

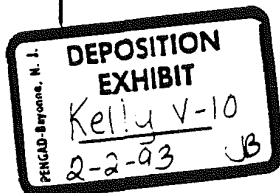
TRANSCRIPT OF PROCEEDINGS

IN THE SUPERIOR COURT
OF THE STATE OF DELAWARE
IN AND FOR NEW CASTLE COUNTY

----- -X	
MONSANTO COMPANY,	:
	:
Plaintiff,	:
	:
v.	:
	:
AETNA CASUALTY & SURETY COMPANY,	:
et al.,	:
	:
Defendants.	:
	:
----- -X	

Civil Action Number
88C-JA-118-1-CV
NON-ARBITRATION
CASE

DEPOSITION OF R. EMMET KELLY



Wilmington, Delaware

Wednesday, January 27, 1993

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IN THE SUPERIOR COURT
OF THE STATE OF DELAWARE
IN AND FOR NEW CASTLE COUNTY

-----x
MONSANTO COMPANY,
Plaintiff,
v.
AETNA CASUALTY & SURETY COMPANY,
et al.,
Defendants.
-----x

Civil Action Number
88C-JA-118-1-CV
NON-ARBITRATION
CASE

DEPOSITION OF R. EMMET KELLY

Wilmington, Delaware

Wednesday, January 27, 1993

Deposition of R. EMMET KELLY, called for examination pursuant to notice of deposition, at the law offices of Duane, Morris and Heckscher, 1201 Market Street, Fifteenth Floor, at 10:05 a.m. before JULIE BAKER, a Notary Public within and for the District of Columbia, when were present on behalf of the respective parties:

-- continued --

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APPEARANCES:

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Insurance Company.

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Wiley, Rein & Fielding
1776 K Street, N.W.
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On behalf of The Travelers
Indemnity Company.

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C O N T E N T S

WITNESS

EXAMINATION

R. Emmet Kelly

by Mr. McConnell

4

E X H I B I T S

KELLY DEPOSITION NUMBER

IDENTIFIED

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P R O C E E D I N G S

Whereupon,

R. EMMET KELLY

was called as a witness and, having first been duly sworn,
was examined and testified as follows:

THE WITNESS: By the way, I have somewhat of a
hearing impairment so I may ask you at times to speak a
little louder.

MR. MC CONNELL: If you will do that, I'll try
to speak up and if you have any trouble hearing me, sir,
I'd appreciate it if you'd let me know.

THE WITNESS: I shall.

EXAMINATION

BY MR. MC CONNELL:

Q Would you state your full name, please.

A R., for Robert, Emmet Kelly.

Q And where do you live, sir?

A St. Louis, Missouri, 665 South Skinker,
S-k-i-n-k-e-r, 63105.

Q And how long have you lived at that address,
sir?

A 18 years, 20 years.

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1 MR. MC CONNELL: Off the record.

2 (Discussion off the record.)

3 BY MR. MC CONNELL:

4 Q Dr. Kelly, my name is Dick McConnell. I'm one
5 of the attorneys for The Travelers Indemnity Company in
6 this case. I'd like to make sure we understand each other
7 today and so if at any time there's any confusion in your
8 mind about my question, please let me know and I'll be
9 glad to clear it up for you. Is that all right, sir?

10 A Thank you. Yes, sir.

11 Q Are you being represented by counsel in this
12 deposition, Dr. Kelly?

13 A Yes, I am.

14 Q And who is that counsel, sir?

15 A Mr. Bray.

16 Q Do you understand that he's one of the attorneys
17 for Monsanto in this case?

18 A Yes, I do.

19 Q Who is paying Mr. Bray's legal fees in
20 connection with this deposition, Dr. Kelly?

21 MR. BRAY: I object to that.

22 THE WITNESS: I don't know. It's not I,

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1 though. I'm not paying it.

2 BY MR. MC CONNELL:

3 Q You're not paying any legal fees to Mr. Bray?

4 MR. BRAY: Same objection.

5 THE WITNESS: That is correct.

6 BY MR. MC CONNELL:

7 Q Do you know whether Monsanto is paying his fees,
8 sir?

9 MR. BRAY: Same objection.

10 THE WITNESS: I don't know.

11 BY MR. MC CONNELL:

12 Q Did you do anything to prepare for this
13 deposition, Dr. Kelly?

14 A I talked with Mr. Bray yesterday.

15 Q For about how long, sir?

16 A Five hours.

17 Q Where did that meeting take place?

18 A In Washington at their --

19 Q Was it Mr. Bray's office?

20 A Mr. Bray's office.

21 Q Was there anyone else present at that meeting?

22 A No, sir. People dropped in, secretaries dropped

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1 in with various messages but no other legal people were
2 there.

3 Q Did you review any documents in that meeting?

4 A I beg your pardon?

5 Q Did you review any documents in that meeting?

6 A No, sir. We discussed some. I didn't read them
7 or analyze them.

8 Q Did you have them on the table where you could
9 see them?

10 A Some, yes, sir.

11 Q Did you read portions of them?

12 A Yes, sir.

13 Q Did Mr. Bray direct your attention to portions
14 of them?

15 A Yes, sir.

16 Q Did you bring any of the documents with you or
17 were they provided by Mr. Bray?

18 A Provided by Mr. Bray. I brought none today and
19 none yesterday. Is that what you meant? Did I bring any
20 with me? I brought none this morning and I brought none
21 yesterday.

22 Q Any documents that you reviewed yesterday were

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1 documents that Mr. Bray provided?

2 A That is correct.

3 Q Have you had any other meetings with any of
4 Monsanto's attorneys in connection with this case?

5 A Yes, with Mr. Snively.

6 Q And Mr. Snively is a lawyer in Monsanto's law
7 department?

8 A That's correct. I think he also represents me
9 in this case.

10 Q Mr. Snively is representing you in this case, in
11 connection with this case along with Mr. Bray?

12 A That's correct.

13 Q On how many occasions have you met with
14 Mr. Snively?

15 A With regard to this case?

16 Q Yes, sir.

17 A Twice.

18 Q When did those meetings take place, sir?

19 A Within the last four weeks.

20 Q Were those also meetings to prepare for this
21 deposition?

22 A Yes, sir.

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1 Q When did the first meeting with Mr. Snively take
2 place, Dr. Kelly?

3 A Gosh, I can't tell you the exact date. I have
4 it in my diary at home but not with me. But it was within
5 the last four weeks, I think.

6 Q How long did you meet with Mr. Snively on that
7 occasion?

8 A About four hours one day and about five hours
9 the next day.

10 Q When was the next meeting with Mr. Snively, sir?

11 A About a week after the first one, so that would
12 be three weeks ago.

13 Q And how long did you meet with Mr. Snively on
14 that occasion?

15 A Again, four or five hours.

16 Q So you actually met with Mr. Snively on three
17 separate days?

18 A Two separate days.

19 Q Two separate days?

20 A That's correct.

21 Q And four to five hours on each day?

22 A That's correct.

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WATER_PCB-SD0000062642

1 Q Have you had any other meetings, Dr. Kelly, with
2 any of Monsanto's other attorneys in connection with this
3 case?

4 A Not that I recall.

5 Q When you met with Mr. Snively, did you review
6 any documents with him?

7 A No, sir, I don't think so. I think he just gave
8 me the details of the litigation.

9 Q Let me ask you about your education, Dr. Kelly.
10 Where did you attend college, sir?

11 A St. Louis University.

12 Q What was your degree in?

13 A Bachelor of science in medicine in 1930 and the
14 MD degree from the same institution in 1932.

15 Q So you attended medical school at the same
16 university in St. Louis?

17 A That's correct.

18 Q And you received your MD degree in 1932?

19 A Yes, sir.

20 Q Did you have any other formal education after
21 that point?

22 A Yes. Well, I had three years training at

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WATER_PCB-SD0000062643

1 St. Louis City Hospital. I've had various short
2 postgraduate courses at various medical schools. They
3 were one or two weeks longer. If that's what you mean by
4 formal education.

5 Q The three years at the St. Louis Hospital, was
6 that the normal residency and internship that doctors do
7 after medical school?

8 A Yes, sir.

9 Q The postgraduate courses didn't lead to a
10 degree?

11 A I beg your pardon? No. It did not.

12 Q Where were you employed after medical school,
13 Dr. Kelly, after you became a fully licensed practicing
14 physician?

15 A Well, I was employed at City Hospital for three
16 years. After I left City Hospital, I was in private
17 practice for about six months, and then I became employed
18 by the Monsanto Company as a physician on a part-time
19 basis until I went in the service. And after I left the
20 service in 1946, I came back to Monsanto in a full-time
21 geographical position.

22 Q Let me go back to your private practice in the

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1 six months after your internship. Did you specialize in
2 any particular area?

3 A No, sir. This was in 1932 or '35 after the
4 hospital -- there was a depression and I don't think there
5 was much specialization.

6 Q You were a general practitioner?

7 A That's correct. Although I was trained as an
8 internist, it was very much a general type of practice.

9 Q Did you begin the part-time work as a plant
10 physician for Monsanto in 1936? Did I hear that
11 correctly?

12 A Yes, sir.

13 Q Did you continue to have a private practice on
14 the side at that time?

15 A Yes.

16 Q About how much of your time was spent as a plant
17 physician at that time?

18 A 35 to 40 percent.

19 Q Was there a particular plant you were assigned
20 to?

21 A Yes. The plant they called the Queeny Plant,
22 which was called Plant A at that time and it was changed

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1 to the Queeny Plant. It was located in St. Louis.

2 Q Was that a plant owned by Monsanto?

3 A Yes.

4 Q Did you serve as a plant physician at any other
5 Monsanto plant at any time?

6 A Did I what?

7 Q Was the Queeny Plant the only plant at which you
8 served as a plant physician for Monsanto?

9 A On a regular basis that was the only one, but
10 after I had been with the company for a period of months,
11 I was given responsibilities to look over problems that
12 might have arisen or existed at other plants in the
13 company and it turned out that I was sort of a medical
14 director without portfolio. I had the job of looking over
15 their medical organizations or addressing myself to any of
16 their medical problems that arose, but I didn't have any
17 direct responsibility for it.

18 Q What other plants did you work with in that sort
19 of irregular capacity, if I can call it that?

20 A Well, it all depends on what time frame you're
21 talking about. The years from 1936 to '41, when I went in
22 the service, '42, I saw most of the plants in the United

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1 States. I would say we had about 10 plants around the
2 country at that time, but I would see them on various
3 occasions. Some plants I would see often. Some plants I
4 would not see at all.

5 Q During that period you're talking about, 1936 to
6 1942, did you have a chance to visit all of the Monsanto
7 plants that existed at that time?

8 A I believe so in the United States and Canada. I
9 did not see any of the ex-U.S.A. plants outside of Canada.

10 Q Can you remember what plants you visited during
11 those years, Dr. Kelly?

12 A The Carondolet, C-a-r-o-n-d-o-l-e-t, plant.

13 Q Where is that plant?

14 A South St. Louis. It's a suburb of St. Louis.
15 The East St. Louis plant, which was called Plant B; Nitro,
16 West Virginia; Norfolk, Virginia; Merrimac,
17 M-e-r-r-i-m-a-c, Massachusetts; and Springfield,
18 Massachusetts.

19 Q Were there also plants in Canada that you
20 visited?

21 A Yes. One in Montreal, outside of Montreal and
22 one outside of Toronto.

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1 Q The plant that you referred to as the East
2 St. Louis plant or Plant B, is that also known as the
3 Krummrich plant?

4 A Later on it was called the Krummrich plant,
5 K-r-u-m-m-r-i-c-h.

6 Q And can you remember any others beyond the ones
7 you've named?

8 MR. BRAY: Others that he visited during that
9 period?

10 MR. MC CONNELL: Right.

11 THE WITNESS: We had some plants on the West
12 Coast, small plywood glue plants and I don't know whether
13 I saw that before the war or afterwards. I don't know
14 when we acquired those plants. I just don't know whether
15 that was before 1942 or the early days after 1946.

16 BY MR. MC CONNELL:

17 Q You visited those West Coast plants at some
18 point, but you just can't remember whether it was before
19 or after the war?

20 A That's correct.

21 Q How often did you visit the various plants we've
22 been talking about in the time frame 1936 to 1942?

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1 A Probably once a year with the exception of --
2 Columbia, Tennessee was another plant that we had.
3 Wherever we had problems or potential problems or we were
4 having a new operation at one of our plants, I might visit
5 that often or once a year. But I would say on the
6 average, once or twice a year, but more closely to once.

7 Q What types of problems did you encounter during
8 those years, Dr. Kelly?

9 A Well, at the Columbia, Tennessee, we were
10 starting a plant making elemental phosphorus and we were
11 using German technology and they advised about what they
12 thought should be done on monitoring the individuals. And
13 I would go down to see if this was a feasible option and
14 it really wasn't a problem, it was a potential problem.
15 And other plants, there may have been requests from some
16 of the employees that were affected on the health, some of
17 these products capable of causing -- that I would go down
18 and examine their exposure and talk to the groups. So
19 that's the type of problem.

20 Q Would it be fair to say you were concerned about
21 the toxicity of the chemicals that were being used at the
22 plants?

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1 A Well, no, I wasn't concerned about the toxicity
2 because we knew industrial chemicals have a certain amount
3 of toxicity, but I was concerned we were not giving them
4 any harmful exposure, give the workers any harmful
5 exposure.

6 Q So you knew back in the 1930s and early 1940s
7 that many of the industrial chemicals that were being used
8 at these plants were toxic?

9 A Well, "toxic" is a relative term. They had a
10 certain amount of toxicity but at the extent that the
11 exposure was such that there was no hazards to the workers
12 in our operation.

13 Q It was part of your job to make sure that the
14 workers were not exposed to amounts of those chemicals
15 that would damage their health?

16 A That's correct.

17 Q And you knew at the time that these were toxic
18 chemicals, that exposure to larger amounts would damage
19 the workers; is that correct?

20 MR. BRAY: Object to the generalities of that
21 question.

22 THE WITNESS: It all depends on what you mean by

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1 larger amounts but it certainly was not -- so in any
2 operation, you have to balance the inherent toxicity or
3 lack of toxicity of the product with the exposure or the
4 lack of exposure or the amount of exposure that the worker
5 is exposed to. In other words, no matter how toxic a
6 compound is, if it's inside a pipe and it stays there, it
7 isn't going to hurt them. And we had to see if there were
8 any opportunities for escape of these products.

9 BY MR. MC CONNELL:

10 Q And conversely, you knew at the time if some of
11 these materials escaped from the pipes, they could be
12 harmful to the workers' health?

13 A No, not necessarily. It all depends on how much
14 escapes. If you have a small spill and got it cleaned up
15 and it washed away, there's no hazards to the worker. But
16 obviously if there was a very large breakdown under
17 elevated temperatures, there might be sufficient exposure
18 that there's a possibility that some injury may occur to
19 the workers.

20 Q And there were spills from time to time at the
21 plants?

22 A Yes, sir. That varies, of course, but there

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1 were at times, certainly.

2 Could I get a glass of water, please?

3 MR. MC CONNELL: Certainly. Why don't we go off
4 the record for a minute.

5 (Discussion off the record.)

6 BY MR. MC CONNELL:

7 Q Dr. Kelly, what was your position during World
8 War II?

9 A Well, I was a member of the medical corps, and I
10 was assigned to two chemical warfare installations, one at
11 Pine Bluff, Arkansas and the other at Edgewood, Maryland.

12 Q Would you tell us briefly what your job involved
13 during those years, sir.

14 A Well, it's really pretty much like the job I had
15 at the Plant A in St. Louis. When I started, in other
16 words, I was in charge of the medical department that
17 watched over the health of the workers making chemicals
18 ammunitions. They manufactured chlorine phosgene,
19 phosphorous napalm, n-a-p-a-l-m, mustard gas.

20 Q All of those materials were chemical warfare
21 agents?

22 A Yes.

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1 Q Would it be fair to say they were highly toxic
2 materials?

3 A Not highly toxic in the sense that breathing one
4 lungful of it would cause a fatality, but they were made
5 to injure the enemy so I think you could consider them
6 toxic.

7 Q Did you return to Monsanto after the war?

8 A Yes, I did.

9 Q And do you recall what year you went back to
10 Monsanto?

11 A First months of 1946.

12 Q And what position did you hold when you went
13 back to Monsanto?

14 A Well, it was a new position. It was a central
15 staff department called the corporate medical department,
16 and I held the title of medical director.

17 Q Were you at that time the medical director for
18 the entire company, sir?

19 A Yes, sir.

20 Q You were responsible for medical operations at
21 all of the Monsanto plants?

22 A With the exception of some foreign subsidiaries,

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1 such as Japan or Sweden and where we had less than 100
2 percent ownership.

3 Q Let's restrict it to the operations in the
4 United States and Canada. Were you responsible for all
5 the medical operations in that area?

6 A Yes.

7 Q At all of the plants?

8 A Yes.

9 Q How long did you remain in the position of
10 medical director, Dr. Kelly?

11 A Until December the 1st, 1974.

12 Q And what happened at that point?

13 A I hit 65.

14 Q And you retired from Monsanto?

15 A That's correct.

16 Q Did you continue to do any consulting work for
17 Monsanto?

18 A I did the first year on a regular basis. Since
19 then, I've done consulting work on sort of a
20 fee-for-service basis.

21 Q That has continued right up through today?

22 A To today, yes, sir.

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1 Q Do you have an hourly fee that you charge
2 Monsanto for your consulting work?

3 A Yes, sir.

4 Q And what is that fee, sir?

5 A \$200 an hour.

6 Q Are you being compensated by Monsanto for your
7 time spent preparing for this deposition?

8 MR. BRAY: I object to that.

9 THE WITNESS: If by preparing, you mean my
10 meetings with Mr. Shively and Mr. Bray?

11 BY MR. MC CONNELL:

12 Q Yes, sir.

13 A I will be compensated for that.

14 Q At your normal hourly rate?

15 A That's correct.

16 Q And are you being compensated by Monsanto for
17 the time spent in the deposition?

18 A With the exception of travel time --

19 MR. BRAY: Same objection.

20 BY MR. MC CONNELL:

21 Q I'm sorry, sir?

22 MR. BRAY: Subject to my objection, you may

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1 answer.

2 THE WITNESS: With the exception of travel
3 time. I do not charge for travel time.

4 BY MR. MC CONNELL:

5 Q But you're being compensated for the time you're
6 spending here in the deposition today?

7 A That's correct.

8 Q And whatever additional days are needed to
9 complete the deposition?

10 MR. BRAY: Same objection.

11 THE WITNESS: That's correct.

12 BY MR. MC CONNELL:

13 Q Have you testified for Monsanto in other cases,
14 Dr. Kelly?

15 A Do you mean by testifying in a trial or in a
16 deposition?

17 Q Let's break it down. Let's talk about
18 depositions first.

19 A Yes, I have.

20 Q On how many occasions, sir?

21 A 15, give or take two or three.

22 Q Have you testified for Monsanto in court on

1 other cases?

2 A Well, I've testified in court. I've been called
3 as a witness by Monsanto, if that's what you mean
4 testifying for them.

5 Q Yes.

6 A I was either testifying as a fact witness or an
7 expert witness in various cases.

8 Q And how many occasions have you testified for
9 Monsanto in court, Dr. Kelly?

10 A In court?

11 Q On how many occasions?

12 A Five to 10, I guess.

13 Q How many of those were as an expert witness,
14 Dr. Kelly?

15 A I guess if I testified five to 10, I would say
16 four to eight were as an expert witness.

17 Q And how many as a fact witness?

18 A One or two.

19 Q In this case, has Monsanto asked you to testify
20 as an expert witness?

21 MR. BRAY: Object to that. The time for
22 designating expert witnesses has not arrived yet.

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1 THE WITNESS: I don't know in what capacity I
2 will be testifying.

3 BY MR. MC CONNELL:

4 Q Monsanto hasn't asked you to testify as an
5 expert?

6 MR. BRAY: Objection. Asked and answered.

7 THE WITNESS: No, they haven't really spelled
8 out what my position in this trial is going to be.

9 BY MR. MC CONNELL:

10 Q Do you own stock in Monsanto, Dr. Kelly?

11 A Yes, sir.

12 Q Do you recall that Monsanto had a stock option
13 program for its top officers and key employees?

14 A Yes, sir.

15 Q And were you one of the key employees who
16 received stock options?

17 A I did receive stock options in 1972 and '73. I
18 obviously have not received any options since, because I
19 retired in '74.

20 Q While you were employed by Monsanto as medical
21 director, you did receive stock options?

22 A Yes, sir.

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1 Q And was that true in the 1950s as well as in the
2 1970s?

3 A I don't think I received any in the '50s. In
4 fact, I'm not sure whether they had stock option plans at
5 that time.

6 MR. MC CONNELL: Let me show you a document,
7 sir, which we will mark as Kelly Exhibit 1.

8 Kelly Exhibit 1 identified.

9 BY MR. MC CONNELL:

10 Q You see, Dr. Kelly, this is a document which
11 consists of the minutes of a meeting of Monsanto's board
12 of directors on November 11, 1954?

13 A Yes, sir.

14 Q I'd like you to turn, sir, to the page -- you'll
15 see there's some page numbers in the upper right-hand
16 corner on each page. I'd like to ask you to turn to page
17 219. Would you tell me when you have that.

18 A Yes, sir.

19 Q And in the first full paragraph on that page,
20 the minutes read "The Chairman stated that the stock
21 option committee appointed by this board at its April 24,
22 1951 meeting has recommended the granting of additional

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1 options to purchase a total of 49,500 shares of this
2 company's unissued common stock to 37 other officers and
3 key employees of the company."

4 Do you see that, sir?

5 A Yes, sir.

6 Q And does that refresh your recollection that
7 there was a stock option program at Monsanto in the 1950s?

8 A Yes, sir.

9 Q And I'd like you to look down near the bottom of
10 the list of names in this paragraph. Do you find your
11 name there?

12 A Yes, I do.

13 Q Do you see that you had options that year for
14 750 shares?

15 A Yes, sir.

16 Q Does that refresh your recollection that you did
17 receive stock options back in the 1950s?

18 A Yes, sir, it does.

19 Q And was that on an annual basis? Did you
20 receive other stock options in other years?

21 A Later on I did. I had forgotten all about
22 this. That was not a very big number. Yes, I did. There

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1 was a second considerably later. I thought that was 10
2 years or so after that that I received a larger amount of
3 shares.

4 Q So from time to time, starting at least in the
5 1950s, you did receive stock options --

6 A Not from time to time. I can only recall two
7 times that I ever received it.

8 MR. BRAY: I'm late at getting this in. I
9 object to the question, the distorting and
10 mischaracterizing the witness' testimony, but he's already
11 answered.

12 MR. MC CONNELL: Yes, he has.

13 BY MR. MC CONNELL:

14 Q You still own Monsanto stock?

15 A I beg your pardon?

16 Q Do you still own Monsanto stock?

17 A Yes, I do.

18 Q How many shares, Dr. Kelly?

19 A Oh, 1500 or something.

20 Q Dr. Kelly, I'd like to go back to the time when
21 you were serving as the plant physician at the Queeny
22 Plant. We've talked a little bit about the work that you

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1 did in that job. I'd like for you to tell me whether
2 there were any other job responsibilities that you had at
3 that time in connection with your job as plant physician?

4 A Well, I don't really believe that I mentioned
5 what responsibilities I had as a plant physician.

6 Q Why don't we go back to that, then, and tell me
7 what your job responsibilities were.

8 A It was to carry out a preventive medical program
9 by examining, by monitoring the health of the employees to
10 see if they had any incipient diseases which were not
11 occupational in scope, such as diabetes or high blood
12 pressure.

13 MR. MC CONNELL: Why don't we go off the record
14 for just a minute.

15 Discussion off the record..

16 [Recess.]

17 BY MR. MC CONNELL:

18 Q Dr. Kelly, we were interrupted by the window
19 washer and clanging against the window outside the room
20 and I think in fairness to you, I'd like to go back and
21 get you to restart your answer to this question. Is that
22 all right with you?

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1 A Certainly.

2 MR. MC CONNELL: Why don't we have you read back
3 the question, if you would.

4 (The reporter read the record as requested.)

5 THE WITNESS: It was to carry out a preventive
6 medical program for the employees, which consisted mainly
7 of monitoring their health through periodic examinations,
8 and that was to find out any incipient diseases which are
9 common to all mankind, such as diabetes, hypertension,
10 et cetera, under the theory that if you caught these in
11 their incipient stage, you would be able to forestall more
12 serious illnesses down the road. Obviously, if there were
13 any illnesses that could be produced by their work
14 situation, you would endeavor to pick up anything abnormal
15 if that had occurred.

16 It also meant that I was supposed to visit their
17 workplace to see if I was able to ascertain whether there
18 was any undue exposure to the chemicals which they were
19 manufacturing or using. It was also my responsibility to
20 find out what was known or needed to be known about the
21 toxic characteristics of our raw materials as well as our
22 finished products.

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1 BY MR. MC CONNELL:

2 Q Was there anything else that was part of your
3 job responsibilities, Dr. Kelly, during the time frame
4 1936 to 1942?

5 A Well, later on, in the years closer to 1942, I
6 would answer inquiries from our various customers and/or
7 doctors as to what the effects of our finished material
8 might or might not have on their workers, on the
9 customers' workers. I think that's about the extent of
10 that.

11 Q Did that involve answering questions about the
12 toxicity of particular chemicals?

13 A Yes, sir.

14 Q Did you have any responsibility for pollution
15 abatement or waste disposal in those days?

16 A No, sir.

17 Q When you went back to Monsanto in 1946 as the
18 medical director, Dr. Kelly, what were your job
19 responsibilities?

20 A Well, there I had direct responsibility to see
21 that we had adequate medical installations in all our
22 various plants and laboratories, that we had a system for

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1 informing our customers through inclusion in our various
2 technical bulletins, our sales bulletins, our application
3 bulletins concerning the safe handling and toxicity
4 evaluation of our products. We -- then, of course, it was
5 almost a moving target. We then developed the industrial
6 hygiene department that allowed us to be more
7 sophisticated in analyzing the working environment of our
8 factories. We also had a more formal program for
9 evaluating the toxicity of our products.

10 Q What do you mean by that, sir?

11 A Well, we later developed a program in which when
12 any of our compounds reached a certain stage, for example,
13 if they were advertised in a bulletin, if they were sent
14 out to several different times, sample quantities, that we
15 would have a particular department that was handling this
16 or manufactured this product, that they had to submit what
17 we called a 201 or 202 file that had to give us the
18 information about the use of the product, the physical
19 characteristics of the product, so that we would decide
20 whether there was any toxicity information available for
21 this product and also whether or not, in our opinion, more
22 information or information would have to be obtained on

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1 that particular product.

2 Q Was it important to have toxicity information
3 about the chemicals that Monsanto was using at its plants?

4 A I beg your pardon?

5 Q Was it important to have toxicity information
6 about the chemicals that Monsanto was using at its plants?

7 A Yes, sir.

8 Q And why was that, sir?

9 A Because you wanted to protect the worker. If
10 you didn't know if the product were toxic or not and the
11 degree of toxicity, you'd do a pretty poor job of
12 protecting them.

13 Q And it was important to know about the toxicity
14 of the products that Monsanto was making at its plants?

15 A Yes, sir.

16 Q And why was that?

17 A We were selling it to the customers that we had
18 to give them safe handling instructions as far as using
19 the product was concerned.

20 Q Did you have any responsibilities for pollution
21 abatement or waste disposal when you went back to Monsanto
22 as the medical director in 1946?

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1 A Not in 1946 but in 195 -- the early 1950s, we
2 were authorized by the executive committee to review all
3 new plants, new processes and assure ourselves and report
4 to the central executive committee that the adequate
5 concern was given to the disposal of waste material. We
6 were not engineers, but we were -- our industrial hygiene
7 group were knowledgeable about waste disposal, and they
8 would be able to tell whether or not the information given
9 in the flow sheets was sufficient to have our waste
10 disposal program keep up with the state of the art of
11 waste management at that particular time. Obviously, that
12 varied from the 1950s to the 1970s.

13 Q Do you believe that Monsanto did keep up with
14 the state of the art on waste disposal?

15 A Yes, I do.

16 Q Do you believe that Monsanto was knowledgeable
17 about the ongoing scientific developments in waste
18 disposal technology during the time you were the medical
19 director for the company?

20 A Yes, I do.

21 Q And that was true from 1946 through your
22 retirement in 1974?

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1 A Well, I would say that we were more knowledge --
2 I was more knowledgeable from the 1950s to the 1974 --
3 early 1950s where the medical department was given -- 1952
4 or '53 we were given the responsibility for reviewing the
5 waste disposal methods and reporting to the executive
6 committee if we did not believe that they were taken care
7 of in an adequate fashion.

8 Q Were there other people who reported to you in
9 the medical department? And maybe we should start in 1946
10 when you started out as the medical director.

11 A When I started out, I had a secretary. Then the
12 next thing, I engaged a part-time physician who was a
13 member of the faculty of Washington University. Then we
14 engaged an industrial hygienist in 1947, I believe --

15 Q Let me stop you there and back up for a moment.
16 When you started in the medical department as medical
17 director in 1946, were there plant doctors at some of the
18 Monsanto plants across the country?

19 A Oh, yes, I was just talking of the corporate
20 medical department. Yes, we had doctors at our various
21 plants. They were usually part-time doctors. We may have
22 had one full-time doctor in one of our plants and I'm just

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1 trying to think -- we had mostly part-time physicians, but
2 in the central medical department we hired first a
3 part-time associate physician.

4 Q And who was that, sir?

5 A George Saunders, who is dead. We hired an
6 industrial hygienist, Elmer Wheeler, in '47, who is also
7 dead, and that was followed by Jack Garrett, and I think
8 he came in '52 or '53. By the time I retired, we had four
9 industrial hygienists, four or five. I'm not sure.
10 Eventually, we hired several toxicologists and eventually
11 also we hired another full-time physician as my
12 associate.

13 (Pause.)

14 BY MR. MC CONNELL:

15 Q When you became the medical director in 1946,
16 Dr. Kelly, who did you report to in Monsanto?

17 A Gee, I don't know if it was vice president for
18 administration or vice president for -- once I reported
19 directly to the executive committee. It varied. I think
20 eventually, I reported to the vice president for
21 engineering. I reported to the vice president for
22 administration. I think I would go through a shuffle

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1 about every seven years at Monsanto and shuffle around the
2 chart, so I don't really know who was the first one I
3 reported to.

4 Q At times, did you report directly to the
5 president of the company?

6 A Well, the executive committee was -- as far as
7 reporting to the president, we were very close to him. We
8 were on a first-name basis and I had ample opportunity to
9 talk to him about anything that came up; whether I
10 reported to him or not, I could walk right in and talk to
11 him and say here's the problem I've got.

12 Q Was that true throughout the time you were the
13 medical director at the company from 1946 to 1974?

14 A Well, not right away in '46, but as it got -- we
15 were relatively small at that time and it was true, yes.

16 Q All the way through to the time that you retired
17 in 1974?

18 A That's correct.

19 Q You mentioned that Monsanto grew. Did Monsanto
20 buy or build additional plants as you went along?

21 A Did they?

22 Q Yes.

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1 A Oh, sure. They built them or acquired them. I
2 think we had 55 when I left.

3 Q That was in 1974?

4 A That's correct.

5 Q Was that 55 plants in the United States?

6 A Oh, probably 10 of those were ex-U.S.A. We had
7 two in Mexico, three in Canada, two in England, one in
8 Luxembourg, one in Germany. I guess there were 10
9 ex-U.S.A. ones.

10 Q Would it be fair to say, then, that you had
11 about 45 plants around the United States?

12 A That's correct.

13 Q And how many states were those in, do you know,
14 sir?

15 A How many states?

16 Q How many different states?

17 A 15.

18 Q Did you continue to visit the plant sites,
19 Dr. Kelly?

20 A Yes. Not as much after we had industrial
21 hygienists. They went there somewhat oftener and we had
22 the one full-time associate, one part-time associate, and

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1 they took over some of the plant visits, but I still got
2 around to certainly all the larger plants once a year, and
3 in some cases more than once a year. And in some cases
4 once every two years. And the small bottling plants where
5 we blew plastic bottles, we had 15 people that might go
6 there every two years or so.

7 Q Did you ever visit the Texas City plant?

8 A Yes, I did.

9 Q On how many occasions?

10 A Well, of course, we had that explosion on the
11 ship next to the plant, so at that time I was there about,
12 oh, 10 times at that particular episode.

13 Q That was in 1947?

14 A '46 or '47 -- '47, I guess. I'd say I was there
15 an average of twice every -- three times every two years or
16 so on the average, about every -- not twice a year all the
17 time but twice one year, once the next.

18 Q And that continued throughout the time you were
19 the medical director up through your retirement?

20 A That's correct.

21 Q When you were there, you talked with the plant
22 chemists and engineers?

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1 A Well, I talked with the plant manager, the plant
2 manufacturing superintendent, the physician, the safety
3 manager, the nurse at the dispensary.

4 Q Then you communicated in writing with these
5 people at other times?

6 A Yes, sir.

7 Q So you have some knowledge of the chemicals that
8 were used at the Texas City plant?

9 A Oh, yes, sir.

10 Q And would that be true also with respect to
11 Monsanto's other plants?

12 A Yes, sir.

13 Q And you have some knowledge of the products that
14 Monsanto made at the various plants?

15 A Yes, sir.

16 Q And also the waste streams that were produced at
17 those plants?

18 A Well, that might vary. I do know in some plants
19 where we had treatment plants, I would know what the waste
20 streams were going into the treatment plants. But mostly,
21 the knowledge about the waste disposal, both air and water
22 and solids, that knowledge rested with Jack Garrett and

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1 Elmer Wheeler. Wheeler was knowledgeable about the air
2 emissions, whereas Garrett was knowledgeable about the
3 water and the solid waste disposal.

4 Q Both Mr. Wheeler and Mr. Garrett reported to you
5 in the medical department?

6 A Yes, they did.

7 Q Let's talk a little bit about Mr. Wheeler's
8 responsibilities. Did he join the medical department in
9 1947? Am I right about that?

10 A Yes, sir.

11 Q Do you recall what his job title was at that
12 time?

13 A Yes. It was an industrial hygienist. He was
14 the sole one we had. Eventually, he became director of
15 industrial hygiene, but we had more than one industrial
16 hygienist. He also was -- eventually he was called
17 assistant. He did not have a medical degree, so he was
18 called the assistant director of the department, but he
19 was not called assistant medical director because he
20 didn't have an MD degree. But he administered, supervised
21 the toxicologists and the other industrial hygienists that
22 we hired.

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1 Q Mr. Wheeler was responsible, you said, for air
2 pollution matters?

3 A Well, I know that's a little all-encompassing
4 term, "air pollution matters." He was responsible for the
5 checking of the new plants and the major remodeling. He
6 was responsible for seeing that the air pollution
7 streams -- that the streams were taken care of, either by
8 flaring or by scrubbing, but he was not responsible for
9 the day-to-day operation of a plant to see whether there
10 was any undue emissions.

11 Q From the standpoint of the medical department,
12 he was the air pollution man? Would that be fair?

13 A Yes, sir.

14 Q What were his other job responsibilities?

15 A Well, he supervised, from an administrative
16 point of view, our toxicological work. He also supervised
17 the industrial hygienists' schedules and their work. He
18 answered quite a bit of correspondence about the safe
19 handling data -- safe handling methods to be used as far as
20 the plant environment was concerned in our customers'
21 plants, as well as our own plants, obviously.

22 Our customers' plants were only on request. We

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1 didn't routinely go out to the customers' plants. They
2 would let us in. It wasn't our responsibility. But on
3 requests -- there were requests that would come in for
4 toxicological information of a medical nature; I would
5 answer it. If it were of an engineering nature or an
6 industrial hygiene nature, Wheeler would answer. But we
7 both were familiar with each other's correspondence.

8 Q Could you tell me the difference, Dr. Kelly,
9 between things you're describing of a medical nature and
10 things that were of an industrial hygiene nature?

11 A Yes. Suppose a doctor or customer would write
12 in and say we're using one of your insecticides, how
13 should we handle it as far as protective garments for our
14 workers? How should we monitor it as far as our
15 manufacturing or blending operation would be concerned?
16 That would be Wheeler's. If somebody would write in and
17 say we've got two people who said they got heart attacks
18 and they believe that it's due to working with your
19 parathion, that would come to me because that would be
20 purely medical rather than engineeringwise.

21 Q So Mr. Wheeler reported to you, but his role in
22 the medical department was somewhat different than yours.

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1 Is that fair?

2 A Yes, sir. He was an expert in his field. I was
3 an expert in my field.

4 Q Would you say that Mr. Wheeler was highly
5 competent in his field?

6 A Oh, yes. He had been an industrial hygienist
7 for the Army laboratory. He was in charge of the state
8 bureau of industrial hygiene for one of the New England
9 states. I don't know if it was New Hampshire or Vermont.
10 It was not Massachusetts, but it was one of the other
11 ones. So he was very well thought of. He was eventually
12 president of the Industrial Hygiene Association of
13 America, so he was quite a well-known authority in
14 industrial hygiene.

15 Q And did you rely on Mr. Wheeler for industrial
16 hygiene matters?

17 A Yes, sir.

18 Q Would you describe yourself as an expert on
19 industrial hygiene matters?

20 A I got more familiarity with it than most
21 physicians, but I'm not an expert on industrial hygiene.

22 Q And do you consider yourself an expert on air

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1 pollution?

2 A No, I'm not an expert on air pollution.

3 Q Let's talk about Mr. Garrett. You said he
4 joined the medical department in 1952 or 1953?

5 A Yes, sir.

6 Q Where was he before that, sir?

7 A Texas City.

8 Q He was a Monsanto employee at Texas City?

9 A That's correct.

10 Q What's the last time you talked with
11 Mr. Garrett?

12 A Oh, two weeks ago.

13 Q Did you talk about his deposition in this case?

14 A No. I talked to him about a different case.

15 Q Another Monsanto case?

16 A That's correct.

17 Q Have you ever discussed this case with
18 Mr. Garrett?

19 A I may have. I really don't recollect much of
20 any discussion with him about it.

21 Q By the way, is Mr. Wheeler still alive?

22 A No, he's dead.

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1 Q When Mr. Garrett came to work in the medical
2 department in St. Louis, did he report directly to you?

3 A No, to Wheeler.

4 Q So Garrett reported to Wheeler and Wheeler
5 reported to you?

6 A That's correct.

7 Q How much direct contact did you personally have
8 with Mr. Garrett?

9 A Oh, gosh, I saw him every day. I ate lunch with
10 him every day. We were in an office around an open area
11 about the size of this table, and Wheeler's office opened
12 into it and mine opened into it and Garrett's opened into
13 it, and I saw him -- we had lots and lots of contact.

14 Q What were Mr. Garrett's job responsibilities in
15 connection with water pollution and solid waste disposal?

16 A I didn't hear the last phrase, "job
17 responsibilities" --

18 Q Let me rephrase it for you. What were
19 Mr. Garrett's job responsibilities in connection with
20 water pollution and solid waste disposal?

21 A They varied. He was of assistance to the plants
22 in dealing with the various regulatory state and federal

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1 bodies. He was responsible for seeing and reporting to
2 the executive committee that the matter of water and solid
3 waste disposal was taken care of adequately and all new
4 manufacturing facilities and major changes. He was not
5 responsible for the day-to-day operation of the plants of
6 their water pollution abatement programs. That was a
7 plant function of the plant engineering and plant
8 manufacturing groups.

9 Q There would be people at each of the different
10 plant locations responsible for that?

11 A Yes, sir.

12 Q But in terms of the medical department,
13 Mr. Garrett was the water pollution and solid waste
14 disposal man?

15 A He was the point man for that, yes.

16 Q And he reported directly to Monsanto's executive
17 committee?

18 A He did?

19 Q Yes, sir.

20 A Garrett? No. I mean -- well, he reported
21 through Wheeler and through me. I'm sure Garrett
22 reported -- not reported, but was called in by members of

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1 the executive committee on an ad hoc situation. He had
2 pretty close access to the executive group of Monsanto.

3 Q Who was on the executive committee that you
4 referred to?

5 A The president, chairman of the board, the
6 general counsel and the vice president for manufacturing
7 and the vice president for research and the vice
8 president, I guess, for marketing.

9 Q Anybody else you can think of?

10 A There may have been some -- there were about five
11 or six others. They had two committees, one corporate
12 development committee and one executive committee, and
13 they were really -- the personnel were the same in both and
14 I don't really know what the difference was in their
15 duties, but that's about the -- it was the top brass of the
16 company, though.

17 Q Did you serve on that committee, sir?

18 A No, I didn't, unfortunately.

19 Q What job responsibilities did Mr. Garrett have
20 other than those that you've mentioned?

21 A Well, I did mention that he was called upon by
22 the various plants for interpretation of various

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1 government edicts and he was also called upon sometimes to
2 appear with them before state or federal bodies. I don't
3 know what some other responsibilities may come to my
4 mind. I'm not sure what other --

5 Q Was he responsible for any industrial hygiene
6 matters like those that Mr. Wheeler handled?

7 A Yes, but then after a while, we got other
8 industrial hygienists, and he spent more of his time with
9 waste abatement programs.

10 Q Was Mr. Garrett highly competent at his job?

11 A Very much so.

12 Q Did you rely on him in the water pollution and
13 waste disposal areas?

14 A Yes, I did.

15 Q You trusted his judgment on those matters?

16 A Yes, sir.

17 Q Do you consider yourself to have any expertise
18 in the area of pollution abatement or waste disposal?

19 A Well, I have some but nothing compared to
20 Garrett, nothing compared to a man who is a geologist or
21 hydrologist. I'd say as far as a physician is concerned,
22 I'm fairly knowledgeable in it but nothing approaching the

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1 expert status.

2 Q Would it be fair to say throughout the time you
3 were working at Monsanto, Mr. Garrett was the one who was
4 responsible for water pollution abatement and waste
5 disposal matters in the medical department?

6 A Well, wait. You've said responsible for water
7 pollution abatement in the medical department. What he
8 was responsible for was to assure the corporate management
9 through the medical department that the plants were giving
10 adequate and sufficient attention to seeing that their
11 waste disposal matters were state of the art, that they
12 were up to -- that he was not -- now, that was in new
13 installations. He was not responsible for checking the
14 Mississippi River to find out if the different plants
15 along the Mississippi River were putting anything in there
16 that they shouldn't have. That wasn't his
17 responsibility. That's the plant management's
18 responsibility.

19 But he would certainly talk with these people
20 and find out what they were doing. So from the medical
21 department, he was our conduit of information that could
22 convince us that the plants were up to scratch.

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WATER_PCB-SD0000062683

1 Q From the standpoint of the medical department,
2 he was the man on water pollution and waste disposal?

3 A That's correct.

4 Q And that was true up until your retirement in
5 1974?

6 A That's correct.

7 Q Dr. Kelly, we've been going for a while. Why
8 don't we take a real short break.

9 A Okay. Fine.

10 (Recess.)

11 BY MR. MC CONNELL:

12 Q Dr. Kelly, I think you told me earlier it was
13 part of your responsibility as the medical director to
14 answer questions about the toxicity of chemicals used at
15 the Monsanto plants in Monsanto products?

16 A Yes, sir.

17 Q Did you keep up with the medical literature
18 about the toxicity of those chemicals?

19 A Following my retirement?

20 Q No, sir. I'm talking about the time when you
21 were actively working as the medical director for the
22 company.

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1 A Yes, sir.

2 Q And you followed the scientific studies that
3 were being done on the toxicity of those chemicals?

4 A Yes, sir.

5 Q And did Monsanto sometimes conduct its own
6 toxicology tests?

7 A Yes, sir.

8 Q I believe you've told me that there were some
9 toxicologists, at least in the later years, on Monsanto's
10 staff in the medical department?

11 A Yes, sir. We ended up with four, I think.

12 Q By the time you retired?

13 A Yes, sir.

14 Q Did you also have toxicology tests conducted by
15 outside laboratories?

16 A Yes, sir.

17 Q And did you get information about the toxicity
18 of chemicals from other chemical companies?

19 A Other chemical --

20 Q Other chemical companies.

21 A Oh, yes, there was a pretty free exchange. In
22 other words, if we had a product that was a me-too

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1 product, that means that du Pont would manufacture it
2 before, I would call up the medical area in du Pont and
3 say what do you know about this? Do you have any trouble
4 with it? Do you have any published data on it? And he
5 would tell me the same thing we would do for him, so we'd
6 get that information. And then there were the various
7 bodies like the Manufacturing Chemists Association that
8 had medical committees that disseminated information.

9 Q Can you tell me some of the major chemical
10 companies that you dealt with exchanging information about
11 toxicity?

12 A Dow, du Pont, Carbide. There may be one or two
13 others. Those are the ones that ring a bell.

14 Q Those are the major ones that you dealt with?

15 A Well, I was on their medical committee of the
16 Manufacturing Chemists Association for quite a number of
17 years. I was chairman for about three or four years and
18 so the personnel of that committee would vary -- would
19 change from over the years, so I was pretty close to all
20 the medical directors of that group.

21 Q What is the Manufacturing Chemists Association,
22 sir?

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1 A It's a different name now, but it was a group of
2 all the major and submajor chemical companies. There are
3 about 50 members, I believe, and they have an office in
4 Washington, and they put out safety bulletins and they put
5 out -- they have all sorts of legal committees. They've
6 got traffic committees. They've got labeling committees.
7 They've got all sorts of committees and medical
8 committees.

9 Q During what years were you on the medical
10 committee for Manufacturing Chemists Association?

11 A '50s and '60s, I guess.

12 Q Was that organization referred to as the MCA in
13 those days?

14 A That's right.

15 Q It's now known as the Chemical Manufacturers
16 Association?

17 A Yes.

18 Q Would it be fair to say, Dr. Kelly, that during
19 the '50s and '60s, you kept up with the state of the art
20 on toxicity?

21 A Also the '70s, yes, sir.

22 Q I didn't mean to exclude the '70s. Throughout

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1 that time period.

2 A Yes, sir.

3 Q Did Mr. Garrett keep up with the scientific
4 literature during the '50s and '60s on water pollution and
5 waste disposal?

6 A Oh, yes, he was a voracious reader. He came up
7 with them. He was very active in any number of regional
8 water pollution activities like the Ohio River, ORSANCO.
9 I don't know what the initials spelled but it was the Ohio
10 River Sanitary Water Commission or something like that.

11 Q Did you personally keep up with the scientific
12 literature during those years on water pollution and waste
13 disposal, or did you leave that to Mr. Garrett?

14 A I left it to Garrett.

15 Q Was Mr. Garrett active in the Manufacturing
16 Chemists Association in their activities?

17 A Yes, on their water pollution committee. He was
18 a good joiner of it. He was on most of the committees.

19 Q So during those years, would it be fair to say
20 that Mr. Garrett was familiar with the state of the art on
21 water pollution and waste disposal?

22 A No question about it.

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WATER_PCB-SD0000062688

1 Q Did Mr. Garrett write published scientific
2 articles from time to time?

3 A Yes, he did.

4 Q And he presented papers at scientific meetings?

5 A Yes, he did.

6 Q Was there a policy at Monsanto that required him
7 to get approval from you or from Mr. Wheeler before
8 publishing an article?

9 A No. I don't know if there was a policy, but he
10 never asked me. I mean, I never even knew he was going to
11 write one. So I don't know if there's any other policy in
12 any other departments but if he was going to write
13 something, he wrote it.

14 Q Do you know whether Mr. Wheeler would have
15 reviewed those before publication?

16 A I don't know.

17 MR. MC CONNELL: Dr. Kelly, let me show you a
18 document which we will mark as Kelly Exhibit 2.

19 (Kelly Exhibit 2 identified.)

20 BY MR. MC CONNELL:

21 Q Do you have that in front of you now, Dr. Kelly?

22 A Yes, I do.

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WATER_PCB-SD0000062689

1 Q Is this an organizational chart for Monsanto's
2 medical department from April 1962?

3 A Yes, it is.

4 Q And you see you're in the very top box listed as
5 the director?

6 A Yes, sir.

7 Q And there's an assistant director in the box
8 right below your box. Who is that, sir?

9 A Maurice Johnson. He left us in 1971, I believe,
10 to go with B.F. Goodrich. He's retired from B.F. Goodrich
11 now and lives in Ohio, and he is living.

12 Q Was he a medical doctor, sir?

13 A Yes, he was.

14 Q What were the nature of his responsibilities at
15 that point in time?

16 A Well, he came to us from Chemstrand, which was
17 our fiber division, and he really -- he was our medical
18 director and he continued that supervision over those
19 plants. There were about five or six plants that they
20 had, two in Europe and five in the United States, and then
21 he -- most of my activities, I mean. When I was out of
22 town, he was the acting director. He did a lot of work

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1 similar to me.

2 Q Did he have any responsibility for water
3 pollution or waste disposal matters?

4 A I don't know if it was that defined. I would
5 say, by and large, no.

6 Q His job was more similar to your job?

7 A That's correct.

8 Q And I want to make sure I understood you
9 correctly. The name you gave for the seven plants that he
10 was directly responsible for was Chemstrand?

11 A Chemstrand. Chemstrand was a company that was
12 formed by Monsanto and American Viscose and eventually we
13 bought out American Viscose. And he was their medical
14 director and he came with us, I think, in 1956, I believe,
15 or around the late 50s.

16 Q Did the Chemstrand plants have anything to do
17 with the operations at Monsanto's Texas City plant?

18 A I'm sorry, I didn't hear you.

19 Q Did the Chemstrand plants have anything to do
20 with the operations at Monsanto's Texas City plant?

21 A Well, we used their acrylonitrile.

22 Q The acrylonitrile was made at the Texas City

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WATER_PCB-SD0000062691

1 plant?

2 A That's correct.

3 Q And it was shipped to the Chemstrand plants?

4 A Spun it to acrilan, a-c-r-i-l-a-n.

5 Q Were there any other products made by
6 Chemstrand?

7 A Nylon.

8 Q Nylon didn't have anything to do with the Texas
9 City plant?

10 A No.

11 Q Were there any other Chemstrand products you
12 recall?

13 A I don't remember. I don't think so.

14 Q Let's go back to the chart, Dr. Kelly. Do you
15 see on the chart that Elmer Wheeler is listed as the
16 manager of environmental health; is that right?

17 A Yes, sir.

18 Q And below him, Mr. Garrett is listed as the
19 manager of industrial hygiene and pollution abatement; is
20 that correct, sir?

21 A Yes, sir.

22 Q And were there other people at this point in

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1 time, 1962, who reported to Mr. Garrett?

2 A I think we had a Dr. Carl Bohl, B-o-h-l. He was
3 a doctor of science. He was not an MD. I don't know when
4 he came on board, but it was around that time. These
5 charts -- as I said, there was an upheaval every seven
6 years or so, and the titles would vary. First of all,
7 they would say we're not going to have anybody -- a
8 director that -- there'd be all managers and seven years
9 later they'd say well, we're going to have some directors
10 reporting to directors. So Wheeler was also -- one of the
11 charts would break it down to -- they all reported in the
12 same fashion here but they had different titles. Wheeler
13 was an assistant director of the department and Johnson
14 was called assistant medical director.

15 Q And when you say the titles changed, it was true
16 that Mr. Wheeler remained in the medical department. He
17 might have had a different title, but his job function
18 remained essentially the same?

19 A Yes, his reporting position was the same, also.

20 Q And the same would be true of Mr. Garrett?

21 A Yes, sir.

22 Q In the box next to Mr. Garrett, there's another

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1 box with the name W.H. Hunt, and he's listed as
2 toxicologist. When did he join the company?

3 A I beg your pardon?

4 Q When did he join the company?

5 A I think around 1960. He's dead. He was
6 responsible for correlating our outside toxicological work
7 with various laboratories we used.

8 Q Were there other toxicology people who reported
9 to Mr. Hunt in 1962?

10 A I don't think so. Eventually, we had, I think,
11 four toxicologists, but I don't know when they came on.
12 The last one came on in about '71, and the other two were
13 in there someplace, 1960, 1970.

14 Q And just to round out the chart, if you look at
15 the left, there's also a block for general offices
16 dispensary?

17 A Yes, sir.

18 Q And there's a Dr. Mezera listed there?

19 A Yes, sir.

20 Q And there's another block for plant medical
21 dispensaries. There are no names there.

22 A Well, that probably should be a dotted line

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1 because they were not -- we had a full-time doctor at the
2 Queeny Plant. We had three full-time doctors at our
3 Chemstrand plant but they were not medical department
4 personnel. So it really should be a dotted line.

5 Q So leaving aside the plant medical dispensaries
6 for the moment, Dr. Kelly, how many doctors and other
7 professional personnel did you have in the medical
8 department at the corporate level in St. Louis in 1962?

9 A I don't remember. I mean, obviously we had
10 these people and whether we had some of our -- some more
11 industrial hygienists in 1962, I'm not sure. When
12 Dr. Carl Bohl came in, I know we didn't get a
13 toxicologist, a second one, until later in the '60s. We
14 had one, two, three, four -- we had about eight
15 professional people there.

16 Q And do you recall, at the time you retired in
17 1974, how many professional people were working in
18 Monsanto's medical department at the corporate level in
19 St. Louis?

20 A One, two, three -- about 12 or 13, I think.

21 Q If you added in the people in the plant medical
22 dispensaries and counted those as well, what would the

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1 number be?

2 A Gee, I'd have to -- right off the top of my head,
3 I couldn't give you those figures because we had a
4 full-time doctor -- there's our friend.

5 MR. MC CONNELL: Let the record reflect that the
6 window washer has returned. Would you like to break for
7 just a moment, Dr. Kelly?

8 THE WITNESS: Fine.

9 (Discussion off the record.)

10 BY MR. MC CONNELL:

11 Q Dr. Kelly, once again, the window washer, I
12 think, has interrupted our train of thought and I'll ask
13 the reporter to go back and read the last question and
14 give you a fair chance to answer it.

15 (The reporter read the record as requested.)

16 THE WITNESS: At the corporate level, probably
17 12 to 14, I think. We had a librarian in there, and I
18 guess 12 to 14.

19 BY MR. MC CONNELL:

20 Q That's at the corporate level, not counting the
21 plant dispensaries?

22 A That's correct.

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WATER_PCB-SD0000062696

1 Q Do you have any idea how many doctors and other
2 professional people would have been involved in the plant
3 dispensaries?

4 A I'd have to add them up. For example, at
5 Pensacola, we had three full-time doctors. At Decatur we
6 had one. At Anniston we had one. At Columbia, Tennessee
7 we had two part-time doctors. At Texas City, we used a
8 clinic and at Chocolate Bayou we had two part-time
9 doctors. And at Springfield, we had a full-time doctor.
10 At Merrimac we had a part-time doctor. At Krummrich we
11 had two part-time doctors. There are probably some I've
12 forgotten.

13 Q You had a substantial number of doctors on the
14 staff?

15 A Yes, no question.

16 Q We talked about Mr. Hunt, the toxicologist.
17 What were his credentials, sir? Was he an MD?

18 A He was a PhD.

19 Q Do you know in what field?

20 A I beg your pardon?

21 Q In what field?

22 A Pharmacology. He was a toxicologist at Johnson

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WATER_PCB-SD0000062697

1 & Johnson, the pharmaceutical company, when he came with
2 us.

3 Q The doctors at the Texas City plant, sir, could
4 you tell me what arrangements there were at Texas City.

5 A It was a Beeler-Manske, B-e-e-l-e-r-M-a-n-s-k-e,
6 clinic. Dr. Manske was our main individual who visited
7 the plant. He was one of the founders of the clinic.

8 Q Were there other doctors who also helped
9 Dr. Manske there?

10 A Yes. Beeler, he was mainly the surgeon and they
11 had three or four other physicians who were -- they might
12 have come over to our place in an emergency or we would
13 send our people over to the clinic.

14 Pause.

15 Whereupon, at 12:00 p.m., the deposition was
16 recessed, to be reconvened at 1:00 p.m. this same day.

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1 AFTERNOON SESSION (1:06 p.m.)

2 Whereupon,

3 R. EMMET KELLY

4 resumed the stand and, having been previously duly sworn,
5 was examined and testified further as follows:

6 EXAMINATION (Continued)

7 BY MR. MC CONNELL:

8 Q I see you're setting your watch, Dr. Kelly.
9 We'll give you a minute.

10 A Consider it set.

11 Q I'd like to talk with you this afternoon,
12 Dr. Kelly, about some of the chemicals that were used at
13 Monsanto's Texas City plant. What is hydrogen cyanide,
14 Dr. Kelly?

15 A It's one molecule of hydrogen and a cyanide
16 molecule, which is carbon and nitrogen. HCN.

17 Q The chemical symbol for that is HCN?

18 A HCN.

19 Q And is that a chemical that was used at the
20 Texas City plant, sir?

21 A Yes, sir.

22 Q What was it used for?

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1 A I don't remember now. I say I do not remember
2 now. I think it was used in the manufacture of
3 acrylonitrile. I don't remember the exact use of it or
4 the flow sheet of the acrylonitrile plants.

5 Q But it was used in the acrylonitrile process?

6 A In the what?

7 Q It was used in the acrylonitrile manufacturing
8 process?

9 A That's correct. Yes.

10 Q Would it be fair to say that hydrogen cyanide is
11 an extremely toxic chemical?

12 A Yes, no question. Used for death chambers.

13 Q It's used for executions?

14 A Yes.

15 Q Kills within minutes?

16 A Yes.

17 Q Was there hydrogen cyanide contamination in some
18 of the waste materials from the acrylonitrile process at
19 the Texas City plant?

20 A Well, I can't answer that, whether that was the
21 hydrogen cyanide was combined with other chemicals or
22 not. I just cannot answer that but I'm sure there was

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WATER_PCB-SD0000062700

1 some hydrogen cyanide, either in pure form or combined
2 form, in some of the waste streams, yes, sir.

3 Q Was the toxicity of hydrogen cyanide known in
4 the 1940s?

5 A Yes, sir.

6 Q 1930s?

7 A Yes, sir.

8 Q Known to you at those times?

9 A I beg your pardon?

10 Q Was it known to you at those times?

11 A Yes, sir.

12 Q And known to Monsanto?

13 A Yes, sir, it was known.

14 Q What is cyanogen chloride, Dr. Kelly? Let me
15 spell that for you, c-y-a-n-o-g-e-n, c-h-l-o-r-i-d-e, two
16 words.

17 A It has a cyanide molecule with a chlorine atom:
18 with one or two chlorines. I don't remember.

19 Q And it's a chemical that's related to hydrogen
20 cyanide?

21 A Yes, it was one of the -- hydrogen cyanide was
22 one of the building blocks of cyanogen chloride.

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WATER_PCB-SD0000062701

1 Q That's a chemical that was used at the Texas
2 City plant?

3 A To the best of my recollection, yes. I don't
4 recall too much about it at the present date.

5 Q Do you remember there was a cyanogen chloride
6 off-gas from one of the acrylonitrile processes at the
7 plant?

8 A I don't remember.

9 Q How toxic is cyanogen chloride, Dr. Kelly?

10 A Not nearly as toxic as hydrogen cyanide, but I
11 can't give you the relative toxicity of it.

12 Q Do you know whether cyanogen chloride was used
13 in manufacturing military war gases?

14 A I'm not sure. I think I recall something about
15 it, but the war gas -- my experience with war gases was 50
16 years ago.

17 Q Yes, sir. That would have been during World War
18 II?

19 A Yes, sir.

20 MR. MC CONNELL: Let me show you a document,
21 Dr. Kelly, that we will mark as Kelly Exhibit 3.

22 (Kelly Exhibit 3 identified.)

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1 BY MR. MC CONNELL:

2 Q Dr. Kelly, do you recognize this as a memo that
3 you received from John Fox about April 11, 1957?

4 A Well, I certainly received it from John Fox.

5 Q And it's dated April 11, 1957?

6 A That's correct.

7 Q It's on a Monsanto Chemical Company letterhead?

8 A Yes, it is.

9 Q Who was John Fox?

10 A He was sort of research/safety/industrial
11 hygiene, sort of an unfrocked industrial hygienist at
12 Texas City. He was an employee of Texas City. I think he
13 was part research, part safety, part industrial hygiene.

14 Q If I could direct your attention to the first
15 paragraph of the memo, Dr. Kelly, Mr. Fox says "As you
16 know, we have a unit in the pilot plant where we are
17 making cyanuric chloride." Do you see that, sir?

18 A Yes, sir.

19 Q And further down, he points out that "we are
20 getting ready to start collecting the cyanogen chloride
21 off-gas for recycle to the unit." Do you see that, sir?

22 A Yes, sir.

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1 Q And does that refresh your memory that there was
2 a cyanogen chloride off-gas from the process?

3 A No, sir, it doesn't.

4 Q And looking -- you just don't remember one way or
5 the other?

6 A I don't remember. It was a pilot plant
7 operation. I don't know if it ever went to full scale
8 manufacturing or not. I don't know. I don't remember.

9 Q If we wanted to know about that, we might be
10 able to ask Mr. Fox?

11 A I beg your pardon?

12 Q If we wanted to know about that, we might be
13 able to ask Mr. Fox?

14 A Sure. He ought to remember it better than I.

15 Q And Mr. Fox goes on to say that he'd like to
16 collect all available information on cyanogen chloride; is
17 that correct, sir?

18 A Yes, sir, that's what he asks for.

19 Q He goes on to talk in the second paragraph about
20 some source materials that he's been looking at and the
21 first one he refers to is a book called "Handbook of
22 Dangerous Materials" by Sax. Do you see that, Dr. Kelly?

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1 A Yes, I do.

2 Q Is that a reference that Monsanto used in the
3 1950s at the time we're talking about?

4 A It may be. Some individuals at Monsanto used
5 it, but I do not believe that Sax was accepted as a
6 top-drawer expert on toxicity. His handbook, which went
7 through several editions, was more popular with the
8 nonscientific community than it was with the scientific
9 community.

10 Q It looks like Mr. Fox was using the Sax
11 reference here, doesn't it?

12 A Yes, it does.

13 Q Let's take a look at the next one, a book called
14 "Industrial Hygiene and Toxicology" by Patty. Are you
15 familiar with that, sir?

16 A Yes. Patty was a well-known industrial
17 hygienist at one of the states. I don't know if it was
18 the Midwestern or New England states.

19 Q Would you regard that as an authoritative
20 source?

21 A It all depends. I don't know the entire details
22 on it, and I'd have to -- I couldn't say I accepted it as a

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WATER_PCB-SD0000062705

1 reference in toto. It may have errors when it's dealing
2 with some of the compounds, but I don't recall.

3 Q Was it a work that you used on occasion in your
4 work as the medical director for Monsanto?

5 A Oh, we had it, I think. I didn't use it too
6 much. I think Wheeler used it more than anybody else in
7 the department.

8 Q Wheeler worked for you in the medical
9 department?

10 A Yes, that's correct.

11 Q Do you know whether Wheeler used the "Handbook
12 of Dangerous Materials" by Sax?

13 A I know he didn't give it a great deal of
14 respect.

15 Q There's another reference here called "The
16 Chemistry of Organic Cyanogen Compounds" by -- you might
17 have to help me with this, Mugerditchian?

18 A I can't help you with it. I never heard of it
19 before. On the document this is spelled
20 M-u-g-e-r-d-i-c-h-i-a-n.

21 Q You've never heard of this particular reference
22 before?

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WATER_PCB-SD0000062706

1 A No, I have no recollection of it.

2 Q Skipping down, it looks like Mr. Fox says in his
3 memo "Since this material was used in the manufacture of
4 military war gases, are there any government booklets
5 available from the Army Chemical Corps?" Does that ring a
6 bell with you that during the war the military had
7 experimented with the use of cyanogen chloride as a
8 military war gas?

9 A I remember something vaguely about it but I
10 don't remember any of the details. It was not a very
11 prominent war gas. Of course, we didn't use any war gases
12 in World War II and whether they manufactured it -- I know
13 they didn't manufacture it at Pine Bluff. They may have
14 manufactured it at Edgewood. Edgewood had sort of a
15 research group as well as a manufacturing group, but I
16 don't recall anything from my year at Edgewood about
17 cyanogen. I do recognize the name but I don't recognize
18 any more about it than that.

19 Q Would you agree that it's a toxic material?

20 A Frankly, I'm not in the position to evaluate
21 right at present.

22 Q You just don't know one way or the other?

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1 A One way or the other. When you say 'toxic,'
2 what are your parameters for toxicity?

3 Q Do you remember --

4 A It shouldn't be a household compound, I'll say
5 that. You wouldn't want it in your kitchen, I don't
6 think.

7 Q Or your drinking water?

8 A Well, I don't know -- it depends on the level.

9 Q You wouldn't put it in your coffee?

10 A Are we talking about a drop or five
11 tablespoonsful? I don't think it's intended for coffee.
12 It's certainly not a food chemical.

13 Q Do you remember whether there was a concern at
14 the time about the exposure of the Monsanto workers to
15 cyanogen chloride?

16 A No, sir, I don't remember any such concern.

17 Q You don't remember one way or the other?

18 A I don't remember hearing any.

19 Q But you did receive this memo from Mr. Fox?

20 A I can't hear you.

21 Q You did receive this memo from Mr. Fox?

22 A Oh, certainly. It was it was a concern on John

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1 Fox's part.

2 MR. MC CONNELL: Could you read back to me.

3 (The reporter read the record as requested.)

4 BY MR. MC CONNELL:

5 Q If you look at the next paragraph of Mr. Fox's
6 memo, he says "Our possible sources of major exposure will
7 be to the toluene solvent, which will contain up to a
8 maximum of 10 percent dissolved cyanogen chloride, and to
9 the gas itself." Does that refresh your memory that there
10 was going to be a worker exposure to cyanogen chloride in
11 the toluene solvent?

12 A No, because again, this is a pilot plant
13 operation, and I don't know how large it was, how long it
14 ran or whether it was discontinued after months or whether
15 it was an ongoing installation. I just don't know.

16 Q So you really don't remember this issue about
17 cyanogen chloride one way or the other?

18 A I don't remember much about it at all.

19 Q At we sit here today, you can't remember what
20 you knew in 1957 about the toxicity of cyanogen chloride?

21 A That's correct.

22 Q Before we leave this memo, do you see the

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1 reference to "toluene solvent" that we've just been
2 talking about, sir?

3 A Yes, sir.

4 Q Was toluene a chemical that was used at the
5 Texas City plant?

6 A When it was used there, whether it was separated
7 from benzene, which came from the stream from the oil
8 refineries, I don't know. They certainly had it in the
9 plant. Whether it was used in the manufacturing, I don't
10 recall.

11 Q But it was certainly present at the Texas City
12 plant?

13 A It was what?

14 Q It was certainly present at the Texas City
15 plant?

16 A Yes.

17 Q Were there occasions, Dr. Kelly, where Monsanto
18 workers were injured in cyanide spills?

19 A Were there occasions when Monsanto workers were
20 what?

21 Q Were injured in cyanide spills.

22 A In cyanide --

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1 Q Spills.

2 A Exposure?

3 Q Spills. Let me start over and I'll see if I can
4 speak up a little bit. Were there times when Monsanto
5 workers were injured in cyanide spills?

6 A Not that I recall. I don't think there were.
7 Our plant was an outside plant without walls and we had
8 suitable antidotes for cyanide, and I don't recall having
9 to use it at all, these antidotes.

10 MR. MC CONNELL: Let me show you a document,
11 Dr. Kelly, which we will mark as Kelly Exhibit 4.

12 (Kelly Exhibit 4 identified.)

13 BY MR. MC CONNELL:

14 Q If you'd like to take a moment and look that
15 over, Dr. Kelly.

16 A Yes, I will.

17 Q Have you had a chance to look that over,
18 Dr. Kelly?

19 A I beg your pardon?

20 Q Have you had a chance to look that over?

21 A I'm halfway through.

22 Q Take your time.

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1 A Yes, sir, I've read it.

2 Q Is this a letter that you got from Otto Smith in
3 1970, sir?

4 A Yes, it is.

5 Q It's dated September 28, 1970?

6 A Yes, sir.

7 Q And Otto Smith -- who was Otto Smith?

8 A He was one of the physicians at the
9 Beeler-Manske clinic.

10 Q And he did work for Monsanto at the Texas City
11 plant?

12 A Well, he was a member of the staff at
13 Beeler-Manske. And as I said before, the two principal
14 members of that staff that came over were Manske and
15 Beeler, but Smith came over at some times, and he
16 certainly filled -- any one of them would fill in on a
17 purchasing basis.

18 Q Would you read the first sentence of the letter
19 for us, Dr. Kelly?

20 A "We are still seeing the workmen who were
21 injured in the cyanide derivative spill."

22 Q Do you remember that spill now, Dr. Kelly?

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1 A No, I don't.

2 Q Do you remember receiving this letter from Otto
3 Smith?

4 A Now I do.

5 Q There had been a spill and some of the plant
6 workers had been injured by the cyanide materials?

7 A Yes, sir.

8 Q Do you remember how many workers were injured in
9 that spill, sir?

10 A No, sir, although he mentions -- he mentioned
11 five.

12 Q In the third paragraph, Dr. Kelly, Dr. Smith
13 tells you it's interesting that all seemed to have
14 cerebral signs and symptoms. They, of course, were
15 cyanotic. What does "cyanotic" mean?

16 A They're blue. They don't have enough oxygen and
17 that's noticeable in a peripheral circulation.

18 Q Is that a typical symptom of cyanide poisoning?

19 A Yes, it is.

20 Q And what does the phrase "cerebral signs and
21 symptoms" mean, Dr. Kelly?

22 A Well, a sign is something that physically is an

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1 objective occurrence. In other words, cyanosis is a
2 sign. Symptom might be a headache or unconsciousness.

3 Q And is that typical with cyanide poisoning?

4 A Yes, sir.

5 Q Further down in that paragraph there's a
6 reference to "wild thrashing, purposeless movements." Do
7 you see that, sir?

8 A Yes, sir.

9 Q Is that typical of cyanide poisoning?

10 A I would say so. It certainly could happen when
11 you're unconscious and when you don't have enough oxygen.

12 Q I think we can put that aside now.

13 A I think it should be noted that the fourth
14 paragraph where he says I have had occasion to use oxygen
15 on two cases this year. Neither of which was at all
16 related to exposure to cyanide or any cyanide derivative.

17 Q You don't interpret that as relating to the five
18 worker poisonings we were talking about?

19 A No.

20 Q Those were other patients seen at the clinic?

21 A Those were private cases of his. One was a
22 young girl and the other was a person who had a stroke.

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1 Q Not related to the cyanide spill we were talking
2 about?

3 A That's right. That's correct.

4 Q Dr. Kelly, what is AN catalyst tar? It's not on
5 the exhibit.

6 A What is --

7 Q What is AN catalyst tar?

8 A Spell the rest of it. AN --

9 Q Catalyst, c-a-t-a-l-y-s-t, tar.

10 A I don't know. I'll have to write that down and
11 look at it.

12 Q I can help you out, Dr. Kelly, because it
13 actually appears in a letter that you wrote. Let me show
14 you a document that we'll mark as Kelly Exhibit 5.

15 (Kelly Exhibit 5 identified.)

16 BY MR. MC CONNELL:

17 Q Do you recognize this as a memo that you wrote
18 on July 3, 1952, Dr. Kelly?

19 A Well, I certainly wrote it, and the date was
20 July the 3rd, 1952.

21 Q Is this your signature at the bottom of the
22 page?

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1 A Yes, it is.

2 Q And it's a memo to Mr. J.R. Mares, M-a-r-e-s, at
3 Texas City?

4 A That's correct.

5 Q And right beside the subject line on the memo it
6 says "AN catalyst tar." What is AN catalyst tar,
7 Dr. Kelly?

8 A It's a mixture of -- AN is acrylonitrile.
9 Catalyst is an additive that was used to make
10 acrylonitrile. They had various catalysts. The tar is
11 what was the chemical composition that remained in the
12 distillate column after the AN was manufactured.

13 Q Could the tar be known as still bottoms or heavy
14 ends?

15 A Yes, sir.

16 Q What catalysts were used in the acrylonitrile
17 process at Texas City, Dr. Kelly, do you know?

18 A I don't remember them. I think they were
19 butylenes. There were various catalysts but I don't know
20 them now.

21 Q Dr. Kelly, looking at the first sentence of your
22 memo, you say 'Some time ago you requested toxicity tests

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1 on the AN catalyst tar." Do you see that?

2 A Yes, sir.

3 Q And Monsanto had conducted some testing by the
4 time you wrote this memo?

5 A Yes, sir.

6 Q And looking again at your memo, the first page
7 of this exhibit, you reported that the AN catalyst tar is
8 moderately toxic?

9 A Yes, sir.

10 Q Was that a true statement at the time?

11 A Yes, sir.

12 Q Monsanto knew in 1952 that the AN catalyst tar
13 was moderately toxic?

14 A Yes. You have to remember that's by
15 classification. Other people may have different
16 classifications as far as toxicity was concerned. There
17 were no set standards, like boiling point, vapor pressure
18 and stuff like that.

19 Q Some people might think it was more toxic?

20 A Some might think it was less.

21 Q Your opinion is it was moderately toxic?

22 A That's correct.

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1 Q And that was your opinion at the time in 1952?

2 A That's correct.

3 Q Let me ask you to look at the third page of this
4 exhibit, Dr. Kelly, under "discussion," second paragraph.

5 A Yes, sir.

6 Q Is this part of the laboratory report on the
7 toxicity testing that was done? Is this part of the
8 laboratory report that was done on the toxicity testing?

9 A Yes, it is.

10 Q Would you read the part of that report that
11 begins at "autopsy."

12 A Yes, sir.

13 Q Would you read that for us?

14 A Yes, sir. Did I read it or will I read it?

15 Q Would you.

16 A At autopsy there were instances of spotted
17 livers suggesting possible dysfunction of that organ.
18 Otherwise, the viscera appeared normal by microscopic
19 examination.

20 Q In 1952 when you had this study done, Monsanto
21 knew that the AN catalyst tar could cause liver
22 dysfunction?

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1 A Well, we didn't know that and that's really -- if
2 you're taking acute tests and animals die in 12 to 24
3 hours, you really don't have time for any pathology to
4 show up. So this laboratory technician is looking at the
5 liver. It says spotting. I don't know what that means.
6 A microscopic examination of an acute toxicity test
7 doesn't tell you much, and I don't think I would put any
8 credence, plus or minus, in that second sentence.

9 Q And by the second sentence you mean "otherwise,
10 the viscera appeared normal" --

11 A No, the whole paragraph. "At autopsy there were
12 instances of spotted livers." I don't know what that
13 means. I don't know whether that occurred at the last
14 stages of the animal. After all when an animal has died
15 from an overdose of a compound, things happen in the
16 morphology of it and you get spotted livers from
17 collections of blood or collections of bile or God knows
18 what.

19 Q And this was a test to determine the minimum
20 lethal dose of AN catalyst tar; is that correct?

21 A That's correct.

22 MR. BRAY: Excuse me. I object. I'm sure this

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1 is unintentionally misleading, but you left something
2 rather significant out of that question.

3 MR. MC CONNELL: I object to your coaching. If
4 you have an objection --

5 MR. BRAY: It's a misleading --

6 MR. MC CONNELL: It's not a misleading question.

7 MR. BRAY: It's terribly misleading.

8 MR. MC CONNELL: And I object to your coaching.

9 MR. BRAY: You left something out of what you
10 purported to read and I can't believe you're intentionally
11 doing it but if you are, I'm going to let it sit with
12 that.

13 MR. MC CONNELL: Jack, first of all, I didn't
14 intentionally leave anything out, and secondly, I don't
15 think --

16 MR. BRAY: Why don't you put in the simple
17 fact --

18 MR. MC CONNELL: No, Jack. I object to the
19 coaching and if you persist in this, we'll seek an order
20 from Magistrate Rubenstein.

21 MR. BRAY: You can go ahead because this is
22 potentially outrageous to read something like that.

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1 MR. MC CONNELL: What is outrageous is your
2 deliberately and directly violating the Court's order.

3 MR. BRAY: You're looking at something and
4 intentionally leaving it out of your question, even though
5 you're both looking at it, to make the transcript appear
6 worse than it will be.

7 MR. MC CONNELL: No, sir, your objection is on
8 the record and I object to anything else.

9 MR. BRAY: You heard my objection.

10 THE WITNESS: May I have the question over.

11 MR. MC CONNELL: Let's read the question back.

12 (The reporter read the record as requested.)

13 BY MR. MC CONNELL:

14 Q Is that correct, Dr. Kelly?

15 MR. BRAY: Same objection.

16 THE WITNESS: That was the question. That was
17 not the title of this. It's for laboratory rats and the
18 oral dose for laboratory rats.

19 BY MR. MC CONNELL:

20 Q Let's break it down, then. The title or subject
21 of the test is the "Minimum lethal oral dose of
22 acrylonitrile catalyst tar, Monsanto lot number H 335, for

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1 laboratory rats in New Zealand white rabbits"; is that
2 correct, sir?

3 A Yes, sir.

4 Q That's the full title of the report. Was the
5 purpose of the test to determine the minimum lethal dose
6 for those animals?

7 A Yes, sir.

8 Q And the laboratory that did the test for you
9 reported that there was possible dysfunction of the liver;
10 is that correct?

11 A Suggested possible dysfunction.

12 Q Do you remember, Dr. Kelly, there were
13 discussions about the soot from the acetylene process at
14 the Texas City plant back in the 1950s?

15 A Yes, sir.

16 Q The acetylene process was the process used at
17 the Texas City plant?

18 A Yes, sir.

19 Q And was it part of the acrylonitrile
20 manufacturing process?

21 A Was it what?

22 Q Was the acetylene process part of the

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1 acrylonitrile manufacturing process there?

2 A It was one of the feedstocks or the building
3 blocks for it.

4 Q For acrylonitrile?

5 A That's correct.

6 Q Do you remember discussing the possibility that
7 the acetylene soot would cause cancer?

8 A Was what?

9 Q Do you remember discussing the possibility that
10 the acetylene soot would cause cancer?

11 A What was the last word?

12 Q Cancer.

13 A Cancer?

14 Q Yes.

15 A That the soot was cancer -- or carcinogenic, or
16 what are you asking me?

17 Q I'm asking you whether, back in the 1950s, you
18 can remember discussing the possibility that the soot from
19 the acetylene process was carcinogenic?

20 A I may have. I don't remember.

21 Q What does the word "carcinogenic" mean?

22 A The possibility of causing the occurrence of

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1 cancer in laboratory animals or in the human animal.

2 Q If a material is carcinogenic, that simply means
3 it causes cancer?

4 A It all depends what species you're talking
5 about. It may be carcinogenic for rats and not
6 carcinogenic for humans.

7 Q But it means it causes cancer in something,
8 doesn't it, Dr. Kelly?

9 A Yes, sir.

10 Q Do you remember that the Union Carbide medical
11 staff believed that the acetylene soot could cause cancer
12 in workers?

13 A I don't remember that. They may have told me.
14 I don't know.

15 MR. MC CONNELL: Let me show you a document
16 which we'll mark as Kelly Exhibit 6.

17 (Kelly Exhibit 6 Identified.)

18 BY MR. MC CONNELL:

19 Q Do you recognize this as a letter that you
20 received from either H.K. Eckert or E.K. Eckert?

21 A H.K. Eckert, yes, I do.

22 Q Eckert is E-c-k-e-r-t. Who was Mr. Eckert?

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1 A He was a plant manager at Texas City.

2 Q Monsanto's plant manager?

3 A That is correct.

4 Q This is a letter that's dated March 14, 1956?

5 A Yes, sir.

6 Q You received this from Mr. Eckert at about that

7 time?

8 A Yes, sir.

9 Q Do you see in the very first paragraph

10 Mr. Eckert says "Mr. Dunlop asked me to convey to you some

11 information he received from Tom Wilbur, Plant

12 Superintendent of Carbide's plant at Texas City." Do you

13 see that?

14 A Yes, sir.

15 Q Who was Mr. Dunlop?

16 A I think he was head of research at Texas City.

17 Q At Monsanto's Texas City plant?

18 A That's correct.

19 Q He was a Monsanto employee?

20 A Yes, sir.

21 Q Would you read for us the next sentence in that

22 letter, sir.

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1 A "During a conversation with Tom it was mentioned
2 that their doctors who are resident at the Texas City
3 plant (they have two) have arrived at the conclusion of
4 the possibility of a carcinogenic nature of soot produced
5 in the acetylene process."

6 Q You remember now this was brought to your
7 attention back in 1956 that the acetylene soot might be
8 carcinogenic?

9 A There was a possibility.

10 Q Would you read the next sentence, sir?

11 A "I bring this to your attention for any
12 possible" --

13 Q No, sir, I'm sorry, the one I'm referring to --

14 A Oh, Carbide produces acetylene by the same
15 process that we do and presumably the soot from the two
16 processes is similar.

17 Q So you knew in 1956 that the Carbide people were
18 concerned that the soot might be carcinogenic, sir?

19 A Well, I don't know what the nature of the amount
20 of their concern was. They came to a conclusion that it
21 was possibly carcinogenic, the soot was possibly
22 carcinogenic.

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1 Q And you knew that Monsanto was using the same
2 process in its plant in Texas City?

3 A Yes, sir.

4 Q Let me refer you now to the next paragraph,
5 Dr. Kelly.

6 A "I am bringing this to your attention for any
7 possible action you might want to take. This information
8 is not generally known at Carbide and no one knows it here
9 at our plant except Mr. Dunlop and me. We prefer to keep
10 it this way until something definite can be determined."

11 Q Why did Monsanto want to keep it confidential
12 and not generally known at the plant, Dr. Kelly?

13 MR. BRAY: Objection to the mischaracterization.

14 BY MR. MC CONNELL:

15 Q Dr. Kelly?

16 A May I have the question back.

17 (The reporter read the record as requested.)

18 THE WITNESS: I do not know why they said that.
19 Whether or not Carbide asked them to keep it confidential
20 or not, I don't know.

21 BY MR. MC CONNELL:

22 Q What did you do in response to this letter,

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1 Dr. Kelly, do you remember?

2 A Yes. I checked our cancer file and found that
3 we did not have any clusterings of cancers in our workers
4 who were exposed to the acetylene soot. I am not
5 certain -- I do not remember at the present time whether I
6 checked with the Carbide doctors to find out if they
7 actually had any cancers in their workers. I looked up
8 what information I could find as the possibility of the
9 cancer being caused by the acetylene soot. I do not know
10 if there had been any laboratory work on this, so I don't
11 know where the cancers were occurring, if any cancers were
12 occurring. After all, they had just said that it's a
13 possibility that it might. We didn't have any cancers.
14 There was no cancers listed in the literature from
15 acetylene soot.

16 MR. MC CONNELL: Let me show you a document,
17 Dr. Kelly, which we will mark as Kelly Exhibit 7.

18 (Kelly Exhibit 7 identified.)

19 BY MR. MC CONNELL:

20 Q Dr. Kelly, I know this document looks like it's
21 covered with that soot we've been talking about. This was
22 the form that was given to us by Monsanto. Do you

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1 recognize this as a letter you wrote back to Dr. Eckert on
2 March 20, 1956?

3 A Yes, sir.

4 Q It's marked "confidential"?

5 A I don't know who put that on. It is marked
6 "confidential."

7 Q And it looks like it's typed right above the
8 text of the letter?

9 A Well, I can't comment on that. It's on there
10 someplace.

11 Q It's in the same kind of typeface that's used in
12 the letter?

13 A Mine is different typeface.

14 Q It's in capital letters but it's typewritten,
15 isn't it?

16 A Well, it's a lot bigger than the caps in the
17 rest of the letter.

18 Q Would you read the first sentence of that letter
19 for me.

20 A "As you know, there is a great deal of talk
21 about the carcinogenicity of hydrocarbons derived from
22 oil."

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1 Q That was a hot topic at the time?

2 A I don't know what you mean by "hot," but there
3 was a lot of talk about lead black and carbon black which
4 went into the tires, and the question was are these
5 carcinogenic or not. "I imagine there is a certain amount
6 of truth in it but certainly by far the largest is
7 speculation."

8 Q That last sentence that you read for us,
9 Dr. Kelly, "I imagine there is a certain amount of truth
10 in it but certainly by far the largest is speculation,"
11 that's what you wrote in your memo in 1956; is that right?

12 A Yes, sir.

13 Q And you did believe at the time that there was a
14 certain amount of truth in the discussion about
15 carcinogenicity of hydrocarbons derived from oil?

16 A A certain amount of truth?

17 Q Yes, sir.

18 A Well, it depends on which hydrocarbon they're
19 talking about from oil. There are any number of
20 hydrocarbons you get from oil and in relationship of that
21 to acrylonitrile soot is -- or acetylene soot is certainly
22 ill defined.

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1 Q Let's go on down. The next line in your memo or
2 letter says "this is my opinion as far as the soot is
3 concerned"; is that right?

4 A That's correct.

5 Q And your letter goes on to set out your opinion?

6 A Yes, sir.

7 Q Would you read the sentence by the numbered
8 paragraph 1.

9 A "It might very well be carcinogenic, although I
10 know of no studies or cases that have occurred."

11 Q And that was your opinion in 1956, that the
12 acetylene soot might very well be carcinogenic?

13 A It might.

14 Q Would you read paragraph 2, Dr. Kelly?

15 A "I do not believe any experimental work is
16 indicated because as I understand it, the content of the
17 soot varies considerably depending upon changes of the gas
18 stream as well as the convergent factors."

19 Q So even though you knew that the soot might be
20 carcinogenic, you didn't conduct any studies?

21 A I didn't know it might be. I said it's
22 possible.

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1 Q You said "it might very well be carcinogenic"?

2 A That's right.

3 Q But you didn't start any experimental work or
4 studies on it?

5 A Well, I didn't start experimental work. I
6 started doing studies about it. I mean, we checked the
7 literature. We checked the government. We checked our
8 other areas.

9 Q Did you find any, Dr. Kelly?

10 A Find any what? Cancers?

11 Q Did you find any studies on acetylene soot?

12 A I do not recall finding any, no, sir.

13 Q Did you conduct one?

14 A Yes, sir.

15 Q And when did you conduct that study?

16 A What?

17 Q When did you conduct that study?

18 A I'd say 1956 sometime.

19 Q In your memo here you said "I do not believe any
20 experimental work is indicated."

21 A Yes, sir.

22 Q Was there something that changed your mind about

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1 that?

2 A I don't think so, no, sir.

3 Q Maybe I have a disconnect on this. Did you or
4 did you not conduct a study on the carcinogenicity of
5 acetylene soot in 1956?

6 A It depends on what you mean by 'study.' If
7 you're talking about animal study --

8 Q A toxicology study.

9 A Animals we did not. Toxicological study by
10 literature searches we did.

11 Q But did you find any studies?

12 A No, sir, we did not. To the best of my
13 recollection, we did not.

14 Q And you did not conduct your own toxicology
15 study in animals?

16 A That's correct.

17 Q Let's look at paragraph 3, Dr. Kelly. You said
18 "it would seem to be a good idea to insist upon complete
19 cleanliness as you are doing." Why, Dr. Kelly?

20 A Well, even if there are suspicions that you may
21 have a carcinogenic product, it's always good industrial
22 practice to avoid excessive contact.

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1 Q Would you read the next sentence, sir.

2 A "I believe that" --

3 Q No, no, it's the next sentence in paragraph 3.

4 A Let me finish that whole paragraph. I'll start
5 over. "It would seem to be a good idea to insist upon
6 complete cleanliness, as you are doing. I understand,
7 however, from the grapevine that the men state they blow
8 soot out of their noses after working around the filters.
9 If this is true, I believe a dust respirator should be
10 mandatory."

11 Q So you knew at the time that the workers in the
12 Texas City plant blew soot out of their noses after they
13 were working in this area?

14 A I didn't know that. I said I learned from the
15 grapevine that people told them so that -- they did blow
16 soot out.

17 Q Would it be fair to say in 1956 you wanted to
18 eliminate worker exposure to the soot?

19 A I wanted to minimize it.

20 Q And why was that, Dr. Kelly?

21 A Because there was a suspicion that there might
22 be a carcinogenic agent in the soot even though we were

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1 not at all certain and we had no evidence that there was
2 such a carcinogenic agent.

3 Q Would you skip down, Dr. Kelly, and read the
4 paragraph -- it's not numbered but it's immediately below
5 paragraph 4.

6 A Why don't I read all of 4? "I believe our
7 doctor should be on the alert to watch for any changes in
8 the skin of the workers."

9 Q Let me ask you why you thought the doctors ought
10 to be on the alert?

11 A Because in certain oils, hydrocarbon oils, skin
12 cancers had occurred. That had been reported. For
13 example, carbon black, which is derived from oil, has
14 caused some skin cancers in workers. Lead black, which is
15 used in paint, which is also a carbon, a soot from
16 hydrocarbon oils, does not cause any skin troubles, any
17 skin cancers so that here we have a compound which we
18 don't know will cause any skin problems but watch out to
19 be sure that nothing sneaks up on us.

20 Q You had a suspicion that it might cause skin
21 cancer?

22 A We just wanted -- well, I really didn't have a

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1 suspicion that it would, but I wanted to be sure of it.

2 Be a belt and suspenders man.

3 Q The purpose of putting the doctor on alert is to
4 find out whether there were any skin cancers?

5 A That's correct.

6 Q Would you read the next part of the letter for
7 us, Dr. Kelly.

8 A "I don't think this is going to be a matter of
9 too great a concern but I don't want to minimize it.
10 There has been, as you know, a great deal of talk about
11 carcinogenesis in the oil industry but frankly, you never
12 hear about too many" -- there seems to be a word scratched
13 out.

14 Q Is it 'cases,' Dr. Kelly?

15 A What?

16 Q Is the missing word 'cases'?

17 A What's the word?

18 Q Cases.

19 A I can't make it out.

20 Q Why don't you read the next sentence.

21 A "Even if a case develops on the skin, it is
22 fairly easily treated" -- I can't make out the word.

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1 Q Is the next sentence "If it develops in the
2 notices or lungs, that is something else"?

3 A Right.

4 Q Why would it be something else, Dr. Kelly, if
5 the cancer developed in the nose or the lungs?

6 A It's a lot tougher to treat than cancer of the
7 skin.

8 Q A lot tougher to diagnose?

9 A Yes. Maybe not the nose but it's not sticking
10 out there on the skin like -- that's pretty easy to
11 diagnose.

12 Q Lung cancer is hard to diagnose?

13 A Well, if it's in the lung, it's inside and you
14 can't be as sure of it as something on the skin of your
15 arm.

16 Q Dr. Kelly, we've been going for about an hour.
17 Would you like to take a short break?

18 A It's all right with me. Whatever you want to
19 do.

20 MR. MC CONNELL: Why don't we do that.

21 (Recess.)

22 BY MR. MC CONNELL:

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1 Q Dr. Kelly, what are polynuclear aromatic
2 compounds?

3 A Well, it's an aromatic compound; it includes a
4 benzene ring, which is six carbon atoms in a ring.
5 Polynuclear has several of those, one up to any number,
6 usually four or five, and aromatic is a description of an
7 organic compound where there are ring structures in
8 contrast to aliphatic, a-l-i-p-h-a-t-i-c, compounds, which
9 are straight chain hydrocarbons.

10 Q A number of the polynuclear aromatic compounds
11 are known to cause cancer in humans?

12 A I don't know if -- there may be some that cause
13 cancer. There may be some polyaromatic compounds that are
14 present in vegetables that in large doses could cause
15 cancer. In small doses they certainly do not cause cancer
16 in humans. There are some polyaromatic nuclear compounds
17 such been anthracenes, a-n-t-h-r-a-c-e-n-e-s, which occur
18 in barbecuing steaks that in sufficient dose can cause
19 cancer, but by no means do all polyaromatics cause cancer
20 in humans or in animals.

21 Q But some of them do cause cancer?

22 A Yes, they do.

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1 Q And that's been known for a very long time?

2 A Yes. I don't know what you mean by "very

3 long."

4 Q 100 years?

5 A Oh, let's say 50, 75.

6 MR. MC CONNELL: Let me show you, Dr. Kelly, a
7 document which we will mark as Kelly Exhibit 8.

8 (Kelly Exhibit 8 identified.)

9 BY MR. MC CONNELL:

10 Q Dr. Kelly, you see on the front page of this
11 document this is a report on cancer and chemical
12 structure?

13 A Yes, sir.

14 Q Monsanto medical department?

15 A Yes, sir.

16 Q And if you look on the next page, you'll see
17 this was written by Jack T. Garrett?

18 A Yes, sir.

19 Q That's the Jack T. Garrett who worked for you in
20 the medical department?

21 A Yes, sir.

22 Q The date is March 1963?

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1 A Yes, sir.

2 Q Do you remember this is a report that
3 Mr. Garrett wrote on cancer and chemical structure?

4 A Yes, sir.

5 Q Would you turn with me, Dr. Kelly, to the page
6 number 10. They're numbered at the top, and tell me when
7 you have that.

8 A Wait. I gotta find it.

9 Q Do you have that page?

10 A Yes.

11 Q Do you remember back in 1963 that Mr. Garrett
12 wrote this report on cancer and chemical structure?

13 A Do I what?

14 Q Do you remember that Mr. Garrett wrote this
15 report on cancer and chemical structure back in 1963?

16 A Yes.

17 Q You were familiar with it at the time?

18 A Yes. I really don't know why he wrote it but I
19 know he did it.

20 Q On page 10 of this report near the bottom of the
21 page there's a section called "Polynuclear Aromatic
22 Compounds."

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1 A Yes, sir.

2 Q Would you read the first sentence in that
3 section.

4 A "This group of compounds has been studied ever
5 since coal tar cancer was described more than a century
6 ago."

7 Q Coal tar is one of the polynuclear aromatic
8 compounds?

9 A Yes, sir.

10 Q Do you agree with Mr. Garrett that coal tar
11 cancer was discovered and described more than 100 years
12 ago?

13 A I'm not certain about the time frame, but it's
14 been quite a while ago.

15 Q Would you read the next sentence, Dr. Kelly?

16 A "There is more data available on compounds of
17 this type than any other group."

18 Q Do you agree with Mr. Garrett on that point?

19 A Well, I don't know. I don't know what type of
20 data he's talking about, whether he's relating this to
21 cancer. I just don't know what that means.

22 Q By 1963, Dr. Kelly, had there been a number of

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1 studies of polynuclear aromatic compounds and their
2 ability to cause cancer?

3 A I'm sorry, my attention wavered. Would you
4 repeat it. I was reading the next paragraph.

5 Q Certainly. By 1963, had there been a number of
6 studies of polynuclear aromatic compounds and their
7 ability to cause cancer?

8 A I don't know. Again, I can't quantify it. Jack
9 mentions scrotal cancer 100 years ago. He's mentioning
10 scrotal cancer in petroleum refineries, presumably the
11 last 40 or 50 years. If that's what he means by lots of
12 them, that's fine.

13 Q It was well known in 1963 that some of these
14 compounds did cause cancer; is that right?

15 A That's correct.

16 Q And in fact, if you look with me over to the
17 continuation on page 11, would you read the sentence that
18 starts "human experience."

19 A -- "with compounds of this type has shown that
20 in certain circumstances there are human carcinogens."

21 Q It goes on to describe the scrotal cancers in
22 chimney sweeps?

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1 A Yes, sir.

2 Q It goes on to describe the fact that the coal
3 tar cancers were obviously caused by polynuclear aromatics
4 absorbed on chimney soot and contained in coal tars?

5 A Yes, sir.

6 Q And he goes on to talk about the high incidence
7 of scrotal cancer in wax pressmen in petroleum refineries?

8 A Yes, sir.

9 Q And he says that was traced to polynuclear
10 aromatics found in the feedstocks?

11 A Yes, sir.

12 Q As well as the supernatant liquors from the wax
13 presses?

14 A Yes, sir.

15 Q Do you agree that in 1963 all of those things
16 were well known?

17 A That what?

18 Q All of those things were well known to the
19 people in the field?

20 A I don't know how well known scrotal cancer in
21 wax pressmen was known.

22 Q Mr. Garrett knew about it?

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1 A Oh, yeah, he knew about it, obviously.

2 Q You knew about it?

3 A Frankly, until this article of his came out, I
4 wasn't too familiar with it, to the best of my
5 recollection now, until Jack wrote this.

6 Q But you knew about it in 1963 when you read
7 Mr. Garrett's report?

8 A Yes, sir.

9 Q Do you remember, Dr. Kelly, that back in the
10 late 1950s Mr. Garrett was concerned about the presence of
11 polynuclear aromatic compounds on the acetylene soot we've
12 been discussing here?

13 A Let's see that reference again. I don't know if
14 we talked about Garrett. We talked about Fox. I don't
15 know if we mentioned Garrett in that discussion.

16 Q We hadn't quite gotten to Mr. Garrett.

17 A I beg your pardon?

18 Q We hadn't quite gotten to Mr. Garrett's
19 involvement in that but we're going to come back to it.

20 My question now is simply, do you remember back
21 in the late 1950s that Mr. Garrett was concerned about the
22 presence of polynuclear aromatic compounds in the

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1 acetylene soot?

2 A No, I don't remember, as well as I see it. I
3 remember hearing from Garrett about it.

4 Q If we looked at the memos, that might refresh
5 your memory on it?

6 A Yes, it would.

7 Q At the Texas City plant, Dr. Kelly, were there a
8 wide variety of hydrocarbons derived from oil?

9 A From what? From oil?

10 Q Yes, sir.

11 A Well, their feedstocks came from oil.

12 Q That was true in the styrene process?

13 A Well, they made ethylbenzene from benzene, which
14 was obtained from oil refineries.

15 Q Was it true in the acrylonitrile process, there
16 were hydrocarbons derived from oil in that process?

17 A Yes, sir, to the best of my recollection. I'm
18 not familiar at the present date with acrylonitrile
19 process and the flow --

20 Q I'm sorry, did you have something else you
21 wanted to add?

22 A With the flow diagrams of the acrylonitrile

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1 process. I don't remember those today. I did in '63,
2 obviously.

3 Q And was it true that hydrocarbons derived from
4 oil were used in the vinyl chloride process?

5 A Yes, sir, but I do not believe that there were
6 polynuclear aromatics in the vinyl chloride process.

7 Q You don't believe that as we're sitting here
8 today?

9 A I'm not sure of that.

10 Q You're just not sure one way or the other?

11 A That's correct.

12 Q How was Monsanto disposing of the acetylene soot
13 in 1956, Dr. Kelly, do you know?

14 A I don't know.

15 Q Do you have any idea what it was doing with the
16 soot after 1956?

17 A No, sir, I don't.

18 Q That wasn't part of your responsibility as
19 medical director?

20 A No, sir.

21 Q Let's talk about acrylonitrile, Dr. Kelly.

22 Would you agree that acrylonitrile is a toxic chemical.

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1 A Again, by an individual -- I say it is a toxic
2 chemical. It's not nearly as toxic as hydrogen cyanide,
3 but it could be considered toxic as an industrial chemical
4 is concerned, yes.

5 Q Hydrogen cyanide is an extremely toxic chemical?

6 A Yes, it is.

7 Q Acrylonitrile is toxic but not as toxic as
8 hydrogen cyanide?

9 A That's correct.

10 Q Is there a relationship between acrylonitrile
11 and cyanide?

12 A I don't know what you mean by a "relationship."

13 Q Are cyanide compounds used in making
14 acrylonitrile?

15 A Yes.

16 Q If you ingested acrylonitrile, would that
17 release cyanide compounds in the body?

18 A Well, I have only experience with one person, a
19 chemist at our Springfield laboratory who drank about a
20 pint of acrylonitrile. I'm not sure of the dose but it
21 was a good-sized dose and it took him, I think, 12 hours
22 to die. So from that one case, it's not in the same

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1 ballpark with cyanide which you're talking about minutes
2 with a much smaller dose.

3 MR. MC CONNELL: Let me show you a document,
4 Dr. Kelly, that we will mark as Kelly Exhibit 9.

5 (Kelly Exhibit 9 identified.)

6 BY MR. MC CONNELL:

7 Q Do you recognize this as a memorandum that you
8 received from Dr. William E. Nessel, N-e-s-s-e-l-1?

9 A Yes, sir.

10 Q And you received it about June 30, 1954?

11 A Yes, sir.

12 Q Does this memo describe the acrylonitrile
13 suicide you told me about?

14 A Yes, sir.

15 Q And who was Dr. Nessel?

16 A He was our plant physician at the Springfield,
17 Massachusetts plant of the Monsanto Company.

18 Q And he reports that one of the chemists
19 committed suicide by drinking acrylonitrile; is that
20 right?

21 A Yes, sir.

22 Q Do you see in the second -- actually, let me

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1 refer you down to under the 3 numbered paragraph, the
2 report says he died approximately 11 hours after
3 ingestion.

4 A Yes, sir.

5 Q And would you read the paragraph right after
6 that, sir.

7 A Wait a minute. I've lost the --

8 Q The paragraph that starts off "according to
9 publication of" --

10 A -- "The Toxicity of Acrylonitrile, based on
11 fatal doses for rats, a lethal dose for this individual
12 would be approximately 6 cc; he took at least 15 cc in
13 ginger ale."

14 Q Dr. Nessell calculated the lethal dose at 6
15 cc is?

16 A No, he didn't calculate that. He quoted a very
17 good Cyanamid company bulletin. That's comparing fatal
18 dose for rats to fatal dose for humans, would be 6 cc's.

19 Q How much is 6 cc's, Dr. Kelly?

20 A A fifth of an ounce.

21 Q A fifth?

22 A 30 cc's is an ounce.

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1 Q Very small dose?

2 A It's a teaspoonful.

3 Q And Dr. Nessel believed that that much would be
4 a fatal dose?

5 A No, he didn't say that. He said based on the
6 publication of American Cyanamid, they calculated that a
7 lethal dose would be 6 cc's, and I don't know what else to
8 say.

9 Q And he goes on to say that the chemist in
10 question took at least 15 cc's?

11 A Well, yes. I don't know how they came out with
12 the dose of 15 cc's. Paragraph 2 said an amount in excess
13 of 15 cc's and paragraph 7 he said at least 15 cc's so I
14 don't know how much the man took. Anecdotally, I thought
15 he took more than 15 cc's, which is half an ounce.

16 Q 15 cc's is only a half an ounce?

17 A That's correct.

18 Q It's a lot less than a pint?

19 A Well, there are 16 ounces in a pint. This is
20 half an ounce.

21 Q And apparently that amount was a lethal dose?

22 A It was for him.

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1 Q The toxicity of acrylonitrile was well known in
2 the 1950s, Dr. Kelly?

3 A Yes, sir.

4 Q You knew about that even before the suicide of
5 the chemist?

6 A Yes, sir.

7 Q Is it true, Dr. Kelly, that acrylonitrile can
8 cause poisoning by inhalation as well as by ingestion?

9 A Yes, sir, insufficient dose.

10 Q And inhalation simply means breathing in the
11 vapors of the chemical?

12 A That's correct.

13 Q Some fatalities have occurred?

14 A What?

15 Q Some fatalities have occurred?

16 A Well, we never had any. No fatalities occurred
17 at Monsanto from inhalation or from anyone working with
18 the material. I don't recall at this time whether there
19 have been -- I have a vague recollection of some illness
20 from breathing acrylonitrile. I don't know if it went on
21 to fatalities or not. Again, not at Monsanto and I don't
22 know --

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1 Q And you knew that in the 1950s?

2 A Yes, sir.

3 Q Is it also true, Dr. Kelly, that acrylonitrile
4 is a severe skin and eye irritant?

5 A Yes, sir.

6 Q Causes burns?

7 A I beg your pardon? Yes.

8 Q Causes headaches and vomiting?

9 A I'm not sure. It all depends on the dose. It
10 all depends on the temperature at which the material is
11 exposed. At ambient temperatures, the exposure is much
12 less than if the material is heated up.

13 Q And this information about toxicity that we've
14 been talking about was known to you in the 1950s?

15 A Yes, sir.

16 Q What is styrene monomer, Dr. Kelly?

17 A Well, it's a compound derived from
18 ethylbenzene. It's a liquid. It has -- it's an industrial
19 chemical and it's moderate to low toxicity. It's used in
20 many applications.

21 Q It was manufactured by Monsanto at the Texas
22 City plant?

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1 A Yes, sir.

2 Q Who were the largest producers of styrene in the
3 world in the 1950s and 1960s?

4 A Whether Dow or Monsanto was, I don't know.

5 Q Were they the two biggest?

6 A I believe so.

7 Q I believe so, too.

8 A Well, we agree.

9 MR. BRAY: I object to that testimony. His, not
10 yours.

11 BY MR. MC CONNELL:

12 Q Is it fair to say styrene was an important
13 product at that time for Monsanto?

14 A Oh, yes, it was a big-volume item. It was an
15 item that was growing, and it wasn't a sink or swim
16 product. I mean, we'd still be making chemicals when we
17 gave up styrene.

18 Q But it was important to you?

19 A Yes, it was important.

20 Q And you knew in the 1950s about the toxicity of
21 styrene monomer?

22 A Yes, sir.

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1 Q In fact, you knew a fair amount about styrene
2 monomer toxicity in the 1940s; is that right?

3 A I don't know when I came upon the information,
4 but I've known it for quite a while.

5 Q Do you remember serving as an expert witness in
6 a styrene case in the late 1940s?

7 A I beg your pardon?

8 Q Do you remember serving as an expert witness in
9 a styrene case in the late 1940s?

10 A I don't remember.

11 Q Don't remember one way or the other?

12 A What?

13 Q You don't remember one way or the other?

14 A That's correct.

15 Q Do you remember some Dow scientists had
16 published an article on styrene monomer toxicity back in
17 1942?

18 A Yes, I do.

19 Q And do you remember who some of those Dow
20 scientists were?

21 A Don Irish was one of them.

22 Q And who was Don Irish?

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1 A Head of their toxicology department at Dow.

2 Q And do you remember the others?

3 A No, I don't.

4 Q Did you have some dealings with Don Irish over
5 the years?

6 A Yes, I did.

7 Q On the subject of styrene and its toxicity?

8 A Oh, it was lots of things. We made parallel
9 products, so we had quite a few discussions and meetings
10 with Dow.

11 Q And were you familiar with this article that
12 Dr. Irish and his colleagues published in 1940s?

13 A Am I familiar with the article?

14 Q Yes, sir.

15 A Yes. As I understand it, he did inhalation
16 studies for a relatively short period of time, 30 days or
17 something like that, and he came out with safe
18 concentrations of the material.

19 Q And you were familiar with that article back in
20 the late 1940s?

21 A Yes, sir.

22 MR. MC CONNELL: Let me show you a document.

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1 Dr. Kelly, that we will mark as Kelly Exhibit 10.

2 Kelly Exhibit 10 identified.

3 BY MR. MC CONNELL:

4 Q I'll just ask you briefly whether this is a copy
5 of the article that you and I have been talking about
6 written by Dr. Irish and his colleagues?

7 A Yes, sir, it is.

8 Q It's an article called "The Response of
9 Laboratory Animals to Monomeric Styrene ?

10 A Yes, sir.

11 Q Do you know the other gentlemen listed with
12 Dr. Irish as the authors of this report?

13 A Yes. V.K. Rowe I didn't know too well. Adams I
14 knew not as well as I did Rowe or Irish. I think Rowe
15 eventually followed Irish as head of the laboratory.

16 Q Were all of those people Dow employees?

17 A Yes, they were.

18 Q If I could ask you to look at the last page,
19 Dr. Kelly, page 301, do you have that now?

20 A Yes, I do.

21 Q I'd just like to direct your attention quickly
22 to the section marked "conclusions."

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1 A Yes, sir.

2 Q They reported that Vapor concentrations of
3 monomeric styrene which are acutely dangerous to guinea
4 pigs and rats range from 10-12 milligrams per liter
5 (approximately 2400 parts per million) for an 8-hour to 46
6 milligrams per liter (10,000 parts per million) for an
7 exposure of 30-60 minutes." You were aware of that
8 information back in the 1940s; is that correct, sir?

9 A Yes.

10 Q Skipping down in that paragraph they reported
11 immediate deaths result --

12 A Let's take the second sentence first.

13 Q Why don't you read the second sentence for us.

14 A "Higher concentrations are impossible to attain
15 at ordinary temperatures.

16 Q Why don't you read the next sentence?

17 A "Immediate deaths result from the primary action
18 upon the central nervous system, while many delayed deaths
19 result from the pneumonia which frequently develops
20 following acute lung irritation."

21 Q So in this study, the material caused deaths in
22 the experimental deaths?

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1 A It what?

2 Q In the experimental animals?

3 A Yes, it caused deaths at 10,000 parts per
4 million.

5 Q What does it mean, Dr. Kelly, that the primary
6 action was on the central nervous system?

7 A It was an anesthetic.

8 Q I'm sorry, sir?

9 A It's an anesthetic.

10 Q What's the result of that?

11 A You can go to sleep. You can go into a coma and
12 you die if you stay in it long enough.

13 Q Let me ask you to look down at the next to last
14 paragraph, Dr. Kelly. Would you read that for us,
15 please.

16 A "Monomeric styrene produces a reaction on the
17 rabbit's skin which is very similar to that produced by
18 the common aromatic hydrocarbons. In industrial use the
19 same precautions should be observed to avoid skin contact
20 as are now followed in the handling of other aromatic
21 hydrocarbon solvents."

22 Q You were aware of that information back in the

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1 1940s?

2 A Yes, that it was a skin irritant, yes, sir.

3 Q So again, styrene monomer is not something you'd
4 want to put in your coffee?

5 MR. BRAY: Objection to the trivialization and
6 the characterization inherent in that question.

7 MR. MC CONNELL: Objection to your speech.

8 MR. BRAY: It's not a speech. It's an
9 objection.

10 THE WITNESS: It's not intended as a food
11 additive.

12 BY MR. MC CONNELL:

13 Q And you wouldn't put it in your coffee,
14 Dr. Kelly, would you?

15 MR. BRAY: Same objection. It's repetitious.
16 It's been asked and answered.

17 THE WITNESS: No, I wouldn't put it in coffee.

18 BY MR. MC CONNELL:

19 Q And you wouldn't want it in your drinking water?

20 A Now, that depends. What dose are we talking
21 about? Are we talking about 1 teaspoonful of styrene in a
22 tankful of water? That wouldn't bother anybody.

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1 Q Would you want it in your drinking water,
2 Dr. Kelly?

3 MR. BRAY: It's been asked and answered.

4 THE WITNESS: I wouldn't want anything in my
5 drinking water if it could be obtained without a
6 particular chemical, but I wouldn't object to it depending
7 upon the dose involved. Remember, he's talking about
8 inhalation here. You've gone over to drinking water, the
9 oral dose of the material.

10 BY MR. MC CONNELL:

11 Q Did they also look at the oral doses of styrene
12 monomer in this study, Dr. Kelly?

13 A Wait until I look.

14 Q Let me refer you to page 299. Is there a
15 section on oral administration, Dr. Kelly?

16 A Yes, there is.

17 Q And did they find a lethal dose in the oral
18 administration study?

19 A They found that giving 1.6 grams of material per
20 kilogram of body weight showed 100 percent survival. Now,
21 if you want to transpose that directly to people, it's a
22 70-kilogram man, which was allegedly the average man, 155

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1 pounds, that would be 100 grams. 100 grams would be
2 roughly equivalent to 3-1/2 ounces in the material every
3 day to a person without causing any fatalities. There was
4 irritation of the esophagus and the stomach, which in some
5 cases at 2 grams caused death of the animal from
6 irritation.

7 Q Let's look at the third paragraph under the
8 section called "Oral Administration." Would you read that
9 for us, Dr. Kelly.

10 A The third paragraph?

11 Q Yes, sir.

12 A I just read it. "A very few oral doses of 2.0
13 grams per kilogram (50 percent solution) produced a
14 pronounced irritation of the esophagus and stomach which
15 quickly resulted in the death of the animal. Even 1.0
16 gram per kilogram often caused a similar reaction after a
17 few doses, with deaths in some cases before the end of the
18 28-day experimental period."

19 Q So in the study, 1942 study, they found that
20 oral doses could cause death as well as inhalation; is
21 that correct?

22 A As well as what?

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1 Q They found that oral doses could also cause
2 death; is that correct?

3 A Oh, yes, sir, if given enough of it.

4 Q I think you mentioned earlier you were active in
5 the Manufacturing Chemists Association; is that right,
6 Dr. Kelly?

7 A Yes, sir.

8 Q What is a material safety data sheet?

9 A Well, it's a publication that is intended to
10 describe the characteristics of a product as well as
11 explaining how it can be handled safely.

12 Q Did the Manufacturing Chemists Association have
13 a program of writing material safety data sheets for
14 various chemicals?

15 A Yes, they did.

16 Q And those safety data sheets contained
17 information about the toxicity of the chemicals?

18 A Yes, sir, it did.

19 Q Did you write the material safety data sheet for
20 styrene in 1949?

21 A I don't think so. I think Dow must have.

22 Q You don't remember working on the material

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1 safety data sheet for styrene?

2 A I don't remember. We only got in the styrene
3 business at the close of World War II, where Dow had been
4 making it for quite some time before, so I know I didn't
5 write it.

6 Q Did Monsanto operate the Texas City plant for
7 the government during World War II?

8 A They bought it afterwards. I was gone. I don't
9 know if they operated it during the war.

10 Q You weren't around during the war because you
11 were in the Army?

12 A That's correct.

13 (Pause.)

14 BY MR. MC CONNELL:

15 Q Dr. Kelly, did you have a chance to talk with
16 Mr. Bray during the break we took?

17 A With whom?

18 Q Mr. Bray.

19 A Did I have a talk with him about, when did you
20 say, today?

21 Q During any of the breaks we've taken today.

22 A Not about this case.

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1 Q About the deposition?

2 A Not about that. I talked to him about the
3 pastrami sandwich.

4 Q But not about the case or the deposition?

5 A Not about the case at all.

6 MR. MC CONNELL: Let me show you a document,
7 Dr. Kelly, which we will mark as Kelly Exhibit 11.

8 (Kelly Exhibit 11 identified.)

9 BY MR. MC CONNELL:

10 Q Dr. Kelly, we've been talking about styrene
11 toxicity, and I asked you whether you could remember being
12 asked to testify as an expert witness in a styrene case in
13 the late 1940s. Do you recognize this document I've
14 handed you as a letter that you wrote on October 9, 1948?

15 A Do I recognize this?

16 Q Yes, sir.

17 A No, I don't. I've forgotten all about it.

18 Q Now that you've seen it, Dr. Kelly, is this a
19 letter you wrote to Don Irish at the Dow Chemical Company
20 on October 9, 1948?

21 A Yes, sir.

22 Q I'd like to direct your attention to the first

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1 paragraph, Dr. Kelly, the second sentence. You say "one
2 large user of styrene, and I don't believe it is our
3 styrene either, has asked me to testify as an expert
4 witness in the case of an employee who is alleging
5 permanent disability because of inhaling this compound."
6 Do you see that, Dr. Kelly?

7 A Yes, sir.

8 Q Does that refresh your memory you did testify in
9 the styrene case in the late 1940s?

10 A I must have. I know I never testified or gave a
11 deposition in it. It doesn't refresh much of my memory on
12 it.

13 Q You don't doubt that it happened?

14 A Oh, no, I'm sure it happened.

15 Q And the second paragraph, could I ask you to
16 read the second paragraph of the letter, Dr. Kelly.

17 A "The second point is that I am to write a first
18 draft of the medical section on styrene for the MCA safety
19 data sheet on this product."

20 Q Does that refresh your memory at all, Dr. Kelly,
21 that you wrote at least part of the safety data sheet on
22 styrene for the MCA?

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1 A No, it doesn't, and I don't know really why I
2 was talked into it. It doesn't really.

3 Q As we sit here today, you can't remember one way
4 or the other?

5 A I can't remember.

6 Q Dr. Kelly, do you remember that styrene was used
7 in food packaging materials?

8 A In what?

9 Q In food packaging materials.

10 A Polystyrene, yes, sir.

11 Q And Monsanto manufactured polystyrene for use in
12 food packaging?

13 A Yes.

14 Q Do you remember in 1961 there was a concern
15 raised about the residual styrene monomer present in that
16 food packaging material?

17 A I don't remember it off the top of my head, no,
18 sir.

19 MR. MC CONNELL: Let me show you a document,
20 Dr. Kelly, which we will mark as Kelly Exhibit 12.

21 (Kelly Exhibit 12 identified.)

22 BY MR. MC CONNELL:

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1 Q Do you recognize this, Dr. Kelly, as a memo you
2 received from Mr. G.W. Ingle?

3 A Yes, I do.

4 Q It's dated April 5, 1961?

5 A Yes, sir.

6 Q Who was Mr. Ingle?

7 A He was in the research department or the
8 development department of our Springfield, Massachusetts
9 plant of Monsanto, which was the plastic division of the
10 company.

11 Q Mr. Ingle was a Monsanto employee?

12 A Yes, that's correct.

13 Q And he's talking in this memo about the
14 polystyrene task force. What was the polystyrene task
15 force, do you know?

16 A I don't know.

17 Q It goes on to say "After some months of work a
18 statement has been developed which indicates that residual
19 styrene monomer is the only parameter to be specified. In
20 addition 0.75 percent has been tentatively fixed as the
21 upper limit for residual styrene monomer. There remains,
22 however, some feeling that the toxicology of styrene has

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1 been inadequately defined to document the safety of such a
2 widely used polymer."

3 Does that refresh your memory that there was a
4 concern about the styrene monomer in these food packaging
5 materials?

6 A Yes, I think so, yes, sir.

7 Q And do you recall that Mr. Ingle was asking you
8 whether you thought additional studies ought to be
9 performed on styrene monomer?

10 A Yes, sir.

11 Q Do you remember whether Monsanto conducted those
12 studies?

13 A Whether they --

14 Q Whether Monsanto conducted those studies in
15 1961?

16 A Well, it really was -- Monsanto was not the one
17 to conduct them. It was a group of styrene manufacturers
18 that was supposed to get a collaborative investigation of
19 it. To the best of my recollection, that was never done.
20 I think they concluded from the extraction studies that
21 there was no particular hazard involved because
22 polystyrene film is, by and large, a rigid type of plastic

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1 rather than a film like you put around meat or flexible,
2 thin type of film. This is a solid, sort of like a box
3 type of material that you use. I don't think it was ever
4 done.

5 Q And the reason it was never done is that you
6 determined that none of the styrene monomer could get into
7 the food?

8 A Either that or the FDA decided that there was no
9 hazard involved. I really think the ball was in their
10 court, was the FDA to make their mind up about it.

11 Q Do you believe the FDA would have tolerated any
12 migration of the styrene monomer into the food?

13 A It would have tolerated some.

14 Q Do you think they would have required safety
15 studies on that before allowing it?

16 A Well, that was our common practice with
17 unintentional food additives from plastics, and I think
18 they would have done the same thing with styrene being
19 extracted from polystyrene. But as I say, I don't recall
20 what they did, except the fact that I do not remember this
21 group in general, Monsanto in particular, doing any
22 further study. I think there's an error here because the

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1 statement that in inhalation work there was two or
2 three-week stuff and fairly good sized doses of -- what was
3 it -- 1 gram per kilo or something like that, 30 days work
4 of. There was a certain amount of oral studies done by
5 Irish.

6 Q That's the 1942 study that you and I looked at
7 before?

8 A That's correct.

9 Q In his memo Mr. Ingle is talking about two
10 different kinds of studies. One type is a 90-day study?

11 A Well, he was hoping if they had to do it, they
12 could get away with that rather than a two-year study.

13 Q And in fact, he says "certainly the shorter-term
14 studies would be far less expensive than the latter."

15 A No question about that.

16 Q Was that an important question to you, whether
17 you had to do a 90-day study or two-year study?

18 A You would settle the issue. A two-year study
19 takes three years to do, by the time you set up the
20 parameters, by the time you have the two years, by the
21 time you have the animals examined microscopically, so
22 it's three years before you get the report. And the 90

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1 days, you get it over 100 days, 110 days and the cost is
2 probably a 20th. So it's important.

3 Q And that was an important consideration to you
4 in deciding whether to conduct that study?

5 A Well, it was -- no, because it was important but
6 when you're dealing with the FDA, they make the rules and
7 it doesn't matter to them if you say well, we're going to
8 spend -- these rules are going to cost us \$100,000. The
9 FDA will say well, that's tough. That's what you have to
10 do, so you don't argue with them about it.

11 MR. MC CONNELL: Let me show you another
12 document which we can mark as Kelly Exhibit 13.

13 (Kelly Exhibit 13 identified.)

14 BY MR. MC CONNELL:

15 Q Is this your response to Mr. Ingle on the
16 question we've been talking about, Dr. Kelly?

17 A Yes, sir, it is.

18 Q It's a memo from you dated April 11, 1961?

19 A That's correct.

20 Q You start out by saying "Certainly I think if we
21 could get all the manufacturers to do a decent 90-day test
22 on styrene monomer, it wouldn't cost us very much.

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1 A That's correct.

2 Q And you go on to say it "might satisfy the Food
3 and Drug Administration"?

4 A Yes, sir, but I also say we'd have to go out and
5 talk to the FDA beforehand.

6 Q You'd have to negotiate with them on what type
7 of study you had to do?

8 A This is what we think is needed. What do you
9 think about it? And they might say negative or yes, go
10 ahead.

11 Q Would you look at the top of page 2 of this
12 memo, Dr. Kelly. You quote a long passage from a book
13 called "Detoxification Mechanisms," but I'm really just
14 interested in the first sentence. Would you read that for
15 us.

16 A "Styrene phenylethylene appears to be more toxic
17 than ethylbenzene and differs from it in its metabolism.

18 Q Styrene is more toxic than ethylbenzene?

19 A That's what the Williams text talks about.

20 Q That was information you had available to you in
21 1961?

22 A Yes, sir.

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1 Q And was it an accurate statement?

2 A Pardon?

3 Q Was it an accurate statement at that time?

4 A Let me finish reading it.

5 Q Certainly.

6 A Well, yes, I don't exactly see where the basis
7 of his statement, "appears to be more toxic than
8 ethylbenzene," how much more or -- he doesn't even give
9 any basis for the statement, per se, than it is more toxic
10 than ethylbenzene. Maybe it was in some other part of
11 that textbook of his. Gerarde is a well known
12 investigator.

13 Q If he made that statement, would you give that
14 some credit?

15 A I'd give it some credit but I'd still have a
16 couple of caveats about his evidence, but I don't know
17 it. He may have -- this may have referred to the paragraph
18 ahead of it.

19 Q But you did decide to quote that in your
20 response to Mr. Ingle, didn't you?

21 A Yes, I did.

22 Q As far as you know, Monsanto didn't do any

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1 further studies at that time?

2 A As far as I know, Monsanto did not do any by
3 itself or participate in any group study. I do not know --
4 I feel quite sure that no group study was done.

5 Q Did Monsanto use toluene and benzene at the
6 Texas City plant?

7 A Did they use --

8 Q Toluene and benzene.

9 A Yes, sir. They used benzene a great deal.
10 Whether they separated toluene from benzene, I don't know
11 if they stripped off the toluene and sold it or used it at
12 some process which I don't recall at present. It was
13 around there.

14 Q Is it true that very large amounts of benzene
15 were used in the Texas City plant?

16 A Oh, yes, lots and lots.

17 Q And would there also have been large amounts of
18 toluene?

19 A I don't know that exactly. I don't know that.

20 Q You just don't know one way or the other?

21 A That's correct.

22 Q Is toluene a toxic material?

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1 A Again, any industrial compound is toxic. I
2 mean, even aspirin is toxic. It depends on your
3 definition. Even salt is toxic. So it is, under that
4 broad, generic definition. Toluene can be called toxic
5 but I would say it's only moderately toxic as an
6 industrial compound is concerned.

7 Q There were other things at the Texas City plant
8 that were more toxic?

9 A Oh, yes, certainly.

10 Q But toluene is moderately toxic?

11 A Is not what?

12 Q Is it moderately toxic?

13 A By my definition, I would say yes.

14 Q And you knew that in the 1950s?

15 A Yes, sir.

16 Q There were scientific reports in the 1950s that
17 indicated that exposure to toluene could cause chronic
18 toluene poisoning?

19 A I'm not so sure about that. I know that it
20 would cause immediate nervous symptoms. You would get a
21 toluene jag much like the beginning of alcohol
22 intoxication. Whether it caused -- it did not cause

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1 leukemia like benzene and was not as far as aplastic
2 anemia which was attributed to benzene.

3 Q So benzene caused leukemia?

4 A Yes, sir.

5 Q And benzene caused aplastic anemia?

6 A In sufficient doses, yes, sir, and I probably
7 would have to say it's definitely known in the causes of
8 chronic myelogenous, m-y-e-l-o-g-e-n-o-u-s, leukemia, but
9 not chronic lymphatic leukemia.

10 Q What's the difference in the two kinds of
11 leukemia?

12 A It depends on which of the cells proliferates,
13 the leukocytes or the lymphocytes.

14 Q Both kinds of leukemia are forms of cancer?

15 A They're both malignant changes. Cancer is
16 usually not a term that's used for leukemias, although
17 it's a serious illness, but it's amenable to treatment
18 much more than other forms of cancer is concerned, so I
19 don't think it can be equated as a cancer.

20 Q It's often fatal?

21 A What?

22 Q It's often fatal?

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1 A Oh, yes, certainly.

2 Q How treatable was it in the 1950s, Dr. Kelly?

3 A Not very treatable. I don't know when the good
4 chemotherapeutic agents came into play, but it was around
5 that time or a little later.

6 MR. MC CONNELL: Let me show you a document,
7 Dr. Kelly, which we will mark as Kelly Exhibit 14.

8 (Kelly Exhibit 14 identified.)

9 BY MR. MC CONNELL:

10 Q Is this a memo that you received from C.L.
11 Gilmore in 1958?

12 A Yes, it is.

13 Q And who was Mr. Gilmore?

14 A Safety manager at the Monsanto plant at Texas
15 City.

16 Q It's dated February 25, 1958?

17 A Yes, sir.

18 Q And he says "One of the units at the plant is
19 planning on the use of toluene in a process which may
20 involve personnel to be working in an atmosphere
21 containing toluene?"

22 A Yes, sir.

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1 Q The workers might be exposed to toluene?

2 A Yes, sir.

3 Q In the second paragraph he goes on to say "From
4 the various references available to us, it would seem that
5 a maximum working concentration would be 200 parts per
6 million." Is that right, Dr. Kelly?

7 A That's what it says here.

8 Q And he goes on to say "However, these same
9 references make references to chronic toluene poisoning
10 which apparently produces blood changes."

11 A Well, he doesn't say "references." He says
12 "inferences."

13 Q I'm sorry, my copy is very hard to read. Is
14 that "inferences"?

15 A "Inferences."

16 Q Why don't we start over, then. "However, these
17 same references make inferences to chronic toluene
18 poisoning which apparently produces blood changes."
19 Mr. Gilmore brought this to your attention in 1958?

20 A Yes, sir.

21 Q Do you remember what those blood changes were?

22 A No. It probably came from Sax and I don't

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1 believe it's been accepted that chronic toluene poisoning
2 causes blood change. It's certainly not similar at all to
3 benzene.

4 Q Whether it's similar to benzene or not,
5 Mr. Gilmore seems to think it caused blood changes; is
6 that correct, sir?

7 A Well, yes, but I don't understand -- I don't
8 accept Mr. Gilmore as an authority on blood changes due to
9 toluene.

10 Q He was Monsanto's safety director at the Texas
11 City plant?

12 A That's correct.

13 Q And if Sax said the toluene exposure caused
14 blood changes, you just don't accept that?

15 A That's correct. I don't know if Gilmore is
16 quoting Sax, but that seems to be his bible.

17 Q Did you know Sax?

18 A Did I know him? No. He was an industrial
19 hygienist someplace. He was someone who just compiled a
20 bunch of references and wrote the book.

21 Q You were familiar with Sax back at that time in
22 the 1950s?

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1 A Yes, sir.

2 MR. MC CONNELL: Dr. Kelly, let me show you a
3 document which we will mark as Kelly Exhibit 15.

4 (Kelly Exhibit 15 identified.)

5 BY MR. MC CONNELL:

6 Q Dr. Kelly, this was a document that was produced
7 by Monsanto in this litigation. It seems to be an excerpt
8 from a longer document and there's a section here on
9 toluene. Do you see that?

10 A Yes, sir.

11 Q There's a section on the first page we have
12 called "Toxicity and Hazards."

13 A The first page says what?

14 Q There's a section B called "Toxicity and
15 Hazards" under toluene?

16 A Yes, sir.

17 Q I'd like to go over some of the statements here
18 and find out whether you agree with them.

19 A First, I don't know -- I don't know who wrote
20 this or what's the date on it or anything about it.

21 Q Nor do I, Dr. Kelly, because this seems to be
22 the form we got it in.

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1 A Okay.

2 Q And I don't think that matters for present
3 purposes.

4 A Okay.

5 Q Under the "Toxicity and Hazards" section there
6 are a number of statements, Dr. Kelly. One of them is
7 this: "Toluene has an acute narcotic effect comparable to
8 that of benzene but lacks the convulsant effect of the
9 latter. Do you agree with that statement?"

10 A I'd have to look it up in an authoritative
11 toxicological text. It's probably correct, but I can't
12 say I agree with it without knowing more about it.

13 Q It says "Unconsciousness appears earlier in
14 toluene than in benzene poisoning." Is that right,
15 Dr. Kelly?

16 A I think that's true.

17 Q And was that known back in the 1940s and 1950s?

18 A I believe so.

19 Q It goes on to say "The subacute or chronic
20 toxicity of toluene is considerably less than that of
21 benzene due at least in part to its difference in
22 volatility." Do you agree with that?

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1 A Yes, sir.

2 Q It goes on to say that "Toluene may enter the
3 body by inhalation, ingestion or absorption through the
4 skin and mucus membranes." Do you agree with that?

5 A I'd have to check on how easily it is absorbed
6 through the skin.

7 Q Do you believe it is absorbed through the skin?

8 A I don't know. I said I'd have to check it.

9 Q Is it true that toluene may enter the body by
10 inhalation and ingestion?

11 A No question. Yes.

12 Q And you knew that back in the 1940s and 1950s?

13 A Yes, sir.

14 Q It goes on to say, Dr. Kelly, that "toluene
15 exerts a similar but stronger irritant action on the skin
16 and mucus membranes than benzene. Dermatitis may result
17 from its drying and defatting action on the skin." Do you
18 agree with that?

19 A Yes, sir.

20 Q Was that known in the 1940s and 1950s?

21 A You mean in general?

22 Q Was it known to you?

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1 A Yes, it was.

2 Q It goes on to say "toluene can cause
3 considerable damage to the eye tissue." Do you agree with
4 that?

5 A Yes, sir.

6 Q Was that known in the 1940s and '50s?

7 A Yes, sir.

8 Q Let's skip over to the next page. It talks
9 about effects and there's a section labeled "acute." Do
10 you see that, Dr. Kelly?

11 A Yes.

12 Q It says "exposure to high concentrations of
13 toluene results in headache, vomiting and disturbance of
14 equilibrium." Do you agree with that?

15 A Yes, sir.

16 Q Was that known in the 1940s and 1950s?

17 A Yes, sir.

18 Q Known to you and Monsanto?

19 A Yes, sir.

20 Q It goes on to say Loss of consciousness is only
21 rarely encountered. Men exposed to 800 parts per million
22 for three days developed severe nervousness, muscular

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1 fatigue, extreme nausea and insomnia which persisted for
2 several days. They exhibited mental confusion, loss of
3 self-control, lack of muscular coordination and impairment
4 of visual accommodation. Similar but less pronounced
5 findings were encountered following exposure to lower
6 concentrations." Do you agree with that?

7 A Yes, sir.

8 Q Was that known to you back in the 1940s and
9 1950s?

10 A Yes, sir.

11 Q Monsanto knew about that at that time?

12 A Yes, sir.

13 Q The next section is called "Chronic." It goes
14 on to say "long-continued or repeated exposure to toluene
15 is followed by headache, giddiness, insomnia, nervous
16 irritability and inability to work. Loss of appetite,
17 nausea and vomiting are noted." Do you agree with that?

18 A I'm not sure about the loss of appetite, nausea
19 and vomiting. I would have to --

20 Q You'd have to check on that part of it?

21 A Yes, sir.

22 Q Do you agree with the rest of it?

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1 A Yes, sir.

2 Q And that was known to you in the 1940s and
3 1950s?

4 A Yes, sir.

5 Q It goes on to say "Intolerance to alcohol is
6 pronounced and is sufficiently characteristic of toluene
7 poisoning to be considered of diagnostic importance.
8 Nosebleeds and heart pains may be encountered." Do you
9 agree with that?

10 A Oh, I'm not sure of the evidence for that. That
11 I'd have to --

12 Q You'd have to check on that part?

13 A Yes, that's correct.

14 Q Let's talk about the next part, Dr. Kelly.

15 "Chronic toluene poisoning, like benzene poisoning,
16 produces blood changes. Toluene poisoning differs from
17 benzene poisoning, however, in the absence of extreme
18 changes." Do you agree with that?

19 A I don't know because he doesn't say what the
20 blood changes are. If he's talking about a very mild
21 anemia, that could be one thing. If he's talking about
22 aplastic anemia, he's wrong. So I don't know what he's

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1 talking about, but I can't agree with that statement. He
2 qualifies it and says it differs from benzene poisoning in
3 the absence of extreme changes, so he's got statements in
4 there that only he knows what he's talking about and I
5 don't believe I could agree with it without knowing more
6 about what evidence he has. All I can say is that from an
7 industrial point of view, toluene is a much less of a
8 problem than benzene.

9 Q Benzene is a problem?

10 A Well, it could be a problem, yes.

11 Q Did Monsanto monitor workers who were exposed to
12 toluene and benzene in the plants?

13 A They did of the benzene workers. I do not
14 believe that we monitored the toluene workers. It
15 depended on the air levels of the benzene. We monitored
16 the working environment and we also monitored the blood
17 levels, the urinary levels of phenols with the benzene
18 workers. We did that. We did not do that with toluene
19 workers.

20 MR. MC CONNELL: Let me show you, Dr. Kelly,
21 what we will mark as Kelly Exhibit 16.

22 (Kelly Exhibit 16 identified.)

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1 BY MR. MC CONNELL:

2 Q Dr. Kelly, do you recognize this as a letter you
3 wrote to Mr. A.B. Trebitz in 1959?

4 A I do now. I didn't remember anything about it
5 until you showed me this.

6 Q But you remember it now?

7 A Yes, sir.

8 Q And it's dated September 18, 1959?

9 A Yes, sir.

10 Q Mr. Trebitz was at the Vickers Petroleum
11 Company?

12 A Yes, sir.

13 Q And why were you writing to Mr. Trebitz?

14 A He obviously got communication with me asking
15 what we did for periodic examinations on workers with
16 benzene and toluene. Whether he wrote to me as a
17 physician for a supplier -- I don't know if this man was a
18 customer of ours for -- we obviously wrote asking about
19 xylene and I told him we -- we didn't even make it. And as
20 far as toluene and benzene are concerned, I do not know
21 whether he wrote to me as a Monsanto employee or a member
22 of the Manufacturing Chemists Association. Sometime when

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1 I was on that committee people would write into the MCA
2 and they would give it down to me or some other member of
3 the committee.

4 Q Would you read the first sentence of the second
5 paragraph, Dr. Kelly?

6 A "With toluene and benzene, we examine workers
7 yearly and do a complete blood count, including smear."

8 Q What did you mean, Dr. Kelly, by "we examine
9 workers yearly"?

10 A We examined them once a year.

11 Q Did they get a complete physical examination?

12 A Yes, sir, but I'm not sure that we did with
13 toluene as much as with benzene. An awful lot of times
14 workers were exposed to both toluene and benzene. I don't
15 remember if we had individuals just exposed to toluene,
16 per se, and I would doubt if we would give them a yearly
17 examination if they were not exposed to benzene along with
18 the toluene.

19 Q But your letter does say "With toluene and
20 benzene, we examine workers yearly"?

21 A Yes, sir.

22 Q And it goes on to say that you do a complete

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1 blood count, including smear." What does that mean,
2 Dr. Kelly?

3 A Smear is a differential look at the blood
4 cells. You see the characteristic of the blood cells. In
5 a blood count you just count them. In a smear you look at
6 the character of the blood cells and whether there's any
7 abnormal proportion in any of the individual components of
8 the blood, the various lymphocytes, leukocytes, et cetera.

9 Q Is it to determine whether there are any
10 abnormal or changed blood cells?

11 A Yes, sir.

12 Q You go on to say here, Dr. Kelly, "In addition
13 we carry out an interval complete blood count on our
14 benzene workers so that these workers receive a blood
15 count every six months. In addition, we carry out urine
16 sulfate tests on our benzene workers." What are urine
17 sulfate tests, Dr. Kelly?

18 A It has to do with the ratio of conjugated
19 sulfates in the urine. In addition, it referenced in
20 comparison to the unconjugated. I don't know the details
21 of it now but that was a test used for a while and carried
22 out examination of the phenols in blood as a more delicate

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1 test, so I guess this fell out sometime in 1960.

2 Q In 1959 when you wrote this letter, you knew
3 that benzene was an extremely toxic material?

4 A Well, again, you're using a term "extremely
5 toxic." It's a toxic material. There's probably billions
6 of pounds of the stuff made every year and used every year
7 and it is not in the same ballpark as hydrogen cyanide but
8 it is more toxic -- I would say it's a toxic compound, not
9 highly toxic like cyanide would be, but more toxic than
10 toluene is, certainly.

11 Q And you knew that long-term exposure would cause
12 aplastic anemia?

13 A In a sufficient amount. There was -- the
14 government had set various safe levels. I don't know what
15 the level was in 1959, but I think it was around 100 parts
16 per million, something along there, and then they dropped
17 it to 50 and then they dropped it to 10, and I think they
18 were talking about dropping it to one by the time I left
19 Monsanto. So it was a toxic compound.

20 Q No secret?

21 A I beg your pardon?

22 Q No secret?

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1 A No what?

2 Q It wasn't a secret?

3 A Oh, no.

4 Q And it causes leukemia?

5 A Benzene?

6 Q Yes, sir.

7 A It can cause leukemia in sufficient dose.

8 Q And you knew that at the time?

9 A Yes, sir.

10 Pause...

11 MR. MC CONNELL: Dr. Kelly, let me ask you to

12 look at a document which we'll mark as Kelly Exhibit 17.

13 (Kelly Exhibit 17 identified.)

14 BY MR. MC CONNELL:

15 Q This is a memo from W.R. Skinner to J.H.

16 Kernan. It's dated July 25, 1947, and if you'll look in

17 the upper right-hand corner, there's a list of names and

18 Dr. R.E. Kelly is one of those names?

19 A Yes, sir.

20 Q Is this a memo you received a copy of back in

21 1947?

22 A Yes, sir.

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1 Q Who was W.R. Skinner?

2 A W.R. who?

3 Q W.R. Skinner.

4 A I don't know who he was.

5 Q In any event, this is a memo about benzene
6 toxicity?

7 A Yes.

8 Q And the first sentence says "Answering our
9 inquiry about the toxicity of benzene and how to deal with
10 it, Dr. R.E. Kelly stated that among other precautionary
11 steps, 'medical control by blood counts and urine tests'
12 should be considered."

13 A Yes, sir.

14 Q And is that an accurate statement of the
15 measures you were taking in the late 1940s regarding
16 benzene exposure?

17 A Yes, sir.

18 Q Further down it says "It seems best that the
19 medical department be prepared to make such tests and at
20 such intervals as are necessary to detect a tendency to
21 chronic benzene poisoning, and also be prepared to deal
22 with cases of acute poisoning-as well." And my question

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1 for you is, did the Monsanto medical department deal with
2 cases of benzene poisoning back in the 1940s?

3 A No, we never had it. We prevented it.

4 Q You were prepared for it?

5 A Yes, sir.

6 Q And you worked hard to prevent any exposure to
7 the workers?

8 A Well, we did work hard but we took the proper
9 precautionary steps to prevent it.

10 Q And the toxicity information about benzene that
11 we've been talking about was known to you in the late
12 1940s?

13 A Yes, sir.

14 Q What is benzol, Dr. Kelly?

15 A Same as benzene.

16 Q The same thing as benzene?

17 A Yes, sir.

18 Q Different term for the same chemical?

19 A Yes, sir, just like "whiskey" is spelled
20 differently in the United States than the United Kingdom.

21 MR. MC CONNELL: Let me show you a document
22 which we'll mark as Kelly Exhibit 18.

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1 (Kelly Exhibit 18 identified.)

2 BY MR. MC CONNELL:

3 Q Is this a memo that you received from Robert D.
4 Sutherland in 1946?

5 A Yes, sir, it is.

6 Q It's dated May 20, 1946?

7 A Yes, sir.

8 Q Who was Robert D. Sutherland?

9 A I haven't the slightest idea. It says he was a
10 safety engineer for the Reconstruction Finance
11 Corporation, which was an agent for Monsanto Chemical
12 Company in Texas City.

13 Q Do you know what the Reconstruction Finance
14 Corporation was?

15 A No, sir, I don't.

16 Q And if you read the letterhead at the top, it
17 says "Monsanto Chemical Company, agent for Reconstruction
18 Finance Corp."

19 A Yes, sir, I read that.

20 Q And do you know what the relationship was
21 between Monsanto and the Reconstruction Finance Corp. at
22 that time?

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1 A We were their agent, but I don't know what else
2 that means.

3 Q Would you read the first sentence of that,
4 Dr. Kelly.

5 A "We have been running blood counts on all our
6 lab personnel to check on the absorption of benzol fumes
7 and the tests have shown that the hemoglobin was low on
8 all tested with the exception of three.

9 Q What would it mean to you if the hemoglobin
10 counts were low on those employees after the exposure to
11 benzol?

12 A It could mean a lot of different things. How
13 low was it? What's the percentage? Three out of how
14 many? Did he have 20 people where their hemoglobin was
15 low? It could be from the action of benzene. It could be
16 from the loss of blood. I don't know if these were
17 females or males or if they had another reason to have a
18 low hemoglobin. So it was just something that had to be
19 investigated.

20 Q He goes on to say "Our principal hazard in the
21 lab is from benzol fumes which are contained in all our
22 materials such as styrene, ethylbenzene, polyethylbenzol.

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1 et cetera." Is that an accurate statement?

2 A I don't know -- no, I don't think so. I don't
3 know what he means by saying benzol fumes are contained in
4 all our materials such as styrene. Maybe there's a small
5 percentage of benzene residual in styrene, but I don't
6 know what the exposure would be, what -- the lab people as
7 a rule do not get a great deal of exposure. They work
8 under hoods and other laboratory apparatus. So I don't
9 know what he means by that's the hazard.

10 Q He goes on to ask you to contact the plant
11 physician, Dr. Manske?

12 A Yes, sir.

13 Q Do you remember doing that?

14 A I'm sure I did, but I don't remember it.

15 Q You don't remember what the follow-up on this
16 problem was?

17 A No, sir. 47 years ago? I don't remember.

18 MR. MC CONNELL: Why don't we take five.

19 (Recess.)

20 BY MR. MC CONNELL:

21 Q Dr. Kelly, we're all back now. Do you recall
22 that a little earlier you and I had some discussions about

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1 the acetylene soot at the Monsanto Texas City plant?

2 A Yes, sir.

3 Q And you couldn't remember when we talked whether
4 there had been some evidence that there were polynuclear
5 aromatic compounds contained in that soot; is that right,
6 sir?

7 A No -- well, no, I think it was established that
8 there was some, but I thought the discussion was whether
9 or not it was a possible carcinogen.

10 Q And you remember it was established that there
11 were polynuclear aromatics contained in the soot?

12 A I'm not really sure.

13 MR. MC CONNELL: Why don't we do this: I'll
14 show you a document, Dr. Kelly, which we will mark as
15 Kelly Exhibit 19.

16 Kelly Exhibit 19 identified.

17 BY MR. MC CONNELL:

18 Q Dr. Kelly, this is a letter from Jack Garrett to
19 Mr. Joseph Houghton, H-o-u-g-h-t-o-n. Your name doesn't
20 appear on this document, Dr. Kelly, but I would draw your
21 attention to the second paragraph of the letter. And by
22 the way, this is dated December 8, 1958; is that correct,

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1 sir?

2 A Yes, sir.

3 Q And Mr. Garrett was working on your staff at
4 that time in the medical department?

5 A Yes, sir.

6 Q The second paragraph of the letter, Mr. Garrett
7 says "While discussing the acetylene soot problem with
8 Mr. Rotzler, who supervises this group of departments, the
9 acetylene polymer problem was brought up. There is a
10 possibility that if there are polynuclear aromatic
11 hydrocarbons in the soot, some of these compounds are also
12 in the acetylene polymer." Does this refresh your memory
13 that by 1958 it had been established that there were
14 polynuclear aromatics in the acetylene soot?

15 A No, sir. They don't say it was established.
16 They say there's a possibility that if there are
17 polynuclear aromatic hydrocarbons, some of these are also
18 in the acetylene polymer. So if there weren't any in the
19 soot, there wouldn't be any in the polymer, so it's just a
20 possibility.

21 MR. MC CONNELL: Let's take a look at a document
22 that we will mark as Kelly Exhibit 20.

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1 (Kelly Exhibit 20 identified.)
2 BY MR. MC CONNELL:
3 Q Do you have that in front of you now, sir?
4 A Yes, I do.
5 Q This is a memo from M.L. Owens to R.J. Schatz?
6 A Yes, sir.
7 Q Did you know those men, sir?
8 A Did I know --
9 Q Did you know them at the time?
10 A No, not those two.
11 Q This is a memorandum dated January 19, 1959?
12 A Yes, sir.
13 Q And if you'll look in the column in the upper
14 right-hand corner, a copy apparently went to Jack Garrett
15 in St. Louis?
16 A Yes, sir.
17 Q And Jack Garrett was working in your medical
18 department at the time?
19 A That's correct.
20 Q If we could look at paragraph 1, the memorandum
21 says "Incomplete combustion of gaseous fuels, including
22 acetylene, forms condensed polynuclear hydrocarbons."

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1 Those found fairly conclusively in the work of references
2 4 and 5 (Tebbens) included 3,4-benzpyrene and
3 1,2,5,6-dibenzanthracene which are known to be
4 carcinogenic." Do you see that, Dr. Kelly?

5 A Yes, sir, I see it.

6 Q And do you remember knowing that at the time?

7 A I don't remember whether I knew it or not.

8 Q If you'll look at the second paragraph, the
9 memorandum says "Any extensive analytical work on
10 Department 18 soot will without doubt in my mind find some
11 3,4-benzpyrene. The definition of 'some' is the hooker in
12 this whole problem. Houghton says the presence of
13 benzpyrene from his lab work can be suspected. I think he
14 has shown it is present." Do you see that, Dr. Kelly?

15 A Yes, sir.

16 Q Did Mr. Garrett ever bring this to your
17 attention back in the 1950s?

18 A Let me finish the paragraph.

19 Q Go ahead and take your time, too.

20 A Yes, sir.

21 Q My question is simply whether Mr. Garrett
22 discussed this matter with you back in the 1950s.

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1 A I don't remember whether he did or not.

2 Q As we're sitting here today, you can't remember
3 one way or the other?

4 A That's correct.

5 Q You don't remember what Monsanto was doing with
6 its acetylene soot from the Texas City plant at the time?

7 A I don't remember.

8 Q Do you remember at any time what Monsanto did
9 with the acetylene soot from the plant?

10 A I remember there was a great deal -- not a great
11 deal, but there was considerable discussion about the
12 acetylene soot and presence or absence of any carcinogenic
13 products in it, but I have no clear recollection of what
14 was done, what we established one way or the other.

15 Q That was handled by Mr. Garrett?

16 A I beg your pardon?

17 Q That was handled by Mr. Garrett?

18 A Yes, I think so.

19 Q Dr. Kelly, do you remember in the 1950s there
20 were some questions that came up about benzene that was
21 contained in polyethylene manufactured by Monsanto?

22 A You don't mean polystyrene?

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1 Q No, sir.

2 A Maybe the memorandum will refresh me.

3 MR. MC CONNELL: Let me show you a document that
4 we'll mark as Kelly Exhibit 21.

5 (Kelly Exhibit 21 identified.)

6 BY MR. MC CONNELL:

7 Q Is this a memo that you received from John Fox
8 in 1958?

9 A Yes, it is.

10 Q And Mr. Fox is the gentleman at the Monsanto
11 Texas City plant that we discussed earlier today?

12 A Yes, we discussed his position at Texas City.

13 Q He was the safety director?

14 A No. He was -- Gilmore was the safety director.
15 Fox was research, part industrial hygiene, part safety, I
16 guess. I don't really know what his title was, but he was
17 doing some things in all those three areas.

18 Q The date on this memo is May 29, 1958?

19 A Yes, sir.

20 Q And the subject is "Benzene in Polyethylene"?

21 A Yes, sir.

22 Q Do you remember that Mr. Fox wrote you to ask

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1 for some information about the benzene contamination in
2 polyethylene?

3 A Do I remember that he asked me?

4 Q Yes, sir.

5 A Yes, sir.

6 Q And that polyethylene was going to be used for
7 food packaging?

8 A Yes, sir.

9 Q He went on to say that at present the only
10 available information they have is that the fresh
11 unrefined pellets contain 400 to 500 parts per million of
12 benzene and the refined pellets 50 parts per million?

13 A That's what he says.

14 Q And he goes on to say they have no information
15 on how much is left in the polymer after it passes through
16 a molding machine but since the machine operates at 350
17 degrees centigrade, there shouldn't be much benzene
18 left."

19 A Yes, sir.

20 Q And do you remember that was a problem that
21 confronted Monsanto back in 1958?

22 A Well, I don't remember how extensive the problem

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1 was or how it was solved. Were there any other memorandum
2 of mine back to him?

3 Q He goes on to say that "the unrefined product is
4 already on the market."

5 A That's what he says.

6 Q Is that accurate?

7 A I don't know.

8 Q Do you have any reason to question it?

9 A What?

10 Q Do you have any reason to question it?

11 A No, I don't have any reason to distrust him, but
12 I can't of my own knowledge say it's accurate or not.

13 Q He goes on to say their "question now is
14 whether there is an acceptable limit already established
15 for benzene in polyethylene. They are rather late
16 requesting this information but they needed to first
17 obtain reliable information on the amount of benzene
18 present."

19 A That's what he says.

20 Q And he goes on to say "if refining is necessary
21 to reduce the level to 50 parts per million, the
22 production cost will certainly be increased. Any further

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1 lowering would really get expensive."

2 A Yes, sir.

3 Q Was that true?

4 A I don't know how -- obviously if you're going to
5 do more refining, the cost is going to go up. I don't
6 know what he means by "really get expensive." I don't
7 know what that means.

8 Q Was there a concern at Monsanto about increasing
9 the production costs?

10 A Well, I don't know. This is John Fox. This is
11 not the manufacturing group. This is not the research
12 group, and I don't know how to resolve the problem.
13 Obviously, as he does say, if you put -- no matter how much
14 benzene, 400 parts per million in pellets, you subjected
15 them to 350 degrees centigrade, you're going to volatilize
16 an awful lot. If there's any benzene in there, it's not
17 going to be remaining at the other end of the extrusion
18 line, so it would appear the sensible thing would be to
19 get some of the material that comes out of a molding
20 machine and see whether there's any benzene left in it at
21 that point rather than any pellets.

22 Q Would it be important to make sure there wasn't

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1 any benzene left in the material that was going to be used
2 for food packaging?

3 A Any benzene, no. I think that the FDA has put
4 limits on sometime, I don't know when they did it, in food
5 packaging but down to a zero level is not necessary.

6 MR. MC CONNELL: Let's look at your answer to
7 Mr. Fox. Let's mark this as Kelly Exhibit 22.

8 (Kelly Exhibit 22 identified.)

9 BY MR. MC CONNELL:

10 Q Would you read that and tell me when you're
11 finished, Dr. Kelly.

12 A Yes. Yes, sir.

13 Q Is this your memo to Mr. Fox regarding benzene
14 in polyethylene?

15 A Yes, sir.

16 Q It's dated June 2, 1958?

17 A Yes, sir.

18 Q Let's look at the first paragraph, Dr. Kelly.

19 You say "First, a strict scientific answer to your
20 question as to 'the amount of benzene that can be safely
21 left in polyethylene used in food packaging' would require
22 extraction data. Even then the individual would have to

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1 come out with an opinion which would be more or less an
2 educated guess."

3 A Yes, sir.

4 Q So you didn't really know with any certainty how
5 much benzene would be left in the food packaging?

6 A We're not dealing with opinions. We're dealing
7 with Food and Drug Administration thinking and if I were
8 the individual, I'd have to come out with a more or less
9 educated guess, depending on what the level was. If it
10 was 1 part per million in the food packaging, I would say
11 forget about it. It's no problem. If it were more, that
12 may be get into the regulatory aspect. I don't know where
13 I came up with that a 10th of a part per million that the
14 FDA might be talking about. I just don't know.

15 Q Let's read the next paragraph. Would you read
16 that for us, Dr. Kelly.

17 A Which is the next one?

18 Q "You then ask."

19 A "You then ask whether or not there is any level
20 that would be acceptable. I presume by this you mean
21 acceptable by the Food and Drug Administration. If any is
22 extractable, the FDA would say if more than a 10th of a

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1 part per million came out, it would be unacceptable."

2 Q Let me stop you there and ask a question. You
3 told Mr. Fox that the FDA would say it was unacceptable if
4 more than a 10th of a part per million came out of the
5 material?

6 A That's what I told them. I do not know at the
7 present time what my basis for that statement was.

8 Q But that's what you told Mr. Fox in 1958?

9 A That's what I told him in 1958, yes.

10 Q Would you read the first sentence of the next
11 paragraph.

12 A "Now we can come down to being practical."

13 Q So you're putting aside what the FDA thinks and
14 you're talking about what's practical?

15 MR. BRAY: I object to that characterization.

16 MR. MC CONNELL: Object to the coaching. You
17 can answer.

18 MR. BRAY: What coaching are you talking about?
19 I object to the mischaracterization of what you said.
20 That's all I said.

21 BY MR. MC CONNELL:

22 Q You can answer, Dr. Kelly. Do you need to hear

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1 the question again?

2 A I'd like to hear the question, yes, sir.

3 MR. MC CONNELL: Read it back to him.

4 (The reporter read the record as requested.)

5 THE WITNESS: Well, no. Certainly anything the
6 FDA says is pretty practical because they're the ones who
7 are in charge, but I go on to say if we have 400 parts per
8 million in the refined pellets, which are then stored and
9 come through a molding machine at 350 degrees C, that
10 would present no hazard to the ultimate user. But
11 unfortunately, mine might be a strong vote if we're taking
12 it up with the FDA because I feel sure any benzene not
13 removed by molding at 350 degrees C would be so bound with
14 polyethylene it would not be removed by contact with the
15 food.

16 BY MR. MC CONNELL:

17 Q Was it important, Dr. Kelly, to make sure there
18 wasn't any benzene getting into the food?

19 A It was important to find out what level would be
20 getting into the food. "Any" is not necessarily the right
21 answer.

22 Q And you went on to say here, Dr. Kelly,

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1 "Believing this and proving it are two different things so
2 what we should do is keep still about any possible benzene
3 contamination in polyethylene." Did you write that,
4 Dr. Kelly?

5 A Did I write it? Yes, I did.

6 Q What did you mean, Dr. Kelly, when you said
7 "what we should do is keep still about any possible
8 benzene contamination in polyethylene"?

9 A Yes, sir.

10 Q What did you mean by that?

11 A Well, until we found out really what levels of
12 benzene contamination were present, we ought to keep still
13 about it. Maybe we've got a problem, but maybe we don't.
14 We don't know anything about it.

15 Q You didn't tell the FDA?

16 A I can't answer that. Now I don't know whether I
17 did or not. Whether I did or not, I don't know.

18 Q You didn't tell your customers?

19 A No, I did not.

20 Q And in fact, you went on -- go ahead, Dr. Kelly.

21 A Because, in my belief, we did not have any
22 problem with safety with any food that was packaged in

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1 polyethylene that came through a molding machine at 350
2 degrees C.

3 Q And you went on to say "I think our salespeople
4 should be notified but certainly no one on the outside
5 should be told about it."

6 A Yes, sir, I said that.

7 Q To the best of your knowledge, Dr. Kelly, is it
8 true that no one on the outside was told about it?

9 A I don't know. I don't know what developed after
10 March of 1958. I don't know what else happened. Do you
11 have anymore memoranda there on this matter?

12 Q You just don't remember?

13 A I don't remember.

14 Q You don't remember going to the FDA to talk with
15 them about this?

16 A I don't remember going. I don't believe I went,
17 but there certainly may be correspondence with the FDA.

18 Q Can you remember any correspondence with the FDA
19 as we sit here today?

20 A I don't remember.

21 MR. MC CONNELL: Let me show you a document,
22 Dr. Kelly, which we will mark as Kelly Exhibit 23.

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1 (Kelly Exhibit 23 identified.)

2 BY MR. MC CONNELL:

3 Q Is this a memo that you got from John L. Tuley
4 in 1964?

5 A I can't make out the date, but it is March the
6 5th, something.

7 Q On my copy it looks like March 4, 1964.

8 A Mine is March the 5th -- oh, I see.

9 MR. FLORIG: You're looking in two different
10 places.

11 BY MR. MC CONNELL:

12 Q Oh, there's a stamped date, which is not very
13 legible. In fact, I can barely see it on my copy and
14 there's a typewritten date on the left.

15 A I wasn't seeing that. Yes, that's correct,
16 March 4, '64.

17 Q Subject is "Toxicity of Benzene"?

18 A Yes, sir.

19 Q Who was Mr. Tuley?

20 A Safety supervisor at the Long Beach plant of the
21 Monsanto Company.

22 Q And without reading it all, Dr. Kelly, Mr. Tuley

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1 advised you that they anticipated using benzene in a
2 process starting up at the Long Beach plant?

3 A Yes, sir.

4 Q And he asked your advice about benzene toxicity?

5 A Yes, sir.

6 Q Do you remember your response to Mr. Tuley?

7 A No, I don't remember it.

8 MR. MC CONNELL: Let me show you a document that
9 we'll mark as Kelly Exhibit 24.

10 (Kelly Exhibit 24 identified..

11 BY MR. MC CONNELL:

12 Q Is this your letter back to Mr. Tuley?

13 A Yes, it is.

14 Q Dated March 10, 1964?

15 A Yes, sir.

16 Q You provided him some information about benzene
17 toxicity?

18 A I beg your pardon?

19 Q You provided Mr. Tuley with some information
20 about benzene toxicity?

21 A Yes.

22 Q Would you read the first sentence in the second

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1 paragraph.

2 A "From the medical point of view, I am distressed
3 at the substitution of benzene for a less toxic solvent,
4 toluene."

5 Q And that's what you told me earlier, that
6 benzene is more toxic than toluene?

7 A Yes, sir.

8 Q And Mr. Tuley and the people at the Long Beach
9 plant were substituting benzene for toluene in their
10 process; is that right?

11 A That's what it seems they wanted to do.

12 Q Would you read the next sentence for us?

13 A "I am sure, however, that you have sufficient
14 commercial justification."

15 Q What was the commercial justification for
16 changing to a more toxic solvent?

17 A Maybe it was a better product.

18 Q Maybe it was cheaper?

19 A I beg your pardon?

20 Q Maybe it was cheaper?

21 A I don't really know the cost differential
22 between benzene and toluene..

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1 Q You go on to say there, Dr. Kelly -- why don't
2 you just read the next sentence for us.

3 A "While it is true the process is a closed one,
4 we always have to worry about leaks. We have found the
5 pump house to be an extremely dangerous area."

6 Q What did you mean by that last statement,
7 Dr. Kelly?

8 A Well, the pump house is a place where pumps are
9 enclosed in a small outside shed and the possibility of
10 leaks through the gaskets and the various parts of the
11 pumps can occur, and it was one of the more -- places
12 where the exposure would be higher.

13 Q And you were always worried about leaks in the
14 pump house?

15 A Well, we worried in case there were a leak. We
16 didn't have leaks all the time. We didn't have people
17 working around the pump house, but they had to go and
18 check the pumps. Presumably they went in and did
19 something with the packing of the pump, had to tear a pump
20 down. Pumps don't leak all the time, obviously, but there
21 could be leaks and there could be repairs on the pumps.

22 Q And if you're running a chemical plant, you know

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1 you're going to have leaks from time to time; is that
2 right?

3 A Well, we don't know. We always are getting --
4 allegedly getting better pumps that won't leak but that
5 doesn't seem to happen all the time.

6 Q Sometimes they do leak?

7 A Sometime they leak, sure.

8 Q Do you remember, Dr. Kelly, there was an issue
9 in the 1950s about a possible acrylonitrile contamination
10 of the styrene made by Monsanto?

11 A I don't remember that.

12 MR. MC CONNELL: Let me show you a document
13 which we'll mark as Kelly Exhibit 25.

14 (Kelly Exhibit 25 identified.)

15 BY MR. MC CONNELL:

16 Q Is this a letter that you got from F.J. Hahn in
17 1953?

18 A Yes, sir.

19 Q I'm sorry, I think that's 1958, Dr. Kelly. I
20 didn't mislead you but it's hard to read. It's dated June
21 11, 1958?

22 A Yes, sir.

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1 Q Who was F.J. Hahn?

2 A I don't know.

3 Q Do you remember he worked in Monsanto's
4 Massachusetts plant?

5 A Yes -- I mean, this came from Springfield so I'm
6 sure he worked there.

7 Q He says in the first paragraph that "The present
8 arrangement for manufacturing styrene and styrene
9 copolymer lattices requires that they share equipment with
10 Lytron 680 which employs acrylonitrile"?

11 A Yes, sir.

12 Q And he goes on to say that "This arrangement
13 presents the possibility of contamination of the styrene
14 lattices with acrylonitrile monomer and since these
15 lattices were sold in food packaging applications, we are
16 faced with the need to determine the degree of
17 acrylonitrile contamination as a regular control
18 measure." Do you remember discussing that with Mr. Hahn?

19 A No, I don't.

20 Q Do you remember anything at all about this
21 problem?

22 A No, sir.

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1 MR. MC CONNELL: Let me show you a document
2 which we'll mark as Kelly Exhibit 26.

3 (Kelly Exhibit 26 identified.)

4 BY MR. MC CONNELL:

5 Q Do you recognize this, Dr. Kelly, as your
6 response to Mr. Hahn?

7 A No, I don't. Let me read it all the way through
8 and I may be able to remember.

9 MR. MC CONNELL: Sure.

10 (Pause.)

11 THE WITNESS: Yes, sir, I finished reading it.

12 BY MR. MC CONNELL:

13 Q Do you recognize that now as your response to
14 Mr. Hahn?

15 A Yes, I do.

16 Q It's dated July 7, 1958?

17 A Yes, sir.

18 Q I have just one or two very short questions
19 about this, Dr. Kelly. Would you look down at the fifth
20 paragraph in the letter.

21 A Yes, sir.

22 Q Would you read just the first sentence for us?

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1 A "I might also say that Dr. Lehman would take a
2 very negative view as to the presence of any AN in an
3 extractable form."

4 Q Who was Dr. Lehman?

5 A Director of the Food and Drug Administration --
6 director of pharmacology.

7 Q And you knew in 1958 that he would take a very
8 negative view about any acrylonitrile that might migrate
9 into food products?

10 MR. BRAY: Objection to that characterization of
11 the document.

12 MR. MC CONNELL: Object to your coaching again,
13 Jack.

14 MR. BRAY: That's an objection. If you're going
15 to mislead and misstate the document, I have to object.
16 There's no other way to do it. This is very short.

17 THE WITNESS: Well, I said I really didn't know
18 what Lehman was going to do, but I say I believe that he
19 would take a negative view as to the presence of any AN in
20 an extractable form.

21 BY MR. MC CONNELL:

22 Q And you knew that in 1958?

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1 A Yes, sir.

2 MR. MC CONNELL: It's 5:00 and we've promised to
3 turn over the conference room at 5:00, so I think we
4 should set a date for -- a time for resuming in the
5 morning.

6 MR. BRAY: The earlier the better.

7 MR. MC CONNELL: Why don't we go off the record
8 for a minute.

9 (Discussion off the record.)

10 (Whereupon, at 5:00 p.m., the deposition was
11 adjourned, to reconvene at 9:30 a.m., Thursday, January
12 28, 1993.)

13

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16 R. EMMET KELLY

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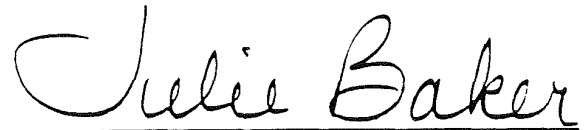
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I, JULIE BAKER, the officer before whom the foregoing deposition was taken, do hereby certify that the witness whose testimony appears in the foregoing deposition was duly sworn; that the testimony of said witness was taken in shorthand and thereafter reduced to typewriting by me or under my direction; that said deposition is a true record of the testimony given by said witness; that I am neither counsel for, related to, nor employed by any of the parties to the action in which this deposition was taken; and, further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.


Notary Public in and for the
District of Columbia

My Commission Expires SEPTEMBER 30, 1997

TRANSCRIPT OF PROCEEDINGS

IN THE SUPERIOR COURT
OF THE STATE OF DELAWARE
IN AND FOR NEW CASTLE COUNTY

-----X		
MONSANTO COMPANY,	:	
	:	
Plaintiff,	:	Civil Action Number
	:	
v.	:	88C-JA-118-1-CV
	:	
AETNA CASUALTY & SURETY COMPANY,	:	NON-ARBITRATION
al.,	:	CASE
	:	
Defendants.	:	
	:	
-----X		

KELLY DEPOSITION EXHIBITS

PROTECTED MATERIAL: MONSANTO
INSURANCE COVERAGE LITIGATION

Washington, D. C.

Thursday, February 4, 1993

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