some interest to you as the man administratively in
2 charge of that program?

3 A. My involvement in the industrial hygiene
4 area there was administrative, and I relied on
5 Mr. Hoyle to run that operation.

6 Q. So, in fact, you don't really know what
7 year, if ever, air monitoring for asbestos dust or
8 silica dust was done in the Dow facility, do you?

9 A. No, I do not.

10 Q. Do you know when, if ever, any engineering
11 controls for dealing with these toxic mineral dusts
12 were put in place at Dow?

13 A. I do not.

14 Q. Would that have been the responsibility of
15 the industrial hygiene department that you were
16 administratively in charge of?

17 A. I am sure they would have been involved.
18 Perhaps the engineering department, as well.

19 Q. Who would have been involved in setting up a
20 biological or medical monitoring program for people

21 potentially exposed to toxic mineral dusts such as
22 asbestos or silica --

23 MR. PIERCE: Objection.

24 Q. -- in Dow facilities?

25 MR. PIERCE: Objection to form of

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1 the question.

2 A. Medical department.

3 Q. If we assume that Dow did not begin air
4 sampling for asbestos dust until some time in the
5 1960's, can you explain to us, sir, why Dow waited so
6 long to begin doing that?

7 MR. PIERCE: That's a completely
8 improper question. I object to your
9 assumption, and certainly I object to
10 the question that goes from an
11 assumption that has no basis.

12 MR. BLANKS: Well, excuse me,
13 sir. Since you don't know the prior
14 testimony in this case, I don't suppose
15 you're in a position to - to fairly
16 make that objection but --

17 MR. PIERCE: But I'm making it
18 because there's nothing here today.

19 It's not based upon anything that we
20 have before us.
21 But go ahead and try and answer
22 the question.
23 (By Mr. Blanks)
24 Q. Dr. Rowe, you'd agree with me, wouldn't you,
25 that Dow had the ability to do air monitoring for

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1 mineral dust certainly before World War II, would you
2 not?
3 A. I'm sure we had the capability someplace,
4 but I don't know what time it was established.
5 Q. And you understand that the mechanical
6 devices, the tools for air sampling for dust, were
7 available before the War, correct, sir?
8 A. I don't know.
9 Q. Did you ever learn about the availability of
10 dust sampling tools?
11 A. I know nothing about dust sampling tools.
12 Q. If we assume, sir, that it wasn't until the
13 Fifties that the first air monitoring for asbestos
14 dust was done in a Dow facility, can you explain to us
15 why it had not been done in the preceding years?
16 MR. PIERCE: I'm going to again

17 object to an assumption not based on
18 anything before us and to the question
19 that follows that thought - that
20 assumption.

21 Q. Sir?

22 A. My assumption, in answer to yours, is that
23 we didn't consider it to be a - in our operation to be
24 a significantly - significant problem.

25 Q. And by that you mean it wasn't a significant

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1 problem relative to some of the other problems that
2 you faced, some of the other chemicals you had to deal
3 with?

4 A. I didn't say that. That would have been a
5 factor, but I don't believe that - that we were too
6 concerned about the operations that we had that may
7 have been involving asbestos.

8 Q. Would it also be the case that you weren't
9 too concerned about operations involving silica?

10 A. Yes.

11 Q. It's true, though, isn't it, that certainly
12 by 1958 that Dow was aware of the long-term health
13 hazards of asbestos, correct, Mr. Rowe - Dr. Rowe?

14 A. I think that's a fair statement.

15 Q. And, in fact, your own laboratory did some
16 toxicology testing on asbestos fibers in that period,
17 did it not, 1958?

18 A. I don't know. We did some -- I don't know
19 what -- I don't know the dates.

20 Q. Well, what was the testing that you did that
21 you were thinking of there and couldn't remember a
22 date for?

23 A. We did some very preliminary work with
24 respect to particulates, using a technique that was
25 only a very preliminary evaluation of potential. And

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1 this involved the injection interperitoneally of
2 suspensions of dust and examining the animals after a
3 period of time to see what the response was.

4 Q. What decade do you remember that being done
5 in?

6 A. Pardon?

7 Q. What decade do you remember those
8 experiments being done in?

9 A. I do not remember a time. I only remember
10 one time we were involved in that sort of thing.

11 Q. Was this work done for some other company
12 or --

13 A. No.

14 Q. What led to this research at Dow?

15 A. This was done in attempting to answer a
16 question that Dow Corning had in the use of DeGussa
17 silica in one of their operations. And it was claimed
18 that DeGussa was not fibrogenic, I guess. And, so,
19 this was just a massive treatment to see if that were
20 true; and we used some materials like silica and
21 asbestos as positive controls.

22 Q. Did you see any mention of asbestos in any
23 of the documents you reviewed to prepare for your
24 deposition, Dr. Rowe?

25 MR. PIERCE: Objection to form of

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1 the question.

2 A. I didn't understand. What?

3 Q. Did you review any documents to prepare for
4 your deposition, Dr. Rowe?

5 A. I don't recollect.

6 Q. Do you recollect preparing for this
7 deposition today?

8 A. I did not prepare for this deposition. I
9 just appeared.

10 Q. So, you weren't provided with any documents

11 to look at by anybody from Dow?

12 A. No, sir.

13 Q. Was it decided while you were responsible

14 administratively for industrial hygiene at Dow to

15 cease the use of asbestos thermal insulation products

16 in Dow plants?

17 A. I don't recollect that.

18 Q. Do you recollect that any consideration was

19 given by you or your staff to finding substitutes for

20 asbestos materials in Dow plants?

21 A. Yes. We were looking for something that

22 would replace dust known to be active.

23 Q. And you would also, then, have been looking

24 for replacements for sand as an abrasive to use in Dow

25 facilities?

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1 A. I don't know for what purpose.

2 Q. Can you tell us what year that Dow ended all

3 asbestos exposures to people working in its plants?

4 MR. PIERCE: Objection to the

5 form.

6 A. I certainly cannot.

7 Q. Do you believe that at any time while you

8 were working with Dow that all asbestos exposures to

9 workers in the plants had ended?

10 A. I didn't get the end of that.

11 Q. Before you left Dow, was it the case that
12 workers in Dow plants were still facing asbestos dust
13 exposures in the plants?

14 A. I don't know.

15 Q. Is that something that you would expect your
16 industrial hygienists to have known?

17 MR. PIERCE: Objection to the
18 form.

19 A. I would expect so.

20 Q. What was done at Dow during the years you
21 were administratively responsible for industrial
22 hygiene to warn people working in your plants about
23 the hazards of toxic mineral dusts such as asbestos or
24 silica?

25 MR. PIERCE: Objection to the form

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1 of the question.

2 A. I don't know.

3 Q. Who would you expect to -- to be
4 knowledgeable about that, sir?

5 A. I would expect Mr. Hoyle to know the answer
6 to that.

7 Q. Was it the policy of Dow to allow men
8 working in its plants to be exposed to harmful or even
9 deadly amounts of toxic dust, sir?

10 MR. PIERCE: Objection to form of
11 the question; argumentative, assumes
12 facts not in evidence, compound.

13 Q. Sir?

14 A. Well, philosophically you'd never want to
15 have people exposed to hazardous quantities of any
16 material.

17 Q. And was that --

18 A. But --

19 Q. -- the policy of Dow, as well as the
20 philosophy?

21 MR. PIERCE: Will you let him --

22 Excuse me.

23 I don't believe you've
24 finished your answer, Doctor. Please
25 do it.

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1 A. Now I'm confused. Certainly that's a
2 philosophy, but that doesn't mean that any exposure is
3 necessarily a hazard exposure.

4 Q. And would that also be true with respect to

5 exposures to carcinogens, Dr. Rowe?

6 A. Yes. My belief, yes.

7 Q. And how do you determine what is a safe

8 level of exposure to a carcinogen such as asbestos?

9 A. Very difficult. You try to minimize. But

10 the body has a remarkable ability to accommodate when

11 you're speaking of asbestos. We've been exposed to

12 asbestos since the beginning of time.

13 Q. Was it known at Dow in 1979 when you retired

14 what a safe maximum level of exposure to asbestos was?

15 A. I don't know.

16 Q. Was it known to you, sir?

17 A. No.

18 Q. Do you know now?

19 A. No.

20 Q. Do you think it's known to toxicological

21 science today?

22 A. I don't think so.

23 Q. What was the industrial hygiene program as

24 concerned contractor employees working in Dow plants

25 during the years that you were administratively in

1 charge of industrial hygiene?

2 A. I had nothing to do with contract

3 employees. I don't know what they did. My
4 understanding was that they were treated like the rest
5 of the Dow employees.

6 Q. That is, required to follow the same safety
7 rules and --

8 A. As far as I know.

9 Q. Was it the case at Dow that safety was
10 everybody's business in the plant?

11 A. That was our teaching.

12 Q. You have no recollection of the 1958
13 toxicology studies of asbestos short fibers done in
14 your laboratory by Dr. Olson, do you?

15 MR. ALMQUIST: I'm going to object
16 to the characterization in that
17 question that there was such a study
18 performed. I don't think there's any
19 evidence from any witness so far that
20 the study, as you've described it, was
21 performed in 1958.

22 MR. PIERCE: Objection. Join the
23 objection.

24 Q. While you were still with Dow, did you ever
25 obtain information about the incidence of

1 pneumoconiosis diseases in workers in Dow plants, sir?

2 A. I don't recollect.

3 Q. Who was R. A. Erhart? Do you remember

4 Dr. Erhart?

5 A. Erhart?

6 Q. From the coatings technical service.

7 A. No. I don't know him.

8 Q. You remember Ken Olson, don't you, sir?

9 A. Yes.

10 Q. And Mr. McCollister?

11 A. Yes.

12 Q. Were they working for you in 1958, Dr. Rowe?

13 MR. PIERCE: I think Dr. Rowe has

14 already testified he didn't even know

15 one of them.

16 Q. Well, "they" being the two gentlemen --

17 A. Would you -- Would you repeat who you were

18 asking me about at this point.

19 Q. Yes, sir. Messrs. Olson and

20 Mr. McCollister, sir.

21 A. They worked for me, but I can't attest to

22 '58. I don't -- The time frame is...

23 Q. By 1958 you were the director of toxicology

24 research, were you not, at the - at the biochemical

25 research lab?

1 A. If that's what it says on the --

2 Q. It does. It says 1954. And there's no
3 change until '64, so --

4 A. Okay.

5 Q. Okay. Do you remember the form that you
6 used back then titled, "Data Sheet of Properties,
7 Health hazards, and Precautions for Safe Handling of
8 Materials"?

9 A. The name is familiar.

10 Q. Well, it's sort of a forerunner of a
11 Material Safety Data Sheet in a way. Yes?

12 A. Yes.

13 Q. What use would the technical - I'm sorry -
14 the coatings technical service be making of asbestos
15 fibers at Dow in 1958, sir?

16 A. I don't know.

17 Q. Are you acquainted with any formulations for
18 floor tile that Dow worked on in the Fifties?

19 A. I'm not familiar with them.

20 Q. Did Dow, to your knowledge, ever manufacture
21 any floor tile?

22 A. Not to my knowledge.

23 Q. Would it have been making epoxy to sell to
24 others as a component of floor tile?

25 A. We made epoxies, yes.

1 Q. Was it the practice at Dow to experiment on
2 these component parts that it was selling to others,
3 such as the epoxy and floor tile?

4 MR. PIERCE: Objection to form of
5 the question.

6 A. Floor tile would - was in a rather curious
7 situation, I would think.

8 Q. Do you know who, if anybody, from your
9 company attended Dr. Selikoff's 1964 presentation on
10 asbestos health hazards in New York, sir?

11 A. I don't know.

12 Q. You didn't get to go, apparently.

13 A. I'm not sure. I don't know.

14 Q. When was it, Dr. Rowe, that Dow began to
15 fully warn about the hazards of asbestos dust on its
16 premises?

17 A. I don't know.

18 MR. PIERCE: Objection to the form
19 of the question.

20 A. I don't know.

21 Q. When was it that Dow began to warn people on
22 its premises that asbestos could cause pleural changes
23 in the lung?

24 A. I don't know.

25 Q. When was it that Dow's industrial hygiene

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1 department or anybody else at Dow began to warn people
2 working on Dow premises that asbestos dust could cause
3 a permanent lung scarring?

4 A. I don't know.

5 MR. PIERCE: Objection to the
6 form.

7 Q. When, Dr. Rowe, did Dow begin to warn people
8 working on its premises that asbestos could cause lung
9 cancer?

10 A. I don't know.

11 Q. And when was it that Dow began to warn
12 people working on its plants that asbestos dust could
13 cause mesothelioma?

14 A. I don't know.

15 Q. Do you recall yourself learning when
16 asbestos came to be known to cause mesothelioma --

17 A. No.

18 Q. -- or suspected of it?

19 A. No.

20 Q. You've heard of that disease before, sir,
21 have you not?

22 A. I've heard of it, yes; but I don't know

23 when.

24 Q. Do you think, sir, that it would be proper

25 to begin to warn people about the health hazards of a

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1 material like asbestos at the point when you first

2 suspect the material of being toxic and causing

3 disease?

4 MR. PIERCE: Objection to the form

5 of the question.

6 A. I think any time you can - you have

7 information of that nature it's well to distribute it

8 as far as possible.

9 Q. It was not the philosophy that you had that

10 you should wait for conclusive irrefutable scientific

11 evidence of a health hazard before warning the people

12 that might be exposed to a material, was it, sir?

13 MR. PIERCE: Objection to form of

14 the question and the terminology

15 "conclusive," "irrefutable," and

16 whatever else you used there.

17 But try to answer it, if you can.

18 A. I don't -- I don't know what was said or

19 what educational programs were in that theory. It's

20 desirable, of course, to do as much as you can.

21 Q. Well, as a toxicologist, was it your
22 personal view that you should not warn about a
23 suspected health hazard until you had conclusive
24 evidence of the hazard?

25 A. Well, you have to identify the hazard; but

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1 then once it's known, certainly you should inform
2 people.

3 Q. Dr. Rowe, I have a document from among those
4 that you were kind enough to bring that you authored,
5 according to this. It's titled, "40 Years of Dow
6 Industrial Toxicology and Industrial Hygiene."

7 MR. PIERCE: Has that been marked,
8 Mr. Blanks?

9 MR. BLANKS: Well, it hasn't yet.

10 (By Mr. Blanks)

11 Q. Do you remember that paper, sir, as one you
12 would have given somewhere around 1977 or so?

13 A. I remember the paper.

14 Q. Do you remember a version of it from a year
15 earlier?

16 A. I beg your pardon.

17 Q. Do you remember one that you gave with the

18 same title a year earlier?

19 A. No. I don't -- I don't know the time

20 frame. That's --

21 Q. I found one that was titled, "39 Years of
22 Dow Industrial Toxicology and Industrial Hygiene,"
23 and then one titled "39 Years"; and they looked very
24 much alike.

25 MR. BLANKS: Do you have the other

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1 one, Mr. Hobson?

2 (By Mr. Blanks)

3 Q. So, I couldn't figure out whether you
4 started to give it one year and didn't or you dusted
5 it off and snuck it in on them again the next year.

6 MR. PIERCE: There's no question.

7 Is there a question pending?

8 MR. BLANKS: You just raised one.

9 (PLAINTIFFS' EXHIBIT 760517 DOW
10 WAS MARKED FOR IDENTIFICATION
11 PURPOSES. SAME WILL BE FOUND IN
12 THE EXHIBIT VOLUMES ATTENDANT TO
13 THIS DEPOSITION.)

14 (By Mr. Blanks)

15 Q. Let me hand you these papers, sir, that

16 this -- This first one is titled, "39 years,"
17 etcetera; and I've marked it 760517 DOW. It's said to
18 have been presented at the Dow Global Physicians
19 Meeting held at Newport, Rhode Island, May 17th of
20 '76. And the companion to it appeared to be the same
21 document with writing on it and a strike-out that
22 takes the 39 years up to 40. That's what perplexed me
23 a little. And I know your lawyer doesn't want you to
24 have your documents back but...

25 MR. BLANKS: You through reviewing

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1 his document there?

2 MR. PIERCE: Well, I certainly
3 intend to review all of the parts
4 that you've put stickums on and
5 notations, --

6 MR. BLANKS: Well, please, carry
7 on.

8 MR. PIERCE: -- which I think is
9 appropriate.

10 Q. Dr. Rowe, do you --

11 MR. PIERCE: Just permit me to do
12 that - and plus your underlinings, plus
13 your notations. I think that's

14 appropriate

15 (By Mr. Blanks)

16 Q. Do you remember giving the paper twice or is

17 that --

18 A. I don't remember giving it twice. Could

19 well have been, though.

20 Q. Okay.

21 MR. PIERCE: Are you going to mark

22 for identification the one entitled

23 "39 years," Mr. Blanks?

24 MR. BLANKS: Well, we'll see what

25 we can figure out about it.

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1 (By Mr. Blanks)

2 Q. Is the one that your lawyer is holding there

3 that's been written on, is that - is that - does that

4 carry your handwriting on there, sir?

5 A. It looks like it. Probably I cleaned up my

6 language.

7 MR. BLANKS: Well, for convenience

8 let's just connect those two and treat

9 them as one exhibit as labeled since

10 it's - It's the same type document but

11 with the written material on it.

12 MR. PIERCE: You mean you want "39
13 years" and the one "40 years" with all
14 the changes to be identified as a
15 single document?

16 MR. BLANKS: Sure. Why not?

17 MR. PIERCE: It's your choice.

18 Q. Now, I've got another typed version here,
19 Dr. Rowe, from your documents that you brought from
20 home that, as typed, says "40 Years of Dow Industrial
21 Toxicology and Industrial Hygiene" and shows you to be
22 the author of it. Would that be -- Would that be so,
23 sir?

24 MR. PIERCE: Could you hand it
25 over so that the witness can look at

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1 it; or do you expect him to read it
2 from across the room, sir?

3 MR. BLANKS: (Tendering document)

4 MR. PIERCE: Oh, I see you have
5 some stick-ons again. Have you made
6 any underlinings?

7 MR. BLANKS: Well, you can
8 probably assume that I have.

9 (By Mr. Blanks)

10 Q. Do you recall when or where you gave that
11 paper, Dr. Rowe?

12 A. No. I don't recall where, but I gave it.

13 (PLAINTIFFS' EXHIBIT 770000 DOW
14 WAS MARKED FOR IDENTIFICATION
15 PURPOSES. SAME WILL BE FOUND IN
16 THE EXHIBIT VOLUMES ATTENDANT TO
17 THIS DEPOSITION.)

18 (By Mr. Blanks)

19 Q. Okay. I've labeled that, the latter one,
20 770000 DOW for lack of a better date, inferring that
21 you did give it the year after '76; and it looks like
22 you did.

23 A. Was it the case, Dr. Rowe, that in a lot of
24 your professional writings and your professional
25 presentations that you did express your professional

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1 opinions, based on your best knowledge and beliefs and
2 the information that you had at that time that you
3 wrote them or published it?

4 MR. PIERCE: Objection to the form
5 of the question.

6 A. Yes.

7 Q. One other thing, sir: Are the handwritten

8 notes on 770000 DOW your handwriting, sir?

9 A. That's the one we just looked at?

10 Q. Yes.

11 A. No, that's not my handwriting.

12 Q. Okay. Dr. Rowe, when did somebody first

13 contact you about giving a deposition in these cases?

14 A. I don't know.

15 Q. Was it the case that somebody from Dow did

16 contact you about testifying?

17 A. They indicated this might be required.

18 Q. Do you remember who it was, sir?

19 A. I think it -- No. I'm not sure.

20 Q. Okay. Is it one of the gentlemen here with

21 us today?

22 A. I think it was -- I think it was Mr. Stuart.

23 Q. All right, sir. And what did he tell you

24 about --

25 MR. PIERCE: Objection.

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1 Objection.

2 Q. -- what was likely to be involved here?

3 MR. PIERCE: Look, I'm

4 representing Mr. Rowe here; and

5 although Dow is capable of taking care

6 of itself, certainly we're not going to
7 get into any conversations between
8 either Mr. Rowe and myself as his
9 attorney nor Dow which apparently
10 offered him up. So, let's cut this
11 business and not get to attorney-client
12 privileged areas, please.

13 MR. ALMQUIST: On behalf of Dow
14 Chemical - And I am here representing
15 Dow Chemical - I would object and raise
16 the attorney-client privilege for any
17 communications that were had with
18 Mr. Rowe as a former employee of Dow
19 concerning this lawsuit in which Dow is
20 a party.

21 Q. Then I'll repeat my question to you, sir.
22 What did people from Dow say to you about the
23 deposition say to you about the today, sir?

24 MR. PIERCE: I direct you not to
25 answer that question, Dr. Rowe.

1 Q. I take it that you're not going to answer me
2 because this man has told you not to, sir. Is that
3 right?

4 MR. PIERCE: His lawyer has told
5 him not to answer that question, that
6 it's a privileged communication.

7 Q. Dr. Rowe --

8 MR. BLANKS: Wait. You're
9 asserting the privilege on behalf of
10 Dow, sir, are you?

11 MR. ALMQUIST: I'm asserting
12 privilege on behalf of Dow.

13 MR. BLANKS: Oh. Well, then are
14 you instructing him not to answer,
15 Mr. Almquist?

16 MR. PIERCE: I have raised the
17 attorney-client objection to this
18 communication. I believe it is a
19 privileged communication.

20 (By Mr. Blanks).

21 Q. Okay. So, Mr. Rowe, there is no issue
22 between you and your attorney, I believe, in terms of
23 privileged communications yet.

24 MR. PIERCE: I'm going to direct
25 my client not to answer things that are

1 obviously privileged whether it's a

2 privilege between myself and Dr. Rowe
3 or in respect to Dow. What is improper
4 is improper; and I as his attorney know
5 it's improper, as you do or should.

6 MR. BLANKS: I know there's
7 something improper here, sir. We're
8 trying to get to the root of it for the
9 jury's benefit.

10 MR. ALMQUIST: I object to that
11 statement and ask that it be stricken
12 from the record as an argumentative
13 speech.

14 (By Mr. Blanks)

15 Q. Dr. Rowe, are either of these two gentlemen
16 seated on your right, Mr. Almquist or Mr. Stuart, here as
17 your attorneys today?

18 A. Are they what?

19 Q. Are they your attorneys? Have you hired
20 either of these two young lawyers to your right to
21 represent you today, sir?

22 A. No, sir.

23 Q. When did you first meet the gentleman to
24 your - to your right - I'm sorry - to your left who's
25 here as your attorney today?

1 A. I don't remember.

2 Q. Can you tell us what his name is, sir?

3 A. His name is Stanley Pierce.

4 Q. When did you -- When did you hire Mr. Pierce
5 to represent you, sir?

6 A. I didn't.

7 Q. All right, sir. And who did hire him to
8 represent you, The Dow Chemical Company?

9 A. No, sir.

10 Q. Did anybody hire him to represent you?

11 A. I hired nobody to represent me.

12 Q. So, this gentleman is not your attorney,
13 then, sir; is that right?

14 MR. PIERCE: Did you ask that I
15 represent you here, Dr. Rowe?

16 MR. BLANKS: Excuse me, sir.

17 You'll have the opportunity to
18 cross-examine.

19 (By Mr. Blanks)

20 Q. So, you're not paying Mr. Pierce to
21 represent you?

22 A. No, sir.

23 Q. And you did not hire him?

24 MR. ALMQUIST: I'm going to object
25 to any questions as to who is paying

1 Mr. Pierce as being improper

2 questions.

3 Q. I'm sorry. Dr. Rowe, you're not paying this
4 gentleman to be here as your attorney, are you, sir?

5 MR. PIERCE: I direct him not to
6 answer that.

7 A. Yes.

8 Q. Do you understand, sir, that Dow Chemical
9 may be paying this man to appear here? Sir?

10 A. It was my understanding.

11 Q. Okay. Do you also understand that this
12 Mr. Pierce is a - frequently an attorney who
13 represents - or frequently represents Dow Chemical
14 Company in litigation?

15 A. I know he has.

16 Q. And do you know that - what city he's from?

17 A. Yes.

18 Q. He's from New York, isn't he?

19 A. Yes.

20 Q. Do you know how you came to make his
21 acquaintance at all?

22 A. No.

23 Q. Are you being hired by Dow to be a

24 consultant in any of this litigation we're here to
25 testify about today?

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1 A. I presume so.

2 Q. Have you made an arrangement with them to
3 pay you for your time, sir?

4 A. They have offered to do that.

5 Q. Are you going to let them do that?

6 A. Yes.

7 Q. And how much are they paying you for your
8 time?

9 A. I would believe that would be a personal
10 question that is probably not anybody's business.

11 Q. Well, you know, I might be inclined to agree
12 with you; but nonetheless the jury has a right, I
13 think, to know what you're being paid by Dow to
14 consult with them, sir.

15 A. There have been no agreements made.

16 Q. So, you haven't given them any figure; and
17 they haven't suggested one?

18 A. Pardon?

19 Q. You haven't told them - given them a rate,
20 and they haven't suggested one?

21 A. I have not.

22 Q. You're still receiving a pension from Dow,
23 are you not?
24 A. Yes.
25 Q. Do you own any Dow stock?

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1 A. Yes.
2 Q. Okay. How much?
3 MR. PIERCE: Look, I'm going to --
4 I'm going to direct you not to answer.
5 I don't see what the relevancy
6 is. He told you he owns Dow stock.
7 That's sufficient. I think we're going
8 way overboard in asking him those kinds
9 of things about his personal finances.
10 You really have the information you
11 need when you know he owns some Dow
12 stock.
13 MR. BLANKS: You know, that
14 thought just occurred to me, too.
15 (By Mr. Blanks)
16 Q. My apologies, Dr. Rowe. Dr. Rowe, I'd like
17 you to tell me about the conversations you've had with
18 Mr. Pierce concerning this litigation and this
19 deposition.

20 MR. PIERCE: I direct you not to
21 answer as attorney-client privilege.
22 MR. BLANKS: Dr. Rowe has already
23 stated you are not his attorney, sir.
24 You may be Dow's attorney but you are
25 not in a position to instruct this

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1 witness and you do so at Dow's peril,
2 sir.
3 MR. PIERCE: No. I'm going to
4 instruct this witness. This witness
5 has specifically asked for me to
6 represent him here. And because you've
7 confused him in some of the questions,
8 I'm not going to change that
9 relationship. I direct the witness not
10 to answer that question.

11 (By Mr. Blanks)

12 Q. Dr. Rowe, are you refusing, then, sir, to
13 tell me about what Mr. Pierce told you to say or not
14 say or what might be asked or not asked in this
15 deposition?

16 MR. PIERCE: I object. I direct
17 the witness not to answer, and I also

18 object to your saying anything in
19 respect to what I've told the witness
20 to say as outrageous statement on your
21 part.

22 Q. Dr. Rowe, when did you learn that Dow was
23 going to arrange for this New York lawyer to appear
24 here at this deposition allegedly to represent you,
25 sir?

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1 MR. PIERCE: Well, first of all,
2 I'd like to object to the
3 characterization of me as a "New York
4 lawyer." I certainly am familiar with
5 Dr. Rowe. Dr. Rowe asked that I
6 represent him. And I am not a New York
7 City lawyer, just - just for your own
8 edification, Mr. Blanks.

9 Q. Sir, are you going to answer me or not?

10 MR. PIERCE: Let's hear that
11 question again, please.

12 Q. The question was, when did you learn that
13 Dow had arranged for Mr. Pierce to appear here at this
14 deposition for you, sir? - to be with you.

15 A. I believe it was on Monday this week.

16 Q. And you hadn't asked to have an attorney
17 represent you at the deposition, had you, sir?

18 A. I expected to have an attorney representing
19 me, yes.

20 Q. And did you expect Dow to provide one of
21 their lawyers to represent you?

22 A. I didn't know how they were going to handle
23 it. I'm only an instrument.

24 Q. All right, sir.

25 MR. HOBSON: We need to change the

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1 tape (directed to Mr. Blanks).

2 MR. BLANKS: Okay. Change --

3 MR. PIERCE: Wait. Leave

4 that -- Are you -- Is that the end of

5 the tape now? Leave it on for a

6 second.

7 If that is the end of the tape,

8 let me say that this deposition is now

9 concluded. You've had the amount of

10 time agreed upon. And with all due

11 respect and admiration which I happen

12 to have for Herschel Hobson: This has

13 been a travesty these two days of

14 irrelevancies and redundancies and
15 constant asking of leading and compound
16 questions; and we have now concluded
17 this matter.

18 (By Mr. Blanks)

19 Q. Dr. Rowe, are you available to continue
20 tomorrow or Monday, sir?

21 MR. PIERCE: Dr. Rowe is not
22 continuing. This deposition is at an
23 end right now. Thank you. You can go
24 to the Court for relief.

25 MR. BLANKS: Mr. Almquist, are you

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1 going to terminate this deposition at
2 this point?

3 MR. ALMQUIST: I believe that the
4 deposition has been terminated.

5 MR. BLANKS: We are prepared to
6 continue pursuant to the notice either
7 tomorrow or on Monday at Dr. Rowe's
8 convenience and would like to know what
9 your pleasure is.

10 MR. ALMQUIST: I will be in trial
11 in Conroe, Texas, on Monday,

12 Mr. Blanks. So, my pleasure has been
13 preordained.

14 Q. Dr. Rowe, will you --

15 MR. PIERCE: Come (directed to the
16 witness).

17 Q. -- be available, sir, at some --

18 MR. PIERCE: Let's go, Dr. Rowe.

19 Q. -- point in time...

20 (AT THIS TIME MR. PIERCE AND THE
21 WITNESS LEAVE THE ROOM.)

22 MR. BLANKS: Let the record
23 reflect that Mr. Pierce, the New York
24 lawyer, has instructed Dr. Rowe, who
25 has said he is not represented by

1 Mr. Pierce, to leave the deposition and
2 walk out without answering the
3 questions; that counsel present are
4 prepared to either continue at this
5 time, depending upon the comfort and
6 convenience of Dr. Rowe, or to continue
7 tomorrow morning at his pleasure or on
8 Monday or at such time as soon
9 thereafter as is convenient to the

10 witness; and that all other parties are
11 present - remain present and apparently
12 are awaiting their opportunity to
13 cross-examine this witness.

14 Mr. Almquist, is it the position
15 of Dow Chemical that Dr. Rowe --

16 MR. ALMQUIST: I have nothing to
17 say on the record, Mr. Blanks. You can
18 understand --

19 MR. BLANKS: I'm sorry. Sir?

20 MR. ALMQUIST: I have nothing more
21 to say on the record.

22 MR. BLANKS: Well, it's my
23 understanding that you had presented
24 this man and requested us not to have
25 him served with a subpoena, which we

1 were certainly happy to do, based upon
2 your representation that he would be
3 available, that we were going to limit
4 the time we spent each day to a couple
5 hours in the morning and in the
6 afternoon because of the gentleman's
7 reputed ill health and his admitted

8 age. And we have done that out of
9 consideration to him. And we want to
10 finish our deposition. And as you
11 tendered him voluntarily and
12 courteously, we think we're entitled to
13 an answer on what your intentions are
14 as to the completion of this
15 deposition.

16 MR. ALMQUIST: And I have nothing
17 more to add at this point, Mr. Blanks.
18 I'm not going to get into a discussion
19 like this on the record.

20 MR. BLANKS: Mr. Stuart, you are
21 here as a counsel for Dow. I beg you
22 for some indication of what Dow's
23 intentions are with respect to the
24 conclusion of this gentleman's
25 deposition, sir.

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1 MR. STUART: (No response)

2 MR. BLANKS: We're respectful of
3 his time and his condition if, indeed,
4 he does have a health problem; but
5 we've relied on the representations of

6 your counsel and through him of your
7 company to appear under these
8 circumstances and on this schedule.

9 MR. ALMQUIST: The representations
10 of which you speak, I believe, are
11 probably in writing and will speak for
12 themselves; so, needless to say, I
13 think we can stop this young lady's
14 incessant work on the keyboard at this
15 point.

16 MR. BLANKS: Then I take it
17 Mr. Stuart has no comment; and I'd
18 like the record to reflect that, as
19 well.

20 For the record, I want to attach
21 the remaining documents that were
22 brought to the deposition in response
23 to the subpoena duces tecum; and we'll
24 take this opportunity to go through
25 them and describe them with the labels

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1 that we've placed on them.

2 Mr. Hobson, do you have those
3 papers?

4 MR. HOBSON: Yes.

5 MR. BLANKS: And I also would

6 suggest to Mr. Almquist that if we

7 can't resolve this amicably that we

8 will be forced to go before the Court

9 and regretfully ask for sanctions and

10 expenses in connection with this,

11 particularly with the flagrant

12 misconduct of - what appears to be that

13 of the outside counsel Dow has hired

14 here who purports to represent

15 Mr. Rowe.

16

17

18 (PLAINTIFFS' EXHIBIT 760600 DOW

19 WAS MARKED FOR IDENTIFICATION

20 PURPOSES. SAME WILL BE FOUND IN

21 THE EXHIBIT VOLUMES ATTENDANT TO

22 THIS DEPOSITION.)

23 We've labeled as Document 760600

24 DOW the --

25 MR. HOBSON: Can we do without the

1 video recording?

2 MR. BLANKS: Yes. We'll turn off
3 the video now so we can get through
4 this business.
5 -- (continuing) the document
6 brought by Dr. Rowe titled, "A
7 historical Account of Dow's
8 Environmental Stewardship," by Eugene
9 E. Kenega, K-e-n-e-g-a, said to be from
10 an internal report of Dow Chemical
11 U.S.A., comma, June 1976.
12 (PLAINTIFFS' EXHIBIT 740000 WHO
13 546 WAS MARKED FOR IDENTIFICATION
14 PURPOSES. SAME WILL BE FOUND IN
15 THE EXHIBIT VOLUMES ATTENDANT TO
16 THIS DEPOSITION.)
17 We've labeled as Exhibit 740000
18 WHO 546 a document brought by Dr. Rowe
19 entitled, "Assessment of the
20 Carcinogenicity and Mutagenicity of
21 Chemicals," said to be the report of a
22 W.H.O., World Health Organization,
23 scientific group from 1974 and being
24 four pages in length.
25 (PLAINTIFFS' EXHIBIT 780814 DOW,

1 WAS MARKED FOR IDENTIFICATION
2 PURPOSES. SAME WILL BE FOUND IN
3 THE EXHIBIT VOLUMES ATTENDANT TO
4 THIS DEPOSITION.)

5 Labeled as Exhibit 780814 DOW, a
6 document titled, "'Clinical Toxicology'
7 Viewed from an Industrial Setting," by
8 P. J. Gehring, G-e-h-r-i-n-g, of the
9 Toxicology Research Laboratory, Health
10 and Environmental Research, Dow
11 Chemical Company in Midland, Michigan,
12 being a symposium on clinical
13 toxicology apparently presented at the
14 Joint Fall Meeting of the American
15 Society of Pharmacology and
16 Experimental Therapeutics and Society
17 of Toxicology, Houston, Texas,
18 August 14th, 1978, bearing some
19 handwritten notes of unknown origin but
20 likely of Dr. Rowe.

21 (PLAINTIFFS' EXHIBIT 790518 DOW
22 WAS MARKED FOR IDENTIFICATION
23 PURPOSES. SAME WILL BE FOUND IN
24 THE EXHIBIT VOLUMES ATTENDANT TO
25 THIS DEPOSITION.)

1 Exhibit 790518 DOW is a document
2 titled, "Dedication Address,"
3 Northwestern University Cancer Center,
4 by Philip Handler, President of the
5 National Academy of Sciences, on
6 May 18th, 1979, showing it was received
7 at C.M.S.A. on July 16th of 1979, and
8 indicating carbon copies to a variety
9 of persons on the front page and having
10 some underlines at different places in
11 the text as it was given to us by
12 Dr. Rowe yesterday afternoon.

13 (PLAINTIFFS' EXHIBIT 740919 DOW
14 WAS MARKED FOR IDENTIFICATION
15 PURPOSES. SAME WILL BE FOUND IN
16 THE EXHIBIT VOLUMES ATTENDANT TO
17 THIS DEPOSITION.)

18 Labeled as Plaintiffs' Exhibit
19 740919 DOW is a document titled, "Some
20 Basic Concepts of Toxicology and Some
21 Thoughts about the Development and Use
22 of Toxicological Information," authored
23 by V. K. Rowe as director,
24 Toxicological Affairs, Health and

25 Environmental Research, Dow Chemical

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1 U.S.A. And at the bottom of this page,
2 it notes that it was for presentation
3 at the National Paint and Coatings
4 Association Meeting at The Homestead,
5 Hot Springs, Virginia, September 19th,
6 1974.

7 (PLAINTIFFS' EXHIBIT 751021 DOW
8 WAS MARKED FOR IDENTIFICATION
9 PURPOSES. SAME WILL BE FOUND IN
10 THE EXHIBIT VOLUMES ATTENDANT TO
11 THIS DEPOSITION.)

12 Labeled as Plaintiffs'
13 Exhibit 751021 DOW is a document
14 titled, "Concerns of Industry Related
15 to Carcinogenic Hazards," authored by
16 P. J. Gehring, D.V.M., Ph.D., and V. K.
17 Rowe, Sc.D. It appears this paper, as
18 adapted by V. K. Rowe for presentation
19 at the Sixth Annual Conference on
20 Environmental Toxicology was presented
21 at a meeting held at the Biltmore
22 Towers Hotel in Dayton, Ohio, on

23 October 21st through 23rd, 1975, notes
24 the original paper in its entirety was
25 presented by P. J. Gehring at the

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1 National Meeting of Comprehensive
2 Cancer Centers of the United States, at
3 Duke, in Durham on April 10th, 1975.

4 MR. ALMQUIST: Not having seen the
5 document, to the extent that there is
6 editorial comments added by Mr. Blanks,
7 I would object to those and state that
8 the document will speak for itself.

9 MR. BLANKS: The face of the
10 document certainly speaks for itself;
11 but I thought for your convenience,
12 Mr. Almquist, I'd have a little excerpt
13 from the face of it in the text so you
14 wouldn't have to go looking for it in a
15 long volume.

16 (PLAINTIFFS' EXHIBIT 780000 NIH
17 1594 WAS MARKED FOR IDENTIFICATION
18 PURPOSES. SAME WILL BE FOUND IN
19 THE EXHIBIT VOLUMES ATTENDANT TO
20 THIS DEPOSITION.)

21 Labeled as Plaintiffs'
22 Exhibit 780000 NIH is a photocopy of a
23 booklet Dr. Rowe brought from his
24 personal files entitled, "Asbestos
25 Exposure: What It Means, What To Do,"

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1 and appearing on its face to be a
2 Department of Health, Education, and
3 Welfare Publication No. (NIH) 78-1594.
4 Let's change this exhibit number
5 to 780000 NIH 1594 to be consistent
6 with the title that's been put on it.
7 (PLAINTIFFS' EXHIBIT 780421
8 WAS MARKED FOR IDENTIFICATION
9 PURPOSES. SAME WILL BE FOUND IN
10 THE EXHIBIT VOLUMES ATTENDANT TO
11 THIS DEPOSITION.)
12 Plaintiffs' Exhibit 780421 DOW is
13 titled, "Overview -- Science Society
14 and Health Risk Control," authored by
15 V. K. Rowe and, according to the
16 document, was presented at the American
17 Bar Association Institute Program on
18 Law, Science, and Technology and Health

19 Risk Regulation April 20th and 21st at
20 the Mayflower Hotel, Washington, D.C.
21 (PLAINTIFFS' EXHIBIT 780900 NIOSH
22 WAS MARKED FOR IDENTIFICATION
23 PURPOSES. SAME WILL BE FOUND IN
24 THE EXHIBIT VOLUMES ATTENDANT TO
25 THIS DEPOSITION.)

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1 Plaintiffs' Exhibit 780900 NIOSH
2 is a two-page excerpt from a document
3 titled, "NIOSH/OSHA Pocket Guide to
4 Chemical Hazards," brought by Dr. Rowe
5 from his personal library and appearing
6 on its face to have been published in
7 September of 1978 by the U.S.
8 Department of Health Education and
9 Welfare and the U.S. Department of
10 Labor.

11 MR. HOBSON: Mr. Almquist told us
12 that he copied only the first couple of
13 pages of this because it was in the
14 public domain.

15 (PLAINTIFFS' EXHIBIT 790423 C&EN
16 WAS MARKED FOR IDENTIFICATION

17 PURPOSES. SAME WILL BE FOUND IN
18 THE EXHIBIT VOLUMES ATTENDANT TO
19 THIS DEPOSITION.)
20 MR. BLANKS: The next is
21 Plaintiffs' Exhibit 790423 C&EN, being
22 pages 23 through 50 of what would
23 appear to be articles from the
24 publication Chemical and Engineering
25 News.

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1 (PLAINTIFFS' EXHIBIT 790900 DOW
2 WAS MARKED FOR IDENTIFICATION
3 PURPOSES. SAME WILL BE FOUND IN
4 THE EXHIBIT VOLUMES ATTENDANT TO
5 THIS DEPOSITION.)
6 The next document is Plaintiffs'
7 Exhibit 790900 DOW titled, "Industrial
8 Hygiene - Truly an Interdisciplinary
9 Science, authored by V. K. Rowe, and
10 appearing in the American Industrial
11 Hygiene Association Journal in 1979.
12 (PLAINTIFFS' EXHIBIT 791004 DOW
13 WAS MARKED FOR IDENTIFICATION
14 PURPOSES. SAME WILL BE FOUND IN

15 THE EXHIBIT VOLUMES ATTENDANT TO
16 THIS DEPOSITION.)

17 Plaintiffs' Exhibit 791004 DOW is
18 the document brought by Dr. Rowe,
19 titled, "Environmentally Induced
20 Cancer... Separating Truth from Myth,"
21 appearing to be a talk by Dr. Harry
22 Demopoulos of the New York University
23 Medical Center, presented to the
24 Synthetic Organic Manufacturers
25 Chemical Association October 4th, 1979,

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1 in Hasbrouck Heights, New Jersey.
2 (PLAINTIFFS' EXHIBIT 801013 DOW
3 WAS MARKED FOR IDENTIFICATION
4 PURPOSES. SAME WILL BE FOUND IN
5 THE EXHIBIT VOLUMES ATTENDANT TO
6 THIS DEPOSITION.)

7 Plaintiffs' Exhibit 801013 DOW is
8 a ten-page set of papers stapled
9 together, as it was produced by the Dow
10 attorneys, bearing on the cover page a
11 date of October 13th, 1980, on a Dow
12 letterhead, and being a letter from

13 John R. Venable, V-e-n-a-b-l-e, M.D.,
14 to Peter F. Infante, I-n-f-a-n-t-e, at
15 the U.S. Department of Labor,
16 Occupational Health and Safety
17 Administration, followed by other
18 correspondence, a photocopy of an item
19 from a newspaper, and a two-page item
20 from some other publication, the
21 Current Report from the B.N.A.; and,
22 finally, a photocopy of a form bearing
23 the title "Who's Who in Science and
24 Engineering" with what would appear to
25 be a signature of V. K. Rowe, dated

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1 6-29-91, and setting out apparently his
2 professional credentials.
3 MR. ALMQUIST: And let me just say
4 on the record that Mr. Blanks
5 characterized that as a document
6 produced by Dow's attorneys. That was
7 a document that Mr. Rowe had provided
8 in response to the subpoena duces
9 tecum. It's not being produced by Dow
10 or Dow's attorneys.

11 MR. BLANKS: Well, my apologies.
12 It was, in fact, handed to me by the
13 Dow attorney; and I understood it to be
14 produced by Mr. Rowe, as Mr. Almquist
15 stated.

16 And to be certain, we've marked
17 as Exhibit 141005 ROWE V. K. the
18 curriculum vitae brought by Dr. Rowe.

19 (PLAINTIFFS' EXHIBIT 810000 FCT
20 WAS MARKED FOR IDENTIFICATION
21 PURPOSES. SAME WILL BE FOUND IN
22 THE EXHIBIT VOLUMES ATTENDANT TO
23 THIS DEPOSITION.)

24 Exhibit 810000 FCT is a collection
25 of material brought by Dr. Rowe that is

1 titled, "Twenty Years of Toxicology,"
2 and indicates contents of various
3 articles on the topic of toxicology,
4 not all of which are included in the
5 package, but most of which are.

6 (PLAINTIFFS' EXHIBIT 801100 ACSH
7 WAS MARKED FOR IDENTIFICATION
8 PURPOSES. SAME WILL BE FOUND IN

9 THE EXHIBIT VOLUMES ATTENDANT TO
10 THIS DEPOSITION.)

11 Plaintiffs' Exhibit labeled as
12 801100 ACSH is a photocopy Dr. Rowe
13 brought of what appears to be an issue
14 of the American Council on Science and
15 Health News and Views shown to be a
16 addressed to Dr. John A. Zapp, Jr., a
17 consultant in toxicology and industrial
18 hygiene in Kennett Square,
19 Pennsylvania, and showing on its face
20 to be Volume I, No. 6, from November
21 and December of 1980 of News and
22 Views.

23 (PLAINTIFFS' EXHIBIT 820200 OH&S
24 WAS MARKED FOR IDENTIFICATION
25 PURPOSES. SAME WILL BE FOUND IN

1 THE EXHIBIT VOLUMES ATTENDANT TO
2 THIS DEPOSITION.)

3 Plaintiffs have labeled as
4 Exhibit 820200 OH&S, being pages 30
5 through 34 of what appears to be the
6 February 1982 issue of a publication

7 called Occupational Health and Safety.
8 And the article is entitled,
9 "Untangling the Asbestos Mess."

10 MR. HOBSON: I'm trying to catch a
11 plane.

12 MR. BLANKS: Are you leaving me?
13 Well, okay. It's been nice seeing you,
14 Herschel. Stop around some time.

15 (PLAINTIFFS' EXHIBIT 840209 NIOSH
16 WAS MARKED FOR IDENTIFICATION
17 PURPOSES. SAME WILL BE FOUND IN
18 THE EXHIBIT VOLUMES ATTENDANT TO
19 THIS DEPOSITION.)

20 Plaintiffs' have labeled as
21 Exhibit 840209 NIOSH a document brought
22 by Dr. Rowe titled, "Current
23 Intelligence Bulletin 41," on
24 1,3-Butadiene, appearing to be
25 published by the U.S. Department of

1 Health and Human Services.

2 (PLAINTIFFS' EXHIBIT 841017 DOW
3 WAS MARKED FOR IDENTIFICATION
4 PURPOSES. SAME WILL BE FOUND IN

5 THE EXHIBIT VOLUMES ATTENDANT TO
6 THIS DEPOSITION.)

7 Labeled as Plaintiffs'
8 Exhibit 841017 DOW is a document
9 brought by Dr. Rowe, titled,
10 "Toxicology in Michigan Today, Risk
11 Assessment in Toxicology: Yesterday,
12 Today and Tomorrow," with a date of
13 October 17th, 1984, and showing on the
14 program within a presentation by
15 Dr. Verald K. Rowe titled, "From the
16 Past: Experience in Toxicological
17 Hazard Evaluation," followed by
18 material prepared on a typewriter and
19 with handwritten notes thereon.

20 (PLAINTIFFS' EXHIBIT 841018 DOW
21 WAS MARKED FOR IDENTIFICATION
22 PURPOSES. SAME WILL BE FOUND IN
23 THE EXHIBIT VOLUMES ATTENDANT TO
24 THIS DEPOSITION.)

25 Plaintiffs' Exhibit 841018 DOW is

1 a document produced by Dr. Rowe titled,
2 "Experimentation, Experience, and the

3 Media," a Symposium of Media, Science,
4 Industry and Public Officials," held in
5 Midland, Michigan, on October 18th,
6 1984, sponsored by The Dow Chemical
7 Company and indicating the subjects on
8 which talks were given and appearing to
9 contain three pages listing symposium
10 attendees including V. K. Rowe and
11 other Dow Chemical Company employees.

12 So, I would ask that you attach
13 all of these, Ms. Reporter, as exhibits
14 to the deposition arranging them in the
15 numerical order in which they've been
16 labeled.

17 MR. ALMQUIST: And we will
18 probably have substantive objections to
19 some of those in terms of their being
20 hearsay in nature. I just want to
21 preserve that for the record.

22 I just would point out that I'm
23 still here, the attorney for Dow
24 Chemical, at the conclusion of the
25 record here today.

1 Mr. Blanks, I believe that you
2 will find in your files a letter from
3 me where on behalf of Dow we agreed to
4 make Mr. Rowe available on October 1st
5 and 2nd for two hours in the morning
6 and two hours in the afternoon. We've
7 not retained Mr. Rowe as an expert
8 witness in this case to give trial
9 testimony. We are seeking his
10 testimony as a fact witness. We have
11 agreed to compensate him for his time
12 to come here today to give that
13 testimony. Beyond that we have no
14 control over Mr. Rowe, and we have been
15 informed in no uncertain terms that
16 Mr. Rowe has an attorney, Mr. Pierce.
17 And Mr. Pierce will not listen to what
18 we have to say.

19 MR. BLANKS: Well, I do not have
20 any knowledge of the letter, although I
21 certainly can't imagine that you would
22 misspeak about its contents. And the
23 matter of Mr. Pierce remains, of
24 course, to be brought before the Court,
25 and likely will be. Thank you for your

1 courtesy and your silence.

2 Are we are off the record now?

3 Do you have anything to say?

4 MR. RUSSELL: No. Just that I'm

5 also still here and that I object to

6 the early termination without any

7 notice or opportunity for people to ask

8 questions and that if the matter is

9 brought before the Court, I'd like to

10 request that whoever is sanctioned will

11 have to pay for all of us to come back

12 out here and resume the deposition.

13 I'm leaving.

14 MR. BLANKS: Good bye.

15 Okay, guys.

16 (AT THIS TIME, APPROXIMATELY,

17 3:05 P.M., THE PROCEEDINGS OF

18 OCTOBER 2, 1992, WERE CONCLUDED.)

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1 THE STATE OF ARIZONA

2 COUNTY OF :
3

4 I, VERALD K. ROWE, hereby certify that I
5 have read the foregoing transcript of my testimony
6 given in the foregoing numbered and styled case, and
7 that same is true and correct to the best of my
8 knowledge and belief.

9 I further certify that any and all
10 corrections have been made on a separate page and
11 initialed by me.

12 This day of , 19 .
13
14

15 VERALD K. ROWE

16 SWORN TO AND SUBSCRIBED BEFORE ME this

17 day of , 19 .
18

19 NOTARY PUBLIC

20 My Commission Expires:
21
22

23

24

25

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1 THE STATE OF TEXAS :

2 COUNTY OF JEFFERSON:

3 I, SANDRA S. SULLIVAN, a Certified Shorthand

4 Reporter for the State of Texas, hereby certify

5 pursuant to the Texas Rules of Civil Procedure and/or

6 agreement of the parties present to the following:

7

8 That this deposition transcript is a true

9 record of the testimony given by Verald K. Rowe, the

10 Witness named herein, on October 1, 1992, and

11 October 2, 1992, after said Witness was duly sworn by

12 me.

13

14 SWORN TO AND SUBSCRIBED by me on the

15 23rd day of October, 1992.

16

17

18 SANDRA S. SULLIVAN, CSR, RPR

19 Certification No.: 2411

Expiration Date: 12-31-93

20

Business Address: Charlotte Smith Reporting, Inc.

21 235 Orleans
22 Beaumont, Texas 77701

23 Telephone: (409) 839-4407

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