

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEW JERSEY
CIVIL NO. 76-1933

EUGENE MALINKO, et al., : HON. GEORGE H. BARLOW

Plaintiffs, :

-vs-

DEPOSITION OF:
ROSCOE NICHOLAS WHEELER, JR.

UNION CARBIDE CORP., :
et al., :

Defendants. :

T R A N S C R I P T of stenographic notes

of the proceedings taken in the above entitled matter
before FRANK ANTHONY, a Notary Public and Certified
Shorthand Reporter of New Jersey, at the office of
PITNEY, HARDIN & KIPP, ESQS., 163 Madison Avenue,
Morristown, New Jersey, on Friday, February 9, 1979,
commencing at 10:00 A.M.

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1 R O S C O E N I C H O L A S W H E E L E R ,
2 J R. , r e s i d i n g a t 1 7 2 3 M a s s e y C i r c l e ,
3 C h a r l e s t o n , W e s t V i r g i n i a , 2 5 3 0 3 , b e i n g f i r s t
4 d u l y s w o r n , t e s t i f i e s a s f o l l o w s :

5 D I R E C T E X A M I N A T I O N

6 B Y M R. L E V I N S O N :

7
8 Q N o w , M r. W h e e l e r , w e ' v e a l l m e t b e f o r e , b u t f o r
9 t h e r e c o r d l e t m e i n t r o d u c e m y s e l f a g a i n . I ' m A l f r e d
10 L e v i n s o n a n d I r e p r e s e n t t h e p l a i n t i f f s i n t h i s c a s e ,
11 a n d s e a t e d a l o n g s i d e t o m y l e f t i s M r. G r a y z e l f r o m m y
12 o f f i c e .

13 N o w w e ' r e h e r e t o t a k e y o u r d e p o s i t i o n t o d a y
14 a n d I k n o w y o u ' r e f a m i l i a r w i t h t h e n a t u r e o f d e p o s i t i o n s ,
15 h a v i n g a t t e n d e d d e p o s i t i o n s i n C h i c a g o o f D r. K a r n o w , i s
16 t h a t c o r r e c t ?

17 A T h a t ' s c o r r e c t .

18 Q Y o u k n o w p r e c i s e l y w h a t ' s i n v o l v e d , d o y o u n o t ,
19 o r s h a l l I g o i n t o i t b r i e f l y ?

20 A I t h i n k I k n o w r e a s o n a b l y w e l l w h a t ' s i n v o l v e d .

21 Q A l l r i g h t .

22 B u t j u s t f o r t h e p u r p o s e o f a d v i s i n g y o u a t t h i s
23 m o m e n t s o t h a t t h e r e ' s n o m i s u n d e r s t a n d i n g w h a t e v e r , y o u
24 t e l l u s t o d a y a s a s i g n i f i c a n c e o f b e i n g i n a c o u r t r o o m
25 f o r a l l p u r p o s e s , a n d y o u ' r e u n d e r o a t h a n d w h a t e v e r y o u

1 tell us today will be eventually transcribed and put into
2 book form which will be used at the time of trial, with
3 the same impact as though you're on that stand, under oath,
4 testifying. You understand that?

5 A Yes.

6 Q All right.

7 Now I would like first to discuss with you,
8 Mr. Wheeler, your background.

9 Tell us if you will what your background is
10 in the field of Chemistry.

11 A I'm a graduate B.S. in Chemical Engineering, Virginia
12 Polytechnic Institute.

13 Q When was that? A I graduated in
14 1943, with a Grade Point Average of 3.4.

15 Q Out of 4 points, is that right?

16 A Yes.

17 Q All right. And that was in 1943?

18 A Yes.

19 Q And you went to Virginia Polytechnic after high
20 school, I assume, is that correct?

21 A No, I attended Marshall University for two years and
22 then transferred to V.P.I.

23 Q Where is Marshall University?

24 A Huntington, West Virginia.

25 Q All right.

1 Now you went to V.P.I. for how many years?

2 A For two years. Actually, for 18 months.

3 Q Okay.

4 And at V.P.I. you took your Chemistry courses,
5 is that correct?

6 A I took Chemistry both at V.P.I. and at Marshall.

7 Q Now in the field of Chemistry I assume you took
8 all the basic Chemistry courses, both Organic and Inorganic
9 Chemistry, correct?

10 A And Physical.

11 Q And Physical? A Yes, and Specialized
12 Chemistry in the polymers.

13 Q And was there much known about polymers in 1943?

14 A Not a great deal.

15 Q So polymers was really another phase of Organic
16 Chemistry in 1943, is that correct?

17 A I'll say yes and no. It's a part of Organic Chemistry,
18 but a very specialized part.

19 Q All right.

20 Now when you came out of V.P.I. in 1943, did you
21 go on doing graduate work in the field of Chemistry?

22 A Only courses that I took during my working life.

23 Q Well, let's consider some of those courses for
24 the moment.

25 In some degree of sequence, starting from your

1 college days on, or graduation from college, tell me what
2 courses you took and where.

3 THE WITNESS: I have to think about this a
4 little bit.

5 MR. LEVINSON: Well, take your time. We
6 have all day.

7 A In general, these courses were sponsored by the
8 Local Institute of Chemical Engineers' Chapter and they
9 dealt with -- to some extent they dealt with polymers,
10 distillation, heat transfer, economics and law.

11 Q And what? A And law.

12 Q All right.

13 Now you say this course was sponsored ^{by} the
14 Engineering Society?

15 A Yes.

16 Q The Local Engineering Society?

17 A Yes.

18 Q And where were these courses?

19 A They were at Charleston, West Virginia.

20 Q And were these sporadic lectures or a series of
21 concentrated courses?

22 A They did it both ways actually, depending on how we
23 brought in the visiting professors.

24 On occasion he might want to come in and give a
25 concentrated one or two-day course or, again, if you had

1 multiple professors, as we did in some cases, then these
2 would be spaced within a week or two at a time, or however.

3 Q Now where were these professors from?

4 A Carnegie, Western University and -- I'm sorry, but
5 I don't remember any others.

6 Q Were these courses -- A They were
7 reasonably well known men in their field, but I can't
8 really give you any detail.

9 Q So these were a series of all types of courses,
10 just so we understand each other, such as law and other
11 phases of Engineering, is that correct?

12 A Yes.

13 Q And they never led ^{to} any degree of any kind, did
14 they?

15 A No.

16 Q Okay.

17 Are there any other courses that you took at
18 any universities?

19 A No.

20 Q Now after getting out of V.P.I., did you go to
21 work for Union Carbide?

22 A That is correct.

23 Q What year? A I went to work about
24 March 15, 1943.

25 Q And when did you graduate from college?

1 A The end of February of '43. That's why I said 18
2 months.

3 Q This was your first job, then, is that correct?

4 A Yes.

5 Q Do you have any training of any kind in Industrial
6 Hygiene?

7 A In those days Industrial Hygiene wasn't too well
8 defined.

9 I worked a year and a half, roughly, as a ~~Gas~~
10 ~~Analyst~~, which involved certain ~~Industrial Hygiene tests~~.

11 Q But do you have any training in the relationship
12 of industry to the human body or the effects upon it?

13 A No formal training.

14 Q Do you have any training of any kind in the field
15 of medicine?

16 A Again, no formal training.

17 Q Well, let's talk about informal training in the
18 field of medicine. Tell me what you would consider training
19 in the field of medicine, first of all.

20 A I feel that whatever I've learned as related to the
21 field of medicine has been learned through the literature
22 studies which I've done in keeping track of the various
23 epidemiological toxicity of pathological studies that have
24 stemmed from the vinyl chloride problem which arose in
25 the Sixties.

1 Q So, as I understand it, you would read epidemi-
2 ological studies in connection with polyvinyl chloride work,
3 is that correct?

4 A In connection with vinyl chloride.

5 Q Vinyl chloride? A Yes.

6 Q And did you try in some way to transfer those
7 particular studies into what you were doing?

8 THE WITNESS: I don't really understand
9 the question. Could you clarify that a little
10 bit?

11 MR. LEVINSON: Yes. Sure. Let me strike
12 that question and start at another point.

13 Q At what point in your career, in terms of years,
14 would you say you first became concerned about the vinyl
15 chloride studies, the epidemiological studies you talked
16 about?

17 A Approximately 1966.

18 I think I stated the exact dates in ~~1966 and 1967~~
19 I don't recall if --

20 Q Is that the first time in your career with the
21 Union Carbide Company that you became involved in any
22 ~~research program~~ in connection with your work?

23 A Yes.

24 Q And what was it that you read in 1966 in the
25 field of epidemiological studies that brought this to your

1 attention?

2 A This was the experience reported by Goodrich in their
3 plant of the appearance of what was termed "~~agglutination~~."

4 Q Were you involved with Union Carbide from the
5 time you first went to work for them in 1943 with the
6 polyvinyl chloride manufacturing phase?

7 A I would like to spread that out a little bit.

8 Q All right, go ahead.

9 A About 1946 I started work in the ~~solution~~ polymerization
10 plant, and I went from that to what is known as an Area
11 Supervisor, where you have multiple plant operations.

12 And I ultimately became what is known as a
13 ~~Production Manager for Suspension~~ And my first -- let's
14 see. My first Production Manager job was suspension
15 and so-called ~~bulk polymerization~~ and this was a Union
16 Carbide process and not the Pechinay St. Gobain.

17 Now let me see. Then there was the ~~dispersion~~
18 PVC operation and -- then the job was reshuffled, you know,
19 and I kept the dispersion process and then went into the
20 polyethylene oxides, polyvinyl alkyl ethers, polyvinyl
21 acetates.

22 So, in effect, I have experience in all the
23 PVC processing, with the exception of ~~Pechinay St. Gobain~~.

24 Q So, in effect, have you now told us all your
25 jobs that you've had with Union Carbide from the day you

1 first started with them, up until the present time?

2 A Not really.

3 Q All right.

4 Just so I have this picture of what your career
5 has been with Union Carbide from 1943 to the present date,
6 suppose you tell us now, starting from that particular point
7 up to the present, what your various functions have been.

8 THE WITNESS: I have to make the dates
9 approximate.

10 MR. LEVINSON: Of course.

11 A All right.

12 I'll start it off as -- I started off as a Gas
13 Analyst for about a year and a half, then I transferred
14 from there and became a Production Engineer in a styrene
15 monomer plant.

16 Q Well, as a Gas Analyst your function was to
17 examine gases through some sort of equipment, is that
18 correct?

19 A That is correct.

20 Q What sort of equipment did you use to examine
21 gases?

22 A We used -- it's called fractionation techniques. This
23 was prior to the invention, of course, of the chromatograph.

24 Q And what gases were you inspecting?

25 A This plant I was working in used ethanol and benzene

1 as a basis for the manufacture of butadiene and styrene for the
2 rubber program.

3 So we were dealing with ethylene, acid aldehyde,
4 hydrogen and -- well, of course, the butadiene is a gas
5 boiling slightly below the freezing point of water.

6 Q And you were merely inspecting the gases through
7 some piece of equipment to determine, I assume, the
8 quantitative evaluation of that particular gas, is that
9 correct?

10 A That is correct.

11 I would also go out in the plant and sample
12 various vents to determine losses, concentrations of the
13 vents and that kind of thing.

14 Q So you did that for approximately a year and a
15 half?

16 A Yes.

17 Q And what was the job you went to from there?

18 A ~~The manufacture of styrene monomer from benzene.~~

19 Q Now styrene monomer is manufactured, I assume,
20 from some other chemicals, is that correct?

21 A That is correct.

22 Q Was it a closed system of manufacturing?

23 A Yes.

24 Q So what was your function in that particular
25 department?

1 A I provided technical support for the department.

2 Q You did no research in that area?

3 A A little.

4 Q But you were primarily in production?

5 A Yes.

6 Q Were you in charge of that production?

7 A I was not in charge of that production.

8 Q You were just a chemist working in production?

9 A I was an engineer working in production.

10 Q I'm sorry. All right.

11 You were a Chemical Engineer in production, is
12 that correct?

13 A Yes.

14 Q Now how long did you have that job?

15 A About a year.

16 Q And this was where?

17 A At the Institute of West Virginia, which is --

18 Q Now where did you go from there? What job did
19 you have next?

20 A I transferred from there to the Production Engineer
21 in the ~~production of polyvinyl chloride process.~~

22 Q Okay.

23 Now this is the first time you've come in contact
24 with polyvinyl chloride in the U.C.C. operation, is
25 that correct?

1 A Yes, that is correct. That was in 1946, roughly.

2 Q 1946? A Yes.

3 Q Now again you were in the production area of it,
4 correct?

5 A That's correct.

6 Q And where were you working in this plant?

7 By the way, what plant was it?

8 A I operated the Polymerization Unit.

9 Q Where? A At South Charleston.

10 Q Now again you were in the production phase and
11 not in the research phase, is that correct?

12 A In that sense, yes.

13 Q Now what did this plant in Charleston do in
14 connection with the PVC?

15 A ~~There were three different PVC plants. One, the~~
16 ~~solution polymerization; one, the Union Carbide bulk~~
17 ~~polymerization and one which was the dispersion or emulsion~~
18 ~~polymerization.~~

19 ~~So, in effect, we had three general types of~~
20 ~~polyvinyl chloride resin.~~

21 Q All right.

22 Now at that particular time, as I said before,
23 you were only concerned with the manufacturing and
24 polymerizing of PVC?

25 A (Witness nods in the affirmative.)

1 MR. LEVINSON: You have to answer yes or no,
2 so this gentleman (indicating the Court Reporter)
3 can put it on the record. You can't shake your
4 head.

5 THE WITNESS: Well, I didn't realize you
6 were asking me a question. Excuse me.

7 MR. LEVINSON: All right. Let me rephrase
8 the question.

9 Q The function of the factory there or the plant
10 there was to polymerize PVC, the vinyl chloride monomers,
11 is that correct?

12 A By the solution process.

13 Q Okay.

14 Was there any research being done in that plant
15 while you were there?

16 THE WITNESS: Would you define "research"
17 for me?

18 MR. LEVINSON: Well, as I am phrasing the
19 question the word "research" concerns itself
20 with any toxic elements of PVC or VCM. It's
21 that type of research.

22 A Well, that type research was carried on at the Mellon
23 Institute Fellowship for Industrial Hygiene, which was
24 established by Union Carbide.

25 MR. LEVINSON: Well, my question was

1 specifically directed to whether anything was
2 being done there at that plant.

3 MR. HOLLINGSHEAD: Could we establish a time
4 frame?

5 I think it might have gotten lost in the
6 series of questions.

7 MR. LEVINSON: Yes.

8 Q You started this particular job in 1946, is that
9 correct?

10 A Right.

11 Q Now how long did you work at that job?

12 A About six years.

13 Q So for six years, from 1946 to approximately
14 1952, you were involved with the polymerization of polyvinyl
15 chloride, correct?

16 A I was directly involved in the unit operation.

17 Now let me clarify this a little bit: At that
18 point I became Department Head, which meant I had charge of
19 the whole plant.

20 Q At what point was that? What year?

21 A Approximately 1952.

22 Q So at the end of your six years there you became
23 Department Head?

24 A Yes.

25 Q You became Department Head of the Manufacturing

1 Unit, correct?

2 A Right.

3 Q Now your only concern at that particular point
4 was getting production out of this polymer -- PVC -- correct?

5 A No.

6 Q All right.

7 Did you have any concern at that point with
8 research?

9 A We did use this plant to develop new products and to
10 generally upgrade the operation.

11 Q Did Union Carbide have a Research Unit at the
12 Charleston Plant when you were there?

13 A Yes.

14 Now wait a minute. I cannot tell you exactly
15 how much they did with regard to toxicity, which is your
16 concern, but there was a Research Unit at the South
17 Charleston Plant.

18 Q All right.

19 And what did that unit consist of? Doctors?
20 Engineers? Chemists? What?

21 A I couldn't really give you a specific description.

22 It was generally Doctors of Chemistry, although
23 there were others involved as well.

24 And, like I say, this is getting a little far
25 back and I can't give you anything more specific than that.

1 Q All right.

2 Did you have any M.D.'s -- medical doctors --
3 in the Research Unit at that plant?

4 A Only as regards the fact that we had a ~~full-time~~
5 ~~plant doctor~~, with a 24-hour Dispensary, and we did
6 ~~keep extensive medical records~~.

7 Q That was for ~~treatment purposes~~ primarily, this
8 doctor on the premises, is that correct?

9 A ~~Yes, and to protect the health of the workers.~~

10 Q And that was in ~~1952~~?

11 A Yes.

12 Q Now in 1952 you assumed control or you became
13 Manager or Superintendent of that production operation, is
14 that correct?

15 A Yes.

16 Q And how long did you stay on there in that
17 capacity?

18 A Again, it has to be approximate. I'd say about four
19 or five years.

20 Q And still in charge of getting out production
21 in the plant, correct?

22 A And developing new products in production.

23 Q All right.

24 That would take us up to 1960 some time, is
25 that right?

1 A Yes.

2 I hope this comes out even. Yes.

3 I know we're working somewhat in the realm of
4 conjecture with dates.

5 MR. HOLLINGHEAD: I might interject that
6 I thought that that might bring us up to 1956
7 or 1957.

8 THE WITNESS: You're correct.

9 Q So you stayed there until 1956 or 1957, in
10 your capacity as a Superintendent?

11 A Yes.

12 Q And what did you do after that?

13 A Then I became what is known as a Department Head at
14 Large.

15 Q What does that mean?

16 A It meant that I handled special projects for -- well,
17 let me define what "special projects" is.

18 MR. LEVINSON: That's my next question.

19 Q What is a special project and what special
20 project did you handle while you were there?

21 A Okay.

22 I worked on ~~economic analysis~~. I worked on the
23 initial design of the so-called "~~7-10-15-20-25-30-35-40-45-50-55-60-65-70-75-80-85-90-95-100~~"
24 which was a ~~polyethylene oxide plant~~, and then there was
25 another new operation there that I don't recall at the

1 moment.

2 Q All right.

3 Now for how many years did you occupy this job as
4 Department Head at Large?

5 A Oh, about a year or two.

6 Q And what did you do after that?

7 A Then I became Area Supervisor, which meant I returned
8 to the plant and took over the supervision of the ~~solvent~~
9 PVC operation, the polyvinyl acetates and the polyethylene
10 oxide.

11 Q And this was 1958 or thereabouts, I imagine, is
12 that correct?

13 A Approximately.

14 Now if you really want to pin these dates down,
15 I can give you a complete list. We'll have to go back
16 through all the records and sort it out.

17 MR. LEVINSON: No, no. I just told you a
18 moment ago that I don't intend to pin you down.
19 I'm just asking these questions to get some
20 idea of the years. I don't expect total
21 accuracy out of you.

22 Q Now you were sent back to take over the super-
23 vision of the entire plant, correct?

24 A Well, a large portion of the plant.

25 The South Charleston Plant, itself, is a multi-

1 product operation and it extends for about a mile or so
2 along the river and is on an island in the river itself,
3 also.

4 Q You were in charge of supervision of part of that
5 plant, correct?

6 A Yes.

7 Q Not the entire plant?

8 A No.

9 Q And the supervision of what part of that plant
10 were you in charge of? Tell me that once more.

11 A ~~Polyvinyl chloride~~ polymerization, by the solution
12 process. This is the polyvinyl acetates, that is both
13 the solid resin and latexes, polyethylene oxide and
14 polyvinyl butyral.

15 Q Four different products were under your control?

16 A Yes.

17 Q And as Superintendent your primary consideration
18 was production, correct?

19 A Yes.

20 Q Now how long did you stay on in that capacity?
21 How many years?

22 A I would say about two years.

23 Q And what did you do next?

24 A Then I simply got more work to do by the fact that
25 I took over, and in addition I took over the dispersion

1 resin process and the vinyl chloride monomer producing
2 facility.

3 Q At the same plant?

4 A Yes.

5 Q How long did you work with that job?

6 A A year or two.

7 Q Still involved in the field of production?

8 A Yes.

9 Q What did you do next?

10 A Then I became Production Manager for the ~~suspension~~
11 ~~bulk-on dispersion of PVC resins.~~

12 Q Still in Charlotte? A Still in
13 Charleston.

14 Q Charleston, rather. Sorry.

15 A And at this point in time I was, you might say,
16 somewhat divorced from the plant in that I had multi-plant
17 duties at the time. The suspension plant was in Texas
18 City at that time and the bulk polymerization plant was in
19 Texas City. The dispersion process, however, was in
20 South Charleston.

21 Q So you had two processes in Texas City and one
22 process going in South Charleston?

23 A Yes.

24 Q And you were in charge of production in both
25 these plants, correct?

1 A Yes.

2 Q And what would you do? Would you fly back and
3 forth between the two plants?

4 A (Witness nods in the affirmative.)

5 Q Your answer is yes?

6 A Yes. Excuse me.

7 Q Okay.

8 How long were you in charge of this joint enter-
9 prise?

10 A I'd say a little over a year. Then we reorganized
11 slightly and I moved from that to Production Manager of
12 the dispersion and polyvinyl acetates and polyethylene
13 oxide.

14 Q And where was that located?

15 A That was all in Charleston.

16 Q How long did you stay in charge of that?

17 A Again I'll have to -- a couple of years.

18 Q Still involved in production, correct?

19 A Yes.

20 Q Now what happened next after that?

21 A I became what was rather vaguely defined as a "Technical
22 Superintendent.

23 Q Well, where did you work first as a Technical
24 Superintendent?

25 A Primarily in South Charleston, although I was concerned

1 With problems that developed throughout both Charleston
2 and Texas City.

3 Q About what year was this, approximately?

4 A I'd say roughly 1970.

5 Q 1970? A Yes.

6 Q And were you still at that point concerned with
7 production as a Technical Superintendent? Is that what
8 you said -- "Technical Superintendent"? Was that your
9 title?

10 A Yes.

11 Q And you were still concerned with production
12 in that capacity, correct?

13 A No.

14 Actually, as I mentioned before, ~~I first became~~
15 ~~involved with the health problem in, roughly, 1966, and~~
16 this portion of my job continued to grow as time went on,
17 and so that ~~in about 1972, 1973, the health toxicity aspect~~
18 ~~had almost grown to be my full-time job.~~

19 Q Well, let me go back, Mr. Wheeler.

20 In 1966 your title was what?

21 A Production Manager.

22 Q And you were in charge of production at that
23 point?

24 A No. Excuse me. I told you wrong.

25 In 1966 I was an Area Superintendent.

1 Q Okay.

2 You were an Area Superintendent and you were
3 stationed in Charleston, correct?

4 A Yes.

5 Q And what were your duties then? What was your
6 title?

7 A Area Superintendent.

8 Q All right.

9 Now what was the Area Superintendent's function
10 then?

11 A He was concerned with the production of multiple
12 unit operations.

13 Q At that particular point, as Area Superintendent
14 with multiple unit operations under your control, you were
15 in charge of the manufacturing processes, correct?

16 A Right.

17 Q Which ones? A I think I'd like to --
18 if you're going to hold me to this on specifics, then I'd
19 like to have the Reporter read back to me what I said before.

20 MR. LEVINSON: As a matter of fact, Mr. Wheeler
21 may I further tell you, by way of assistance,
22 that you can refer to your report in front of
23 you if it's going to help you.

24 As a matter of fact, I suggest that we have
25 your entire report marked for identification at

1 this time and you can refer to it.

2 Mark it for identification.

3 (The above mentioned report of Mr. Wheeler
4 is received and marked Exhibit PW-1 for
5 identification.)

6 MR. LEVINSON: Off the record.

7 (Discussion off the record.)

8 MR. LEVINSON: Back on the record.

9 Q Now my previous question concerned itself with
10 your duties in 1966 as an Area Superintendent. Was that
11 your title?

12 A Yes.

13 Q And they were primarily duties concerned with
14 manufacturing processes?

15 A Correct. Yes.

16 Q You were not involved in research at all at that
17 time, were you?

18 A Not in the terms that you define "research."

19 Q In other words, health research.

20 A As I mentioned earlier, 1966 was the first time I
21 became actively involved in health research.

22 Q Now how long were you the Area Superintendent?

23 A About two years.

24 Q Now you said before that this is the first
25 time you became involved with health research, is that

1 right?

2 A Yes.

3 Q What health research did you conduct?

4 A The acroosteolysis problem was brought to the
5 attention of the Occupational Health Committee of the
6 Manufacturing Chemists Association -- MCA -- who called
7 a meeting in Detroit, I think, and I was, as the most
8 responsible and most available man at the time, sent to
9 Detroit in company with our Plant Physician to hear what
10 they had to say.

11 Q Who was your Plant Physician at the time?

12 A Dr. ~~E. C. Hull~~

13 Q And Dr. Hull was a treating physician, or was he
14 a research man?

15 A He was an ~~industrial~~ physician.

16 Q So in that capacity as industrial physician he
17 was in charge of actually treating and the general health
18 of the employees, correct?

19 A Correct.

20 And it's our practice to conduct case surveys.

21 For example, if you have two or three cases of
22 a guy who gets one finger turning blue, then that physician
23 will try to assemble all the data he can on those people
24 and then go into the plant and try to identify what might
25 have caused it.

1 So it's a -- you could say there is some limited
2 research done by a good industrial physician.

3 Q So the research that Dr. Hull was doing, if any,
4 was merely attempting to correlate any health problems
5 with any existing situations at the plant?

6 A Yes.

7 Q All right.

8 But he did no actual medical-chemical research,
9 did he? Do you understand what I mean by "medical-chemical
10 research"?

11 A Well, I'm not quite sure even yet.

12 Q Okay.

13 You mean you're not sure what "medical-chemical
14 research" is, as of this moment, is that right?

15 A I'm not sure what your definition of it is, versus
16 what mine is.

17 Q Well, Doctor, what is your definition of it?

18 A In my opinion it covers the whole gamut of the type
19 of thing that I just mentioned that Hull did. It covers
20 epidemiology, it covers so-called bioassays, it covers
21 the study of the metabolism material and --

22 Q Does it cover live animal testing?

23 A That is what I was thinking of in the bioassays.

24 Q All right.

25 Well, did Dr. Hull do that?

1 A He did the one part, which is what you might call
2 case studies, as well as very limited epidemiological-type
3 studies.

4 Q Okay.

5 So that you've told us that in your job as
6 Area Superintendent in 1966 or thereabouts you went to
7 some meetings of the various chemical plants, and I think
8 you referred to it as the Manufacturing Chemists Association,
9 the group that conducted this meeting?

10 A Right.

11 Q And that was your first exposure or first
12 involvement with the Health Program?

13 A Yes.

14 Q Okay.

15 And at that particular meeting there was some
16 discussion of the acroosteolysis problem?

17 A Correct.

18 Q And was that your first exposure to a health
19 problem there at that meeting?

20 A Not my first exposure to a health problem, no.

21 Q All right.

22 Was it determined that this acroosteolysis was
23 involved with PVC production?

24 A It was involved in the B.F. Goodrich Plant.

25 Q But did it come to light in connection with PVC

1 production?

2 A It appeared to.

3 Q And you came back from that meeting and continued
4 on in your job as Area Superintendent, correct?

5 A I came back from that meeting with the knowledge that
6 we had hired the University of Michigan, the group on
7 Occupational Health, I believe it is, to make an industry-
8 wide epidemiological study and we were going to have to
9 provide them with records.

10 Q You say "we." Are you talking about Union Carbide
11 or the Manufacturing Chemists Association?

12 A Both.

13 Naturally, I was primarily concerned with what
14 I was going to have to do with regard to getting records
15 together and making sure that the University of Michigan
16 people got the proper information that they required to
17 make this study.

18 Q Okay.

19 Now when was this done with the University of
20 Michigan? In other words, Union Carbide and MCA got
21 together and hired the University of Michigan. Now what
22 year was that?

23 A Approximately 1966 or early 1967.

24 Q And was this after the meeting was held?

25 A Yes.

1 The decision was made at the meeting to hire them
2 and the actual contract negotiations -- when the contract
3 was obtained I don't really know.

4 Q When you say "hire", in other words, money was
5 given to the University of Michigan to perform this
6 particular research, correct?

7 A Right.

8 Q And who provided the money to the University of
9 Michigan?

10 A It was provided by voluntary subscriptions from the
11 various industry participants.

12 Q The various industries being members of
13 MCA, correct?

14 A No, this was a section of MCA.

15 Q And which section of MCA was it?

16 A At that time it was an informal group of people who
17 manufactured vinyl chloride resins and vinyl chloride
18 monomers.

19 Q Can you tell us the names of those various
20 corporations?

21 A I can give you some examples, but I can't really give
22 you all of them.

23 Q Well, give us some examples.

24 A Dow, B.F. Goodrich, Goodyear, Allied Chemical.

25 Q Okay.

1 But when you came back from that meeting in
2 1966 you continued on in your job as Production Superintendent
3 so to speak, correct?

4 A Yes.

5 Q And how long did you stay on that job?

6 A I think I stated before that it was until approximately
7 1970. No, no, excuse me. I believe I stayed about two
8 years, roughly. In 1968 I became Production Manager and
9 then I became Technical Superintendent in 1970.

10 Remember, I said before that I still qualify the
11 fact that I can't really, without digging through the
12 records, get all these dates straight.

13 Q All right.

14 So for 1968 to 1970 you were Production
15 Superintendent?

16 A Technical Superintendent.

2 17 Q Technical Superintendent? A Yes.

18 Q But still involved with the production of these
19 various products we talked about earlier, correct?

20 A Yes.

21 Q Okay.

22 Now from 1966, when you went to that meeting,
23 to 1970 did you have any other contacts with any health
24 problems in the polyvinyl chloride or vinyl chloride
25 monomers?

1 A No --

2 MR. LEVINSON: No, not "No." Just you.

3 A All right.

4 I followed the necrotoxicology study to its
5 ultimate completion and --

6 Q Well, how did you follow it?

7 A There were progress reports and we had a final
8 discussion of the report in 1969.

9 Q In other words, as the University of Michigan
10 did studies on it, they would send you some information
11 of what they were doing and what they found, is that
12 correct?

13 A Yes.

14 Q And you would read these particular sheets?

15 A Well, they would come back and say, "Would you please
16 go back and check this man's x-rays," shall we say.

17 Q And you would have someone at the plant do that
18 and send it back to them, correct?

19 A Yes.

20 Q How beyond that one study from 1966 to 1970,
21 while you were in your various jobs there, was there any-
22 thing else that you personally did or were involved with
23 in the Health Programs in connection with PVC or VCM,
24 besides this one project?

25 A I did get a test developed which would permit us to

1 determine in the plant concentration of vinyl chloride as
2 low as 50 ppm.

3 Now bear in mind that Carbide is concerned with
4 its people and with their health. I was concerned with
5 those -- frankly, the people who worked for me were my friends.
6 I felt any time that there appeared to be a problem, I wanted
7 to know about it and I wanted to do something about it,
8 which is why I felt if there were a connection with acro-
9 osteolysis, we were under a general directive to minimize
10 exposure to any materials.

11 Q All right.

12 So at some point between 1966 and 1970 you say
13 you developed a test to --

14 A No, not me personally. I had one developed.

15 Q All right.

16 You say you had one developed. Did you put
17 someone to work on it?

18 A Yes.

19 Q Who did you put to work on it?

20 A I believe at that time it was W.H. [REDACTED] but I
21 really couldn't be held to that.

22 Q And you said to him, "Develop a test so we can
23 determine ppm of VCM in the atmosphere," correct?

24 A I told him that we wanted a test which I could take
25 into the plant and do on a routine basis, and admittedly

1 at that time you could determine vinyl chloride much
2 lower in a laboratory setup.

3 But what I wanted was one that you could use to
4 go check the contents of a vessel or check the work space
5 atmosphere.

6 Q About what year was that, that you directed
7 someone -- namely Mr. Ketchum -- to produce some sort of
8 device for you?

9 A About 1969, I guess.

10 Q All right.

11 Now did he come forth with such a device?

12 A Yes.

13 Q How long did it take him to do that?

14 A It seemed like forever, but it was six months.

15 Q Okay.

16 Now what happened to you in 1970, as far as
17 your relations with Union Carbide are concerned?

18 MR. HOLLINGSHEAD: What did he do in
19 1970?

20 MR. LEVINSON: Yes, from 1970 on what did
21 he do.

22 MR. HOLLINGSHEAD: Okay.

23 A That was roughly the day I think I stated I became a
24 Technical Superintendent and I became involved with
25 economic studies, process evaluations, health problems --

1 to an extent -- and anything that the -- well, the
2 Technical Superintendent is sort of an internal consultant,
3 so to speak.

4 Q Now you've been a Technical Superintendent from
5 1970 to the present date?

6 A Well, right now of course I'm ~~President/Manager for~~
7 ~~Occupational Health and Environmental Protection.~~

8 Q And how long were you Technical Superintendent?
9 Until what date?

10 A Up until the first of 1978.

11 Q So roughly from 1970 to 1978 you were ~~Technical~~
12 ~~Superintendent~~ involved with all the various functions you
13 just told us about, correct?

14 A Yes.

15 Q And during that period you mentioned one of your
16 functions was health problems of a sort or something along
17 those lines, correct?

18 A Correct.

19 Q What did you mean by that?

20 A As I mentioned in my report, ~~Mr. V. L. ...~~ made his -- he
21 presented his paper in Houston, and I believe that was in
22 1971. He -- no, no, I beg your pardon. That was ~~1970~~

23 Now this paper of course focused our attention
24 on the fact that he had seen ~~various diseases develop in rats that~~
25 ~~was exposed to 30,000 ppm of vinyl chloride over a long~~

1 period and there was concern about it.

2 The Occupational Health Committee, of which
3 Carbide was a participant, had Viola come to the United
4 States and they discussed his work with him and then they
5 had contacted through Solvay, et al, a Dr. LeFevre, who
6 came and talked to the informal group of vinyl chloride
7 monomer PVC producers, and it was at that meeting that I
8 got -- that the decision was made to set up and do long-
9 term toxicity studies on the vinyl chloride and monomer
10 exposures.

11 Q Did you set them up yourself?

12 A At that meeting I ended up being Chairman of the
13 Committee to take care of this. I did have help from
14 other industry people.

15 Q All right.

16 Now just so I have this thing straight, you say
17 Dr. Viola came to America. Did he come at the request of
18 Union Carbide Company or of the Manufacturing Chemists
19 Association?

20 A Primarily the Occupational Health Group.

21 The Manufacturing Chemists Association is not
22 a closely knit corporation.

23 Q Well, I'm looking at your report, and on Page 19,
24 the third paragraph, it says, "The Manufacturing Chemists
25 Association invited Dr. Viola to the United States to

1 discuss his studies in greater detail." Is that
2 correct?

3 A Yes.

4 Q So MOA invited him across, correct?

5 A Yes.

6 Q And you, in your capacity as a Technical Superin-
7 tendent of Union Carbide, were sent by Union Carbide to
8 listen to Dr. Viola speak, correct?

9 A No, I was not.

10 Q What was that?

A I was not sent.

11 We sent a radical man, ~~Dr. Ken Anderson~~.

12 Q So you didn't hear Viola yourself?

13 A No.

14 Q But, anyway, did you get a copy of Dr. Viola's
15 report?

16 A Yes.

17 Q Now did you discuss that report with anybody?

18 A Yes.

19 Q Who? A With our medical people and
20 with my superiors who were, as I say, somewhat concerned
21 about this. Was this simply a fluke? We were quite sure
22 we had nobody we were exposing to 30,000 ppm -- but how
23 far down did the problem extend?

24 Q You say in 1967 or thereabouts Mr. Ketchum devised
25 a plan for testing the ppm of PVC in the atmosphere of the

1 plant, right?

2 A Yes.

3 No, no, it was in 1969.

4 Q In 1969? A Right.

5 Q Dr. Viola spoke in 1970, correct?

6 A Yes.

7 Q And that figure, 30 ppm --

8 A That's 30,000 ppm.

9 Q That figure -- ~~30,000 ppm~~ -- came into being
10 for the first time then?

11 A Yes.

12 Q How did you have readings of your own from your
13 plant in Charleston taken by Mr. Ketchum or by someone in
14 the plant, readings of your concentration of VC in the
15 atmosphere?

16 A Yes.

17 Q Do you have records that were made and kept of
18 what the findings were?

19 A I think they're there.

20 Q Were records made regularly from that time on,
21 records of VC in the atmosphere at your plant?

22 A I'd have to say with reasonable regularity. It was
23 not on a fixed schedule.

24 Q All right.

25 So now that I have this total picture, your

1 health investigatory exposure in your job as Technical
2 Supervisor then was to get Dr. Viola's report, and before
3 that it was involved with the Michigan study, correct?

4 A Yes.

5 Q And again you were involved with merely reading
6 the various reports that came back from these two sources?

7 A Yes.

8 MR. HOLLINGSHEAD: So that we can understand
9 your question, that question was directed only to
10 his personal experience, is that right?

11 MR. LEVINSON: Yes.

12 MR. HOLLINGSHEAD: All right. Just so we
13 all understand that.

14 MR. LEVINSON: Correct.

15 MR. HOLLINGSHEAD: All right.

16 Q Now you, yourself, did not undertake during your
17 years there any research or direct research to be taken
18 by Union Carbide Company in connection with PVC toxicity
19 by way of experimentation of any kind?

20 A Well, I can't say that I, myself, undertook it.

21 I know there was a fair amount of skin sensitiza-
22 tion and these kinds of tests done at Mellon on resins.

23 MR. LEVINSON: Well, I want to go back to
24 what you personally know or saw.

25 In fact, when I ask you a question, Mr. Wheeler,

1 of what you know took place generally secondhand,
2 then I'll direct it to you along these lines.

3 But I'm trying to direct it to what you
4 personally did or know.

5 THE WITNESS: All right.

6 Now may I ask you to make one correction?

7 MR. LEVINSON: Go right ahead.

8 THE WITNESS: I mentioned "Ken Anderson."

9 It should have been ~~Kenneth Levan~~

10 MR. LEVINSON: All right. Fine.

11 It's really not too important.

12 THE WITNESS: Well, I --

13 Q Now you were this Technical Superintendent in
14 charge, really, and you were concerned primarily with
15 production up until the year 1970, correct?

16 A Yes.

17 Q Okay.

18 Would it have been your function to direct some-
19 body to do research on PVC toxicity?

20 A In light of the way we operated, yes.

21 Q All right.

22 Did you do that? A Not at that
23 time. Not until I had heard the discussion from

24 ~~Frank Brown and others~~, et cetera.

25 So at that point we would be in November of 1971.

1 Q All right.

2 Now you were Technical Superintendent until 1970?

3 A I was Technical Superintendent.

4 Q Until what year?

5 A Oh, I would
6 say roughly 1970 or after 1970 I was Technical Superinten-
7 dent.

8 Q For how many years were you Technical Superinten-
9 tant?

10 A Until, roughly, a year ago.

11 Q All right. That's right, 1978. I think you
12 told us that earlier.

13 Now during this entire period from 1970 to 1978,
14 what precise training did you have of any kind, outside
15 of Union Carbide, to PVC or VCM and the toxicity of these
16 products?

17 A It mostly consisted of what I read.

18 There is an interchange of safety and health
19 information between the various companies through such
20 agencies as MCA, and if you're interested in your people
21 you make sure that you read these in the hope that you can
22 prevent accidents or health problems in the downstream.

23 Q All right.

24 Now did you ever, for example, go to the University
25 of Michigan and discuss with the people there -- who were
supposedly doing research on behalf of MCA into PVC -- what

1 their findings were, what they were doing or anything along
2 those lines?

3 A Only at the final report date, which was roughly 1969.

4 Q And you never went there to discuss the report
5 with anyone? You just read their report, is that correct?

6 A I discussed it with them at the meeting.

7 Q In other words, you -- what meeting are you
8 talking about now?

9 A They didn't put the date on it, except to say it was
10 in 1969.

11 Q In 1969 you're telling us there was a meeting
12 somewhere. Where was the meeting?

13 A That one, I believe, was in Cleveland.

14 Q And under whose auspices was this meeting held?

15 A It was, again, under the Occupational Health Committee
16 of the Manufacturing Chemists Association.

17 Q Okay.

18 And who was present at this meeting from the
19 University of Michigan?

20 A [REDACTED].

21 Q And was there any particular paper promulgated
22 by the University of Michigan in connection with their
23 findings?

24 A Yes, quite a long report.

25 Q Do you have that report?

1 A Yes.

2 Q Where is it? A It's in my files
3 in Charleston.

4 Q Could you produce that report for us?

5 A Surely.

6 Q Now did you do anything else in connection with
7 any toxicity problems during those years, up to 1978,
8 besides these two episodes that we've talked about?

9 MR. HOLLINGSHEAD: You said "1978." Did
10 you mean 1978?

11 MR. LEVINSON: Yes, I mean 1978.

12 A Yes.

13 Q What else? What else did you do?

14 A As I mentioned before, I became Chairman of this
15 committee. I did get the group together and we laid out
16 a Research Program, and through various means -- including
17 sending Dr. Dinman to Europe -- we tried to find out what
18 the European people were doing in terms of vinyl chloride
19 research, in that we did know that based on Viola's work
20 that they had started a Research Program of their own
21 and we wanted to not do the same thing on two sides of the
22 ocean.

23 We wanted to be sure that there were differences,
24 and this was so that we would learn more.

25 Q All right.

1 What was done?

2 A As I mentioned in my report, we set up a program in-
3 volving an ~~epidemiological~~ study, industry-wide, on the
4 effects of vinyl chloride. We also set up a plan to study
5 the ~~retention~~ of vinyl chloride.

6 Q What year was that?

7 A Our initial committee meeting was in December, and I
8 think we made our proposal then.

9 Q December of when? A December of
10 1971.

11 Q What meeting are you talking about now?

12 A This was the meeting of the group that was commissioned
13 by the vinyl chloride PVC producers, and that was the
14 meeting which we had here in November to come up with a
15 program, a Research Program, and to obtain sponsorship
16 and get it off the ground.

17 Q Now I'm looking at your report, the same one that
18 you have in front of you which has been marked ~~CONFIDENTIAL~~

19 Now at that particular meeting, if what you say
20 there is accurate, Dr. Viola discussed the fact that they
21 had found tumors in rats who were exposed to ~~vinyl chloride~~
22 vinyl chloride, correct?

23 A Yes.

24 Q At that same meeting you were named Chairman of
25 the particular committee to plan some cooperative research,

1 correct?

2 A No, not at that meeting.

3 Q Well, when was it done?

4 A Well, yes, it was. Yes.

5 Q All right. A I'm out of context.

6 Dr. Viola was originally asked to come to the
7 United States on May 5th and 6th, for which I paid him
8 \$1,000 in expenses as part of his --

9 MR. LEVINSON: Well, I'm not concerned with
10 that for the moment.

11 Q The fact is that there was a committee formed,
12 is that right?

13 A No, no. The committee was formed in November.

14 Q There was a committee formed in November of 1971?

15 A Right. Yes, November.

16 Q And you were named Chairman of that committee to
17 plan some cooperative research, correct?

18 A Right.

19 Q Now as I read your report there's -- by the way,
20 who else was on your committee besides --

21 A T.R. Torkleson, Bill Reinhardt of Ethyl, Dr. Maury
22 Johnson. All these cats are doctors.

23 And Maury Johnson of, at that time, Unireoyal.

24 We also had a man there from Goodrich, but I can't -- his
25 name escapes me right now.

1 Oh, and Dr. Zeb Bell from PBC Industries.

2 Q All right.

3 Now at that particular meeting that you held with
4 these various men from the various industries mentioned
5 by you, you've indicated that you decided an investigatory
6 procedure should take place, the cost of which should be
7 about \$350,000, is that correct?

8 A Yes.

9 Q It further appears from your report that this
10 particular Association couldn't raise this \$350,000 or
11 didn't raise it?

12 A That's right.

13 Q So as a consequence this particular investigation
14 didn't proceed, did it?

15 A Yes, it did proceed.

16 Q When did it proceed?

17 A All right.

18 Bear in mind that when you have an industry --
19 this is sort of like the Community Chest. You say you
20 need so many dollars and you expect the various people in
21 industry to subscribe.

22 Some people have tougher times subscribing or
23 getting authorization, and these kinds of things, so anyway
24 we had over 350. With, roughly, 165, I think it was,
25 which was enough to start the longest part of the study,

1 which was the long-term inhalation, we contracted with
2 Industrial Biotech and we made the decision to proceed
3 with the single study and we continued to raise money
4 to fund the remainder of the program, which we did ultimately.

5 Q All right.

6 How much money of that 165,000 did Union Carbide
7 put up?

8 A We laid out approximately \$35,000 in pledges.

9 Q All right.

10 Now this meeting that was originally held in
11 November 1971, the meeting where the committee was formed,
12 were you in charge of the ad hoc committee?

13 A Yes.

14 Q Now after that particular meeting, when was the
15 first time anything was done by way of any effort on the
16 part of MCA or Union Carbide to do or undertake any research?

17 A ~~The money, the one sixty-five, was pledged in 1972.~~

18 ~~We hired Industrial Biotech in 1972.~~

19 Q All right.

20 But from 1971, in November, when you originally
21 had Dr. Viola speak to you and the committee was formed,
22 Union Carbide was still producing PVC, correct?

23 A Correct.

24 Q Now let me ask you a few questions about these
25 various groups we're talking about or will talk about.

1 You've mentioned the Manufacturing Chemists
2 Association.

3 . Now tell us briefly what the Manufacturing
4 Chemists Association is, of what they consist and what
5 their purposes are.

6 A It's a -- do I really need to go into this? I've
7 already done this in the Interrogatories.

8 MR. LEVINSON: That's correct, and I don't
9 want you to go into it in any great detail, but
10 just tell us generally what their function is and
11 who they are.

12 Let me ask the question in a leading way
13 so that you can correct me if I'm wrong, in order
14 to save time.

15 A Well, subject to what I've already told you in the
16 Interrogatories, and I may not give you the exact words,
17 it's an organization dedicated to improve the safety of the
18 industry and to improve the industry's image, so to speak,
19 and it does provide services to the industry, such as
20 CHEMTREC.

21 This is a reporting system which, if a tank car
22 jumps a track down here, and if it belongs to Union Carbide,
23 the railroad people and all the transportation people are
24 told to call CHEMTREC. And they'll run down the owner and
25 get the people on the spot who know how to handle those

1 kind of things.

2 They also make recommendations as to labeling,
3 safety procedures, and so forth, through the Safety Data
4 Sheets.

5 Q All right.

6 Is it fair to say, first of all, that it's an
7 organization made up of all leading chemical manufacturers
8 in the United States?

9 A Yes.

10 Q Is it safe to say or fair to say that in addition
11 to safety they also have other purposes where they provide
12 for any mutual benefits of all the various corporate
13 members, such as lobbying, such as the discussion of any
14 future legislation on the scene that involves chemicals?

15 A I think I would object to the term "lobbying." That
16 is one problem that we had with the Manufacturing Chemists
17 Association, in that ~~they did not and would not, as a matter~~
18 ~~of policy, become involved with anything that felt was~~
19 ~~controversial or that felt was not of a scientific nature.~~

20 Q All right.

21 You object to the term "lobbying."

22 Do they have anything to do with keeping its
23 members advised of any proposed legislation on the horizon?

24 A Yes.

25 Q So they do have other functions, besides health

1 and safety, don't they?

2 A Yes. Sure.

3 Q What are the other functions?

4 A Well, like I say, I've already told you this and I
5 can't recall the exact words in the Interrogatories, but I
6 think I did give you their 20th Silver Anniversary or
7 reprints from it, which listed ~~their objectives~~, their
8 standing committees and everything.

9 Q All right.

10 Now do they also have a function in connection
11 with submitting and promulgating information concerning
12 manufacturing principals or methods of assisting the various
13 member corporations in their production?

14 THE WITNESS: I'm not sure I understand
15 your question.

16 Q Do they promulgate research among the various
17 corporate members or disburse research from one member to
18 another?

19 A They act as an ~~information clearing house~~

20 Now I -- but as regards research, they do form
21 within themselves so-called Project or Task Groups.

22 The ~~Vinyl Chloride Task Group~~ was one of these
23 where it was charged with furthering research on vinyl
24 chloride.

25 Q So as I understand it then, Mr. Wheeler, the only

1 research -- medical research -- that was done through MCA
2 was in 1971 for the first time when they called upon their
3 various members to provide \$350,000 to do some evaluation
4 of toxicity of PVC?

5 MR. HOLLINGSHEAD: Are you limiting that
6 question?

7 Well, let me state an objection to it. Is
8 your question only with regard to -- is it with
9 regard to the entire history of MCA or are you
10 limiting it in time at all?

11 MR. LEVINSON: I'll withdraw the question
12 so that there's no problem with it.

13 Q Did the Manufacturing Chemists Association ever
14 at any time prior to 1970 do anything by way of promulgating
15 or undertaking research of toxicity of PVC?

16 THE WITNESS: Now are you saying hands-on
17 type research or are you saying collecting data
18 world-wide and making sure that its members were
19 aware of it?

20 MR. LEVINSON: Well, let's take them one at
21 a time.

22 Q First of all, did MCA at any time prior to 1970
23 undertake any research by way of collecting any epidemiological
24 studies or anything outside of actual physical research on
25 the product?

1 A Always.

2 Q Well, what do you mean by "Always"? When was the
3 first time?

4 A If I understand your question, you're simply rephrasing
5 what I said a moment ago, if I remember correctly, in that
6 ~~they collected various scientific papers and they made~~
7 ~~these papers available to their members.~~

8 Q All right.

9 Well, ~~when for the first time did it come to your~~
10 ~~attention through MCA that there was some problem with~~
11 ~~toxicity of PVC or VCM?~~

12 A ~~1966.~~

13 Q Okay.

14 What did they do in 1966 that brought that to
15 your attention?

16 A We heard a report from ~~Dr. Wilson of Goodrich~~ and
17 talked about the apparent syndrome involving the ~~loss of~~
18 ~~calcium in the ends of the fingertips.~~

19 Q That's the ~~acroposteolysis~~, you talked about before?

20 A Yes.

21 Q Okay. That was in 1966.

22 What did they do after that paper by Dr. Wilson?
23 Was anything else ever done by MCA in the way of promulgation
24 of the information to you and U.C.C. about the toxicity of
25 PVC?

1 A We maintained a physician on the Occupational Health
2 Committee of MCA for many, many years.

3 Now this information -- any time there was
4 information available or problems, these were discussed,
5 with the benefit of the Occupational Health Committee's
6 recommendations.

7 Q All right.

8 Now getting back to my question, you said before
9 that in 1966 they promulgated some information about
10 dissipation of calcium in the tips of fingers of people
11 exposed to this particular product, correct?

12 A Loss of calcium.

13 Q Loss of calcium, also known as acroosteolysis?

14 A Acroosteolysis, yes.

15 Q Now my question is simply this? Did they, after
16 that date in 1966 when they first told you about this
17 problem, did they ever come forth with any additional papers
18 advising you of any further study in that health problem
19 or other health problems of people exposed to VCM?

3 20 A Well, they made an ~~active search of the European~~
21 ~~literature, of which~~ you'll find that there are a number
22 of articles that are listed in the University of Michigan
23 Acroosteolysis Study, and we did make an effort to find
24 out more about the so-called ~~Russian~~ ~~Spain~~.

25 Apparently due to the difficulties in communicating

1 into the Russian Zone, we were able to get no information
2 other than that work was going on, that they had seen
3 acroosteolysis and were studying it in ~~Rumania~~.

4 Q Were you personally involved with MCA's
5 investigatory proceedings?

6 THE WITNESS: Prior to what date?

7 MR. LEVINSON: Prior to 1970.

8 A I would say I was not personally involved.

9 Q All right.

10 So whatever you're telling us now is strictly
11 what you've been told yourself, correct?

12 A No.

13 You asked me what MCA did and I was trying to
14 tell you what MCA did.

15 Q But that's not of your own knowledge that you're
16 giving us that answer, correct?

17 A I guess you would have to say it was secondhand
18 knowledge.

19 Q All right.

20 Now, as a matter of fact, in reading your report,
21 Mr. Wheeler, you indicated to us that this particular
22 investigation was given over to the University of Michigan
23 some time about the year 1966, correct?

24 A Yes.

25 Q And you received a report back from them around

1 1969, three years later?

2 A That was the final report.

3 Q The final report? A Yes.

4 Q Now in that three-year period, from your knowledge
5 either first-hand or indirectly-- was anything else done
6 by NCA by way of investigation?

7 A No.

8 Q From your own personal knowledge did U.C.C. do
9 anything by way of personal investigation?

10 MR. HOLLINGSHEAD: You mean investigation
11 on these two questions?

12 MR. LEVINSON: Toxicity of the PVC or the
13 VCM.

14 MR. HOLLINGSHEAD: You're excluding from
15 your question, then, any gathering of materials
16 or studies?

17 Q My question is this: ~~From your personal observa-~~
18 ~~tion, what did U.C.C. do between 1966 and 1969, in any~~
19 ~~investigation?~~

20 A I don't know what they did.

21 Q You don't know? A Right.

22 Q All right.

23 Now between 1969 and 1971 -- that is November of
24 1971 -- what did U.C.C. do by way of any investigatory
25 proceeding as to determining the toxicity of VC?

1 A Well, they --

2 Q And I'm using November 1971 as the date when you
3 had that meeting of the Manufacturing Chemists Association.

4 A If you confine that to my direct knowledge, I don't
5 know what they did.

6 Q All right.

7 But during this time you were the man who was
8 involved with the technical aspects of production of
9 polyvinyl chloride, correct?

10 A Yes.

11 Q But after this meeting in 1971, the meeting
12 when you were named the Chairman of this ad hoc committee
13 for research, what was done between that time and the
14 year 1973 by way of any research or any investigatory pro-
15 ceedings?

16 A As I mentioned earlier, ~~we did hire Industrial Biotest.~~
17 It was not a good choice, shall we say, as far as hiring
18 because the first thing they did after they were hired is
19 they moved their facilities.

20 Their people visited our people and we visited
21 Industrial Biotest and refused to accept the proposed
22 equipment they were going to use, so we had some arguing
23 back and forth.

24 Q Well, let me get this straight.

25 What date do you ascribe to that, as to when the

1 bioassay tests were undertaken?

2 A We undertook the bioassay tests as soon as we had
3 collected the \$165,000, which I think I referred to here
4 somewhere.

5 Q That was 1973, I believe. Correct?

6 A No.

7 Q Look at the fourth paragraph of your report.

8 A (Witness complies with Counsel's request.)

9 Well, in 1973 there I say that we had collected
10 enough to sponsor the whole program. But we had undertaken
11 work prior to that point.

12 I should have made that plainer.

13 MR. HOLLINGSHEAD: In fact, he testified
14 earlier that it was in 1972.

15 MR. LEVINSON: 1972?

16 THE WITNESS: Yes.

17 Q This was after the Kramer and Matchler report,
18 correct?

19 A Yes.

20 Q And this is when you started doing the bioassay
21 test, you say?

22 A Yes.

23 Q Now you say "we." Who is "we"?

24 A The Vinyl Chloride Research Group or the Vinyl Chloride
25 Task Group of MCA.

1 Q Where was that done?

2 A It was done at Industrial Biotech in Decatur, Illinois,
3 I believe just outside of Chicago.

4 Q Your plant wasn't in Decatur, Illinois, was it?

5 A No.

6 But we were sponsoring a part of the research
7 and I was actively involved at that time as a so-called --
8 what's known as a "~~Research Coordinator~~"--in what you might
9 call a Steering Committee of six people who were to oversee
10 the program.

11 Q Now what were they attempting to do at Decatur,
12 Illinois? What sort of bioassay test?

13 A We were going to do a ~~long-term study of rats, mice and~~
14 ~~hamsters exposed to 50, 500 and 1,500 ppm vinyl chloride.~~
15 It was supposed to be -- it was to be a ~~two-year study~~.

16 The animals would be exposed eight hours a day
17 and then at the end of two years -- I'm trying to search
18 my memory now. I may be a little bit vague on this, but
19 they were to be necropsied and, of course, the samples of
20 the various organs taken, and we were going to do a
21 pathological study as well as a growth or microscopic
22 pathological study, as well as a growth study.

23 Q Well, was this taken, then, at Decatur?

24 A Yes.

25 As I mentioned, we had trouble getting that off

1 the ground because, frankly, we made a bad choice. They
2 were not as capable as they should have been, and as a result
3 we lost, I'd say, at least six months, maybe as long as a
4 year.

5 Q Who was not as capable? I don't understand.

6 A Industrial Biotest.

7 Q You mean the people performing these tests were
8 not capable?

9 A That's right.

10 Q Well, who did you retain to do this testing?

11 A Industrial Biotest. They're an industrial laboratory
12 who do inhalation studies and bioassays of various kinds.

13 Q Who retained this group?

14 A The Vinyl Chloride Task Group.

15 Q Of the MCA? A Right.

16 Q Well, how did you determine they were not as
17 efficient as they should have been?

18 A We went out and looked into it and didn't like what we
19 saw and we -- well, we told them we would have to change
20 it.

21 Q In other words, you didn't like the way they
22 were proceeding with this experiment?

23 A That's correct.

24 Q In what way were they proceeding improperly?

25 A We were concerned initially about ventilation in the

1 laboratory, because we wanted to be sure there was no
2 spillover from one group of animals to another.

3 Because if you want to expose an animal to 50 ppm,
4 you want to be sure that that group is kept completely
5 separate and you don't get leakage from the animals who are
6 being exposed to 500 ppm. You want to be sure of what's
7 going on during the exposure.

8 They were not fully ready, because they had
9 moved their facilities and as a result of that we lost one
10 complete set of animals.

11 Q Well, how did you reorganize the testing?

12 A Well, we bought another complete set of animals. They
13 did make the changes we requested and ultimately got the
14 thing off the ground and going.

15 But, like I say, due to this problem, it did
16 slow up and it delayed the end results of the test.

17 Q After 1972, though, what was done by Union Carbide,
18 itself, by way of any toxicity testing?

19 A Then we devoted all of our energies and felt this
20 industry-wide study would provide the answers that we were
21 seeking.

22 Q What did you do?

23 A We worked with the MCA Group.

24 Q You worked through the MCA Group?

25 A Yes.

1 Q So that Union Carbide -- and correct me if I'm
2 wrong -- personally did no testing?

3 A Right.

4 Q The only testing that was done, then, from that
5 point on was done by the Manufacturing Chemists Association?

6 A Right.

7 Q Now did the Manufacturing Chemists Association
8 actually conduct at any time, to your knowledge, after 1972,
9 that is after this report by Kramer and Mutchler, any live
10 animal testing on PVC or VCM?

11 THE WITNESS: I'm not sure I follow you.

12 Would you go back through that one again?

13 MR. LEVINSON: Yes. Sure.

14 THE WITNESS: Maybe I'm a little bit stupid

15 or --

16 MR. LEVINSON: No, no, you're not.

17 Q Back in 1972 apparently there was a request made
18 by your committee for MCA to produce \$350,000 to do some
19 studies on VCM toxicity, is that right?

20 A No, no. The request was made to the individual
21 producers.

22 MR. LEVINSON: I'm sorry.

23 A These were tests of PVC and vinyl chloride, and
24 we asked that they voluntarily subscribe money and we --
25 the basis was -- well, we asked each company to subscribe

1 based upon its published capacity.

2 Q All right. Well, it's not important.

3 But for the moment, in 1971, according to your
4 report, after Dr. Viola's work was discussed by NCA, the
5 committee was formed and you were in charge of the ad hoc
6 committee and a request was made for the various members
7 to produce \$350,000 to --

8 A No, not those members. The members of the PVC vinyl
9 chloride industry.

10 Q All right. I'm not trying to quibble.

11 The members of the PV Group of the NCA?

12 A Okay, I'll accept that.

13 Q And I think you mentioned many of their names
14 before, correct?

15 A Actually, there were 33.

16 Q Thirty-three? A Yes.

17 Q Such as Goodrich and your company and many others,
18 correct?

19 A Yes.

20 Q Okay.

21 And these various 33 companies could not produce
22 this \$350,000 or would not produce it, is that correct?

23 A Until some time later.

24 MR. HOLLINGSHEAD: I object to the form of the
25 question.

1 MR. LEVINSON: I withdraw the question.

2 Q According to your report in 1972 the sponsorship
3 of the Manufacturing Chemists Association study did not
4 meet the financial objective of \$350,000, is that correct?

5 A That is correct.

6 Q But some time thereafter you did collect \$165,000,
7 correct?

8 A That was -- it was at the point roughly in time that
9 this statement was made, that we did not meet the financial
10 objective, when we had the \$165,000 in pledges in hand.

11 Q And that was some time in 1972?

12 A Yes.

13 Q Okay.

14 Now my question is this: What did MCA do from
15 1972 on, from the date you first got \$165,000 in pledges?
16 From that date on what did MCA do by way of developing
17 any Toxicity Study Program?

18 A All right.

19 As I mentioned before, we had laid it out.
20 We still sought contractors for the remaining pieces,
21 because we were confident that we were eventually going to
22 raise the money and, as I mentioned earlier, we did get the
23 Industrial Biotech Long-Term Inhalation Study off the
24 ground.

25 In the meantime we were still trying to a certain

degree, and somewhat successfully, to make contact and work with the European vinyl chloride and PVC producers.

Q You say "we." Not you, personally, correct?

A Well, it was personally a part of the so-called Research Coordinator Group. And, as such, this was a part of my decision and a part of my work, to try to make sure this got done.

Q By the way, were records made by MCA of all the various things they did in this connection or by your committee?

A Yes.

Q And where are these records?

A They're available from MCA.

Q How would I get these records?

A I would suggest that you probably contact Lucille Heshell. I believe the correct spelling is H-e-s-h-e-l-l.

Q And where is she located?

A At MCA Headquarters in Washington, D.C. It's on Connecticut Avenue and it's in the Universal Building. It's about 1825 Northwest. I believe that's the correct address.

Q Are these records all available to the public?

A Insofar as I know.

Q Do you have copies of all these records?

A I think so.

1 Q How voluminous are they?

2 THE WITNESS: I think you led me down a
3 small blind alley.

4 MR. LEVINSON: Not intentionally.

5 THE WITNESS: Now we're still talking about
6 the notes of the meetings of the various -- of
7 the Task Group and the Steering Committee, right?
8 Is that what we're talking about?

9 MR. LEVINSON: I was talking about -- now
10 you've got me thinking.

11 THE WITNESS: Well, I answered your question
12 and then I --

13 Q So there's no misunderstanding, let me first ask
14 you as to the notes of your committee, this ad hoc committee
15 that you refer to as the one that concerned itself with
16 toxicity of PVC or VCM.

17 Did your committee maintain notes of everything
18 that was done?

19 A Yes.

20 Q Was there a stenographer present taking down
21 the various meeting discussions?

22 A No.

23 So it was not a verbatim record.

24 Q Well, who made the records?

25 A It was the MCA Project Officer.

1 Q And how often would you meet?

2 A About this time we were meeting on the order of once
3 a month.

4 Q All right.

5 So there should have been between ten or twelve
6 meetings held every year, correct?

7 A Yes.

8 Q Now where are these records?

9 A Well, as I mentioned, they are at MCA Headquarters,
10 and I think I also have a complete file on that.

11 Q You have a complete file on it?

12 A Insofar as I know, I think I do.

13 Q And where is your file?

14 A It resides in Charleston.

15 Q All right.

16 Now is your file available?

17 A (Witness shrugs his shoulders.)

18 MR. HOLLINGSHEAD: I haven't looked in the
19 file yet.

20 We will certainly advise you what's in it
21 and if it's available.

22 Now I think your next question might be:

23 How voluminous is it?

24 MR. LEVINSON: Yes.

25 MR. HOLLINGSHEAD: I don't know that either.

1 Of course Mr. Wheeler would know.

2 THE WITNESS: It would not be an unreasonable
3 request for me to pull those and make copies for
4 you.

5 MR. LEVINSON: All right.

6 Will you do that?

7 THE WITNESS: Yes.

8 MR. HOLLINGSHEAD: Just so I understand your
9 question, you're asking for Mr. Wheeler's file?

10 MR. LEVINSON: Mr. Wheeler's records of those
11 committee meetings held between 1972 and the
12 present date that concern themselves with PVC and
13 VCM.

14 MR. HOLLINGSHEAD: All right.

15 My concern is -- and I don't know this,
16 because I haven't spoken to him about it, but if
17 his file is incomplete in regard to what MCA
18 has in their file, I want it understood that we're
19 introducing Mr. Wheeler's file and I'm not
20 running a comparison myself.

21 If there's more at MCA -- that I don't know.

22 MR. LEVINSON: All right.

23 THE WITNESS: That would be the next thing
24 to disturb me a little bit, too.

25 I would expect MCA's file to be complete

1 and my typical sloppy filing system is probably
2 not complete.

3 MR. LEVINSON: All right.

4 BY MR. LEVINSON:

5 Q Where would MCA's file be?

6 A In Washington.

7 Q Where? A At their Headquarters.

8 Q Did you give us their address before?

9 A Yes, although I would check it. It's roughly 1825
10 Connecticut Avenue, Northwest.

11 Q And that's Lucille Heshell, the one in charge of
12 that?

13 A She is now.

14 At the time of this Dr. Kenneth Johnson was.
15 Now he's no longer -- I think his health has deteriorated
16 to such a point that he's probably not a reliable witness
17 or helper -- either one. It's rather unfortunate, but that's
18 the case.

19 MR. LEVINSON: Off the record.

20 (Discussion off the record.)

21 MR. LEVINSON: Back on the record.

22 Q Now were there records or publications made by
23 the Manufacturing Chemists Association of this particular
24 subgroup of MCA concerning their studies from 1972 on?

25 THE WITNESS: You're speaking of progress

1 reports and these kinds of things?

2 MR. LEVINSON: Anything.

3 A These were mostly reported in the minutes of this
4 group.

5 Q I see.

6 So that I understand you, they're mostly reported
7 in the minutes that you first talked about, the minutes of
8 your meetings?

9 A Yes.

10 Q And that came out once a month?

11 A Whenever we had a meeting.

12 Q All right.

13 But were there any publications, to your knowledge,
14 by MCA concerning this particular problem?

15 A If I'm not mistaken, I -- well, I'd better check.

16 In terms of publicly available documents, I don't
17 think that there were any.

18 Q Okay.

19 Now in your report you have also referred at some
20 point to the Society of Plastics Industries.

21 A Yes.

22 Q Who were they? A They are, again,
23 a trade organization made up of users and manufacturers
24 of plastics.

25 Q And where is their office, their main office?

1 A It's in New York, on Lexington Avenue.

2 Q And who supports this particular organization?

3 A It, again, is supported through dues levied upon its
4 members.

5 Q Is your company a member of it?

6 A Yes.

7 Q Are most plastic manufacturers members of it?

8 MR. HOLLINGSHEAD: That's a difficult question.

9 MR. LEVINSON: All right.

10 Q Tell me some of the names, to your knowledge,
11 of who are company members of this group, along with Union
12 Carbide Company.

13 A Dow, Goodrich, Goodyear, Firestone.

14 Q DuPont? A Yes.

15 Q Eastman Kodak? A Kodak I would have
16 to assume -- that I don't know.

17 Q Allied Chemical? A Allied Chemical,
18 yes.

19 Q All right.

20 So it's a fair statement to make, is it not, that
21 generally the leading companies in this country who are
22 involved in plastics manufacture are members of this
23 organization?

24 A Provided you will qualify that and say that it's open
25 to all manufacturers of plastics and plastic materials.

1 It involves and actually provides its greatest
2 service --

3 Q What was that? A It is more
4 involved and actually provides its greatest service to the
5 small manufacturer, the so-called man who has a garage
6 operation.

7 Q What sort of services does it supply?

8 A Oh, it brings together in various sections -- and you
9 have to realize it's such a large organization that I'm
10 not even prepared to discuss its various pieces.

11 But it provides for interchange of information
12 on safety and it's much more business oriented.

13 As I mentioned earlier, ~~was wanted to be a~~
14 ~~scientific body. SPI is more the business oriented body.~~
15 They have no hesitation, as you described it earlier, to
16 ~~lobby~~

17 MR. LEVINSON: I see.

18 That's not a dirty word, by the way.

19 THE WITNESS: I didn't say it was a dirty
20 word.

21 MR. LEVINSON: Okay.

22 A ~~But SPI will accept a controversial subject and has.~~

23 And that is why SPI came into the vinyl chloride
24 picture, and that's because ~~MCA would not become involved~~
25 ~~with discussions with the Government regulatory bodies.~~

1 Q All right.

2 Does SPI have any facilities for testing any
3 products?

4 A No.

5 Q Do they retain any chemists or engineers on their
6 staff -- SPI?

7 A They have Technical Managers.

8 Q Managers? A Yes.

9 Q And what is their function? To assimilate various
10 papers in the field?

11 A To organize meetings on various technical subjects,
12 to collect papers and make sure that these -- if they
13 appear to be important -- are made available or that its
14 members are made aware.

15 Q All right.

16 By the way, going back one step, does Manufacturing
17 Chemists Association have any testing facilities for products?

18 A No, neither of these organizations have any.

19 Q Do they retain any full-time doctors? I'm talking
20 about research M.D.'s on their staff?

21 A Not to my knowledge.

22 Q All right.

23 Now you also have mentioned at some point in
24 your report an organization known as "~~Communication Resources~~
25 ~~Research~~, correct?

1 A Correct.

2 Q Who are they? A They are a group --
3 it's a branch of IRC -- ~~Industrial Relations Council~~ --
4 which I think was founded by -- it was a Foundation in
5 New York by Rockefeller and some of his people.

6 And IRC is a nonprofit educational kind of a
7 Foundation, whereas the spin-off and setup in Washington --
8 ORC -- is supposed to be a self-supporting branch of IRC.

9 Q What's their purpose?

10 A ~~To provide liaison between the Department of Labor,~~
11 ~~primarily OSHA, and the industry.~~

12 Q Again, these members -- and I'm not talking member-
13 for-member -- are the same members who belong to the SPI
14 also members of the ORC?

15 A No.

16 There you run into a wider gamut. We have
17 people like Westinghouse, G.E., Eastman Kodak, and again
18 some of the chemical companies such as Carbide are members,
19 Allied Chemical and -- it's a more diverse organization.

20 Q And again, they do no testing of any kind, do they?

21 A Only as a Task Group. I think I mentioned in my report
22 that the ~~ORC did do an Epidemiological Study on~~ the effects
23 of polyvinyl chloride and vinyl chloride on the fabricating
24 industry.

25 Q Well, by "Epidemiological Study", just so we

1 understand each other, they merely gather reports from other
2 sources and put them together to determine some conclusion.
3 Is that what you're talking about?

4 A An Epidemiological Study, depending on whether you're
5 doing a ~~Retrospective Study or a Prospective~~, I guess is a
6 better term, Study -- in fact, that is the correct term.
7 In a Retrospective Study you can go back into the medical
8 records, and in this particular study group you're looking
9 for deaths.

10 Q But it's a record-seeking or type of research,
11 is it not?

12 A Well, that's the first step. You seek the records and
13 then you try to reduce them to some relationship as compared
14 to a standard population. Ideally, if you could, you would
15 collect this so-called exposed group and then a non-
16 exposed group, everything else being the same and not
17 dissimilar to a laboratory study on bioassay on animals.

18 Unfortunately, though, you never get real purity.
19 In the laboratory-- in a box you can control everything,
20 but when you're dealing with a group of people here and
21 a group of people here, you're getting into some very
22 diverse and multiple effect kinds of things.

23 Am I making myself clear?

24 MR. LEVINSON: Yes, you're making yourself
25 clear.

1 Q So that this organization -- SPI -- the only
2 research they have done has been of an epidemiological
3 nature?

4 A No, no, we're talking about ORC.

5 Q ORC. I'm sorry. Is that correct?

6 A That is correct.

7 Q Now do you personally subscribe to the validity
8 of Epidemiological Studies?

9 A I think they are of varying quality.

10 The ORC Study has accomplished its objective,
11 which was to -- we were looking for the ~~uncommon diseases~~
12 ~~nasopharyngeal carcinoma and angiosarcoma~~.

13 Q And that's all you were looking for with them?

14 A That was the basic thinking and objective of the
15 study.

16 Now I did talk them into, since we had the data
17 on other deaths, to publish the whole thing as opposed
18 to saying, "We have surveyed the fabricating industry and
19 investigated X number of deaths and found no angiosarcomas."

20 Q Who paid for this particular investigatory
21 proceeding?

22 A Again, the small group of companies, of which Carbide
23 was one.

24 Q Do you recall at this time how much money was
25 spent for this Epidemiological Study?

1 A I'm sorry, but I don't know. I can find out for you,
2 if it's critical.

3 MR. LEVINSON: It's not important.

4 Q Do you recall when it was done?

5 A It was organized -- I don't -- I didn't put a date
6 down, but I would say it was initiated about the end of
7 ~~January 1954~~

8 Q Do you recall who was in charge of this study?

9 A ~~Lee T. Smith~~ And he had working with him a ~~Dr. Bill~~
10 ~~Nichols, and for an expert we hired Dr. Leonard Chiassi.~~

11 Q Who was he? A He's an M.D. and
12 an epidemiologist and he works at Georgetown.

13 And we also employed several nosologists.

14 Q Several what? A ~~Nosologists.~~

15 Anyway, these are people who are expert in
16 reviewing death certificates and classifying cause of death.

17 Q And all they do is read what they see on a
18 death certificate and put it in some category, is that it?

19 A Yes.

20 And this is where ~~Nichols~~ did excellent work.
21 In order to read a death certificate and classify it,
22 first you've got to find it. And he did go into areas of
23 the various plants and talked his way into hospitals and
24 various other places to dig out records.

25 As a result he did a reasonable job. I think he

1 not about maybe ~~85 percent~~ and that's about all you can
2 hope for in something of this nature.

3 Q And what happens to employees who leave the
4 employment after exposure and subsequently die? Do they get
5 their death certificate as well and evaluate their problems?

6 A If they are traceable.

7 Q So there's a large element that's not traceable,
8 I assume, or an element that's not traceable?

9 A Well, it becomes one of these asymptotic
10 affairs. It takes an infinite amount of labor to get that
11 last case, and as a result most Epidemiological Studies are
12 very fortunate -- they get to 95. Most like to get to 90
13 per cent or better.

14 Q Well, ORC -- Organization Resources Counselors --
15 published this Epidemiological Study?

16 A Yes.

17 Q And where is that?

18 A It resides in the hands of the members. There's one
19 copy that was given to NIOSH and one to OSHA.

20 Q Do you recall the results of those studies?

21 A I would just as soon read it to you as opposed to trying
22 to recall it, because it's entirely too technical, except
23 for the fact, as I mentioned earlier, that this was a
24 study that went looking for what we still consider a
25 ~~marker disease~~ with regard to vinyl chloride exposure, and

1 that's the ~~original source, and we did not find any other~~
2 ~~subsequent industry~~

3 Q When you say "in the ~~manufacturing~~ industry", what
4 do you mean by that?

5 A These are the people that take the white powder --

6 Q And turn it into a finished product?

7 A -- and combine it with plasticizers, stabilizers and
8 colors and run it through a Banbury or extruder and
9 ultimately come out with a semifinished product such as
10 a film, a rigid sheet.

11 Q What about the incidence of angiosarcoma in
12 their studies that were found or not found among people
13 working in the actual production of the polyvinyl chloride,
14 that is starting with the vinyl chloride monomer and
15 producing the polyvinyl chloride?

16 MR. HOLLINGSHEAD: I'm not sure that's
17 a question.

18 You asked about --

19 MR. LEVINSON: Do you understand the
20 question?

21 Strike the whole question.

22 THE WITNESS: I'm not sure. I prefer to
23 have you restate that one.

24 MR. LEVINSON: All right.

25 Q Now you've told us that the ORC finding

1 epidemiologically concerned itself with the fabricators
2 of PVC.

3 A Yes.

4 Q My question now is this: Did it concern itself
5 with these people working in the production of PVC itself?

6 THE WITNESS: Now when you refer to "PVC",
7 you're saying the raw white powder?

8 MR. LEVINSON: ~~That's correct, yes.~~

9 THE WITNESS: Well, now, not pellet powder.
10 I'm speaking of powder only.

11 MR. LEVINSON: All right.

12 Q In other words, the pellet is made from the
13 powder, correct?

14 A No.

15 Q It's different? A A pellet is
16 ~~a semifinished product. It's a step in fabrication:~~

17 When you convert the resin to a compound pellet,
18 then you've started fabrication, number one.

19 Q All right.

20 Now let's start with the powder then.

21 A All right.

22 At that point in time we were already aware of
23 ~~the Courtenay finding, the Halton results.~~

24 Q So then, as I understand it, the only thing
25 ORC accomplished epidemiologically was a study of the

relationship of angiosarcoma only in the fabricating industry?

A Yes.

~~Now we were concerned. We knew we had a problem with long-term exposure to high concentration of vinyl chloride.~~

Now everything then hit with this problem. The first thing we wanted to do is find out what is its extent and we felt the best way to find out whether it extended all the way down even to the housewife is to pick the next step in the chain of manufacture and look at it very carefully.

MR. LEVINSON: Now might be a good time to break for lunch.

(Luncheon Recess: 12:10 P.M.-1:10 P.M.)

MR. LEVINSON: Back on the record.

Repeat the last question and answer.

(The requested portion is read by the Reporter.)

ROSCOE NICHOLAS WHEELER,
J R., previously sworn, testifies further as follows:

DIRECT EXAMINATION CONTINUED

BY MR. LEVINSON:

Q Was that the end of your answer, Mr. Wheeler?

1 A I think so, if you understand what I'm saying.

2 Q I understand what you're saying.

3 Now, Mr. Wheeler, I think it was your testimony
4 this morning that you were in charge of occupational
5 health in the year 1978 to 1979, is that correct?

6 A Well, insofar as vinyl chloride, I have a number of --

7 Q What's that? A I have a number of
8 health projects, one of which is vinyl chloride.

9 Q Okay.

10 Now who was in charge at U.C.C. between 1970 and
11 1978?

12 A I would say the basic man in charge was Dr. Carl Darnehl.

13 Q Well, Dr. Darnehl is an M.D., correct?

14 A Correct. He's our clinical toxicologist.

15 Q He's also the man who's your Number 1 doctor
16 in your organization?

17 A No, he's not the Medical Director.

18 Q Now when did he first become the doctor in charge?

19 MR. HOLLINGSHEAD: We're talking now about
20 occupational --

21 MR. LEVINSON: Safety and health.

22 MR. HOLLINGSHEAD: Concerning PVC or the
23 entire --

24 MR. LEVINSON: PVC.

25 A As of my knowledge, which may not be entirely correct,

1 in the early Sixties.

2 Q Okay.

3 So Dr. Darnahl, you are telling us, was in charge
4 of occupational safety and health, including --

5 A No, no, no. Only the medical and toxicology part.

6 Q He was in charge of medical toxicology from the
7 early Sixties until when? The present time?

8 A Yes.

9 Q Well, what job did you have that you described
10 earlier to us in 1978 that was in connection with health
11 involving PVC?

12 A I support the medical group in terms of collecting
13 the technical information and do surveys and act as
14 liaison, generally.

15 They are our specialists that I call upon, if
16 you see what I mean.

17 Q All right.

18 Then as I understand it, Dr. Darnahl was the
19 man in charge of the toxicological problems vis-a-vis
20 safety of the workers, is that correct?

21 THE WITNESS: Could you define "in charge
22 of"?

23 Q Well, let me ask you this: What was Dr. Darnahl's
24 job, from the early Sixties, that you told us about?

25 A Well, our clinical toxicologist, and I believe he

was Assistant Corporate Medical Director.

Q And what's a clinical toxicologist?

A That's my own definition, please, and I won't say that it's exactly right.

Q Well, did he work in the same plant you did in Texas City or Charleston?

A No. Darnahl has an office in New York.

Q Well, did you ever see what Dr. Darnahl would do? Did you ever look at him working?

A I have worked with him. I have never --

Q In what connection did you work with him?

A In collecting information and also collecting -- getting his opinion and, in effect, trying to come up with an overall package.

There is a medical/clinical type of information which constitutes a part.

You have the occupational segment, exposures of people, and these kind of things. Then you've got, in addition to that, the Government regulatory business and you have, in addition to that, a considerable inflow of -- well, I'll say information.

Q Well, just for the moment, so that I understand what you're talking about in connection with Dr. Darnahl, you've classified him as the clinical toxicologist, is that correct?

1 A Yes.

2 Q First of all, did he do experiments that you
3 ever saw him do?

4 A He did studies, but I don't know if he did experiments.

5 Q All right.

6 Did you ever see him work in a white jacket, for
7 example, in a laboratory?

8 A No.

9 Q Every time you saw him he was in an office,
10 correct?

11 A Yes.

12 Q He was in a business suit, correct?

13 A Yes.

14 Q Did you ever see him do controlled research pro-
15 jects of any kind, actual toxicological research?

16 A Not to my knowledge.

17 Q Between 1960 and the present date, did Union
18 Carbide maintain a laboratory for doing toxicological
19 studies on human problems in connection with PVC?

20 THE WITNESS: Are you speaking strictly as
21 related to human reactions?

22 MR. LEVINSON: Human reactions.

23 A This all fell under Carl Darnehl, and the --

24 MR. LEVINSON: That's not my question to
25 you, Mr. Wheeler.

1 Q My question is simply this: Did you ever observe
2 any laboratory of any kind where this work was done from
3 1960 to 1979, the present date?

4 A Only to the extent that we have sponsored the clinical
5 studies at the ~~University of Louisiana~~

6 MR. LEVINSON: Do you understand my question?

7 THE WITNESS: Yes, I understand the question.

8 Q Did you ever see, in all your time from 1960 to
9 1970, any laboratory where this work was done, operated
10 by Union Carbide?

11 A No.

12 Q Now did Dr. Dernohl have any doctors under him
13 who did research, human research on PVC toxicology?

14 A I couldn't tell you because I don't know.

15 Q Okay.

16 ~~Now PVC was first manufactured by Union Carbide~~

17 ~~in 1929~~? I believe you told us in your report, is that
18 correct?

19 A If that's the date in the report, it's correct.

20 Q I think you listed it under the series of dates,
21 the chronology.

22 A Okay.

23 I said that we started commercial production of
24 vinyl chloride and the manufacture of vinyl chloride by --

25 Q By 1928, is that right?

1 A No, [REDACTED]

2 Q You had your ~~first visit~~ ~~in 1943~~ for the
3 vinyl chloride monomer, is that correct?

4 A Insofar as I can interpret our records, yes.

5 Q Well, these are your records that you just handed
6 me and I'm just reading from them.

7 A Yes.

8 Don't forget that I wasn't working there in
9 1928.

10 Q I'm coming to that.

11 You started work there for them for the first
12 time in 1943, correct?

13 A Yes.

14 Q Now in 1943 you weren't concerned with vinyl
15 resins, were you?

16 A Right.

17 Q In your first couple of years there you didn't
18 have anything to do with this particular phase of activities?

19 A That's correct.

20 Q But you did start working in the polyvinyl
21 chloride area a couple years later, is that right?

22 A In 1946, approximately.

23 Q Now when you started working in that department,
24 did you have occasion to go to their library where they
25 kept all their literature and pamphlets concerned with

1 the various chemical processes and chemical properties
2 of the various things that they were concerned with?

3 A Yes, or I simply called the library and asked them
4 to have a book sent to me.

5 Q All right.

6 Now prior to the time that your company went into
7 production of PVC, of the actual polymerization of the
8 vinyl chloride monomer, did your company do, to your
9 knowledge -- either directly or from reading literature --
10 any research, any live animal research on PVC or the
11 monomer?

12 MR. HOLLINGSHEAD: Can I have the first
13 part of that repeated?

14 (The requested portion is read by the
15 Reporter.)

16 MR. HOLLINGSHEAD: All right. Thank you.

17 THE WITNESS: Haven't we already covered
18 all this in the Interrogatories?

19 MR. LEVINSON: My question to you has to be
20 answered here.

21 If there's any objection, Mr. Hollingshead
22 will make it for you.

23 MR. HOLLINGSHEAD: I think Mr. Wheeler's
24 comment is simply to the extent that it appears
25 in the Interrogatories, that his verbal response

would only supplement that.

MR. LEVINSON: I'd like to have him say it.

A All right.

~~He had established an Industrial Hygiene Fellowship at Mellon Institute, fully supported by Union Carbide.~~

Q And what year was that?

A I think that's in one of my reports. I'm not sure just which one, though. That was under ~~Dr. Henry Smyth~~.

Oh, Here we are -- 1937. And there was a Chemical Hygiene Fellowship under Dr. Henry F. Smyth.

Q That's four years after you went into production, correct?

A Yes.

Q Now do you know the nature of that particular work that was done by Dr. Smyth at the Mellon Institute?

A Well, one of which was a long-term feeding study of polyvinyl chloride to rats. It was one of the first long-term chronic studies ever conducted.

Q And do you have a copy of his report?

A I have a summary copy.

Q Do you have it embodied in your report here, the report marked ~~2-1~~ for identification?

A I don't recall now whether it's in that whole bunch of material I sent you or not.

1 Q Do you refer to it here in your report?

2 A I think I do, under my "~~Discussion of Polyvinyl Chloride~~
3 ~~Toxicology~~", yes, in the first part, where I refer to the
4 toxicity of polyvinyl chloride, where it was studied and
5 reports were submitted, and this was simultaneously by
6 Smyth and Neil at Mellon Institute of Research, which was
7 done for Carbide, and also by ~~Harvard~~ University for B.F.
8 ~~Goodrich~~ Company.

9 Q And that's on Page 24 of what's been marked
10 PW-1, is that correct?

11 A Right.

12 In both cases PVC was given to the animals for
13 two years, and in both cases no effects attributable to
14 the resin were noted.

15 Q Now when those particular products were being
16 fed to the rats by Dr. Smyth, do you know of your own
17 knowledge the type of PVC that was used for that experiment?

18 A Both the Goodrich and the Carbide tests were conducted
19 with vinyl chloride copolymers.

20 Q Copolymers? A Yes.

21 Q And how is that different than the ordinary
22 polymer?

23 A A small amount of a comonomer. In Carbide's case the
24 material was, I believe, VINU and it contained about two
25 or three per cent of vinyl acetate in the monomer, in a

polymer chain.

Q What was the actual monomer count in that particular product?

MR. HOLLINGSHEAD: I'm ^{not} going to put a direction on the record to direct him not to answer, but obviously the report which is available speaks for itself, and to that extent if at any time his answer is inconsistent with it, I don't intend either for him to be bound by it or for Union Carbide to be bound by it, because he's working on memory.

You can answer the question as best you can.

A Well, as best I can recall at the moment, it's roughly two to three per cent vinyl acetate.

Q My question was do you know the actual ppm of free monomer in that particular product that was being used?

A No.

Q Do you know the extent of the testing? Do you know over what period of time these testings had gone on?

A Two years.

Q And do you know the amount of rats that were used or mice that were used in this particular experiment?

A I don't remember right now. It's in the report.

1 Q Where is this report?

2 A It's at the Mellon Institute.

3 Q Do you have a copy of it?

4 A I have a summary copy.

5 Q Is it a big volume or rather simple?

6 A No, just a small --

7 MR. HOLLINGSHEAD: My recollection is that
8 it's been provided to you in Answers to Interroga-
9 tories.

10 MR. LEVINSON: Do we have it?

11 THE WITNESS: I would think it has been
12 provided.

13 MR. LEVINSON: All right.

14 MR. HOLLINGSHEAD: While you're talking,
15 I'll see if I can find it.

16 THE WITNESS: If I didn't, I'm very sorry.

17 But I think I certainly would have intended
18 to. I think I gave you a copy of both the
19 ~~Goodrich and the Mellon Institute studies.~~

20 MR. LEVINSON: Okay.

21 Q Now I think you testified you first started
22 manufacturing in 1933. When you went into full production
23 of PVC at that particular point, where were you doing the
24 manufacturing? Was it all done in Charleston or was part
25 of it done in Texas?

1. A All in Charleston.

2. Q All in Charleston? A Yes.

3. Q And what type of PVC were you manufacturing?
4. What process were you using?

5. A Well, let's go back to this chronology here.

6. From ~~1933 to 1934~~ our prime product was the
7. so-called ~~solution polymer~~ which contained ten to fifteen
8. per cent vinyl acetate in the polymer.

9. And these are only approximate.

10. Now in 1937 I'd say we began commercial production
11. of vinyl chloride resin by a ~~continuous bulk polymerization~~
12. process.

13. Now at this point in time there were two products:
14. One was VYNW, which contained about two per cent vinyl
15. acetate and QYNA, which was, in effect, 100 per cent vinyl
16. chloride.

17. Q All right.

18. And when did you go into the ~~suspension resin~~
19. manufacturing?

20. A Oh, that was considerably down the road. I'd say

21. ~~1942~~

22. Q All right.

23. Now did you have occasion to test at any time
24. the residual vinyl chloride monomer in these various
25. products?

1 MR. HOLLINGSHEAD: What do you mean by
2 "you" in that question?

3 MR. LEVINSON: I mean by Union Carbide
4 Company.

5 MR. HOLLINGSHEAD: The company itself or
6 anybody on their behalf?

7 MR. LEVINSON: Yes. Right.

8 MR. HOLLINGSHEAD: No, no. Which do you mean?
9 Do you mean the company itself or anybody on their
10 behalf?

11 MR. LEVINSON: The company itself.

12 THE WITNESS: Now you're speaking of what
13 time period?

14 MR. LEVINSON: All right. All right.

15 Let's start you off with the first time it
16 was done.

17 A Yes.

18 Q And when was it first done?

19 A I couldn't tell you, because our records don't go back
20 that far.

21 Q How far back do your records go in measuring
22 the residual vinyl chloride monomer count?

23 A I guess you might say the ones which I've supplied
24 you constitute all the records I was able to get.

25 Q Well, if you turn to Page 46 of your report,

1 which is PW-3, and it's before you now, you set forth there
2 the ~~which is PW-3, and it's before you now, you set forth there~~
3

4 A Yes.

5 Q Now when was that count made?

6 A Approximately 1974. Early in 1974.

7 Q Yet you were manufacturing a suspension resin
8 back in 1955?

9 A Yes.

10 Q So that between 1955 and 1974 there were no
11 counts being made by Union Carbide Company, to your
12 knowledge?

13 A Yes, we had made some.

14 Q Well, when did you make those "some"?

15 A I'd have to dig back through the records and find them.

16 We and Armstrong Cork became concerned about this
17 because they did find a ~~chlorobenzene~~ in some of their
18 storage silos, and at that time our analytical techniques
19 were not all that refined.

20 We do know we were looking at ~~concentrations~~
21 in the ~~samples~~ at that time on the order of ~~.01 per~~
22 cent, which is about 100 ppm.

23 Q All right. Let me go about it another way.

24 You know in 1966 of the ~~concentrations~~ problem,
25 is that correct?

A Yes.

Q And was that problem ever associated by you or were you ever made aware of the fact that there was some connection between that and the vinyl chloride monomer?

A This was a presumed connection.

And to my knowledge it's still a presumed connection to this day.

Q All right.

But it was presumed then, too, was it not, in 1966?

A No, it was presumed in 1969.

Q But in 1966 you first became aware of the acro-osteolysis problem that existed among polyvinyl chloride workers, correct?

A ~~By 1966, I was aware of it.~~

Q But people exposed to vinyl chloride monomer?

A No, no, this was a particular occupation. This was a guy who went down into the reactor and scraped the walls.

Q Now what that man was exposed to was a hard-caked polyvinyl chloride on reactor walls, is that correct?

A In that respect, plus also he was exposed to the high concentration of polyvinyl chloride in his working atmosphere.

Q The monomer is what you're talking about when you say "vinyl chloride", is it not?

1 A Yes.

2 Q So did you believe at that time that there was
3 some connection between the vinyl chloride and the acro-
4 estcolysis?

5 A We had no proof.

6 Like I say, when we got through with the study in
7 1969 we made a basic presumption that this must be the case
8 and the study recommended that vinyl chloride exposure be
9 limited to 50 ppm.

10 Q But your actual measurements, you say, didn't
11 start until 1974?

12 A Well, now, we're talking about two different animals
13 again.

14 Q All right.

15 When did your actual study start then?

16 A In one case you're talking about vinyl chloride
17 contained in the solid polymer residual and --

18 MR. LEVINSON: Right.

19 A Now when we talk about exposure to 50 ppm in a working
20 atmosphere, we're talking about vinyl chloride contained
21 in the breathing air.

22 Q All right. You're right.

23 Now when did you first develop or start counting
24 the ppm of vinyl chloride in the atmosphere?

25 A I think I mentioned this morning that I requested a

1 method to be developed in 1969.

2 Q That was the first time that you worked on
3 developing a method for doing that?

4 A No.

5 We had had methods before that, but we needed a
6 method which would go down lower.

7 If you're going to set for yourself a goal of
8 50 ppm worker exposure, maximum, then you have to have a
9 means of measuring 50 ppm which is practical and usable
10 in the plant.

11 This is what I was after. We should measure this
12 in the laboratory and we did have -- there were devices
13 on the market which had an advertised sensitivity of 100 ppm.
14 But, like I say, if you're going to set yourself a target,
15 you've got to be able to see the target.

16 Q All right.

17 Now when then did you first develop something --
18 anything that would measure the PVC in the atmosphere within
19 any range, regardless of the smallness of the amount?

20 A Well, I think you're being a little broad, but I will
21 also answer you broadly in that as a Gas Analyst in 1943
22 I could have measured vinyl chloride at a concentration
23 of a tenth of the per cent volume in air.

24 Q In 1943? A Yes.

25 But a tenth of the per cent in air is one-thousandth

1 ppm.

2 Q All right.

3 When did you first develop any machinery or any
4 type of testing that would test, for example, one ppm?

5 A This came ~~after~~ the development, you might say, with
6 common usage of gas chromatographs.

7 Q When was that? A I'd have to dig
8 that up. I don't recall.

9 Q And what is this device you're talking about?
10 Gas what?

11 A Chromatographs.

12 Q Chromatographs? A Yes.

13 Q Well, gas chromatographs have been in use a long
14 time, have they not?

15 A Yes.

16 But now it took a while for them to go from a
17 laboratory curiosity to becoming a standard laboratory
18 apparatus.

19 Q All right.

20 Now let's go back a few steps. Now to your
21 knowledge Union Carbide, itself, outside of this one
22 episode in 1937 when they had Dr. Smyth at Mellon
23 Institute do some research for them on PVC and VCM, did you
24 do anything else by way of research on the product before
25 it went into production? After it went into production,

1 I mean. I'm sorry.

2 THE WITNESS: Now which product?

3 MR. LEVINSON: PVC.

4 A In the material I supplied you I think you will find
5 a summary of some test work which was done at Mellon
6 Institute.

7 Q No, no, I said outside of Mellon Institute.
8 Outside of this one test in 1937.

9 A No, no.

10 I'm saying that there are also other tests in
11 the materials which you've been supplied with, tests which
12 involve skin sensitivity and these kinds of things.

13 Q All right. Let me just look at this.

14 In 1940 your records show studies for skin
15 sensitization with regard to PVC resins and compounds
16 at Mellon Institute by Dr. Smyth.

17 A Yes.

18 Q After that the next thing you have is again
19 by Dr. Smyth in 1947, and this is on chronic oral toxicity
20 to rats of vinyl chloride-vinyl acetate copolymer, correct?

21 A No, no. I'm saying there that the work -- this
22 work was done earlier. Excuse me. I beg your pardon.
23 That's correct, as stated on Page 27.

24 The reporting was issued in 1966. That's on
25 Page 45 -- or is it Interrogatory 45?

1 MR. HOLLINGSHEAD: Interrogatory 45 of
2 the plaintiff's Supplemental Interrogatories.

3 MR. LEVINSON: What is the question?

4 MR. HOLLINGSHEAD: The question is: "List
5 toxicological and other studies relating to
6 occupational health that were wholly or partially
7 sponsored by Union Carbide Corporation."

8 And that answer is contained in my letter
9 to you of September 19, 1978, as a supplementary
10 answer to those Interrogatories.

11 MR. LEVINSON: All right. I'm now looking
12 at that letter.

13 Off the record.

14 (Discussion off the record.)

15 MR. LEVINSON: Back on the record.

16 Q I now have before me the letter that's been
17 referred to as a more complete answer to Interrogatories
18 with regard to Interrogatory 45, in which you are stating
19 that Union Carbide has given us all the toxicological
20 studies done on this particular product.

21 Now do you have a copy of that letter in front of
22 you?

23 A Right here.

24 Q All right.

25 Now you told us a moment ago about the fact that

1 Mellon Institute of Research did some studies in 1937 and
2 these studies were of a nature where certain PVC compounds
3 were given to the rats by feeding, is that correct?

4 A No, this was a skin sensitization.

5 Q A skin sensitization? A Yes.

6 Q All right.

7 Now if you look at the letter of September 19,
8 1978, particularly to Question Number 4 or Paragraph 4,
9 at the bottom of the page, it indicates in the last line,
10 "This study involved exposure of rats, mice and hamsters
11 to vinyl chloride concentrations of 0, 50, 200, 2,500 ppm's
12 by inhalation. The histopathology for this study is
13 not complete; however, ~~neoplasms~~ were found in the animals
14 at all levels of exposure."

15 Now, Mr. Wheeler, it appears this particular test
16 was done in ~~1975~~ is that right?

17 A Yes. That's the Industrial Bioassay Test that we
18 talked about this morning.

19 Q And at no time prior to 1975, you are telling
20 me, did Union Carbide ever find such histories of neoplasms
21 by use of animal testing?

22 A No, no. Let's go back a little bit.

23 Don't forget that in the 1930's and up until the
24 early Forties there was a great deal of effort on the part
25 of the medical profession to use vinyl chloride as an

1 anesthetic and it was thrown out as an ~~anesthetic~~ for
2 surgical operations because it caused ~~cardiac~~ ~~arrhythmias~~

3 And when you got this type of endorsement from
4 the medical profession, are you likely to concern yourself
5 with whether a material is toxic or not?

6 MR. LEVINSON: Now that is an argumentative
7 answer. Unfortunately, that is not my question
8 to you.

9 Thalidomide at one time was thrown out, to ,
10 by the pharmaceutical houses as a product and
11 medical people used it and what happened to that?
12 That's not a very valid position.

13 I'm not going to argue with you , however.

14 My point is simply that in 1975 after the
15 experimentation they suddenly found that there's
16 neoplasms of all kinds by exposure to vinyl
17 chloride, based on your answer here.

18 Q Now my question to you is this: Was it ever found
19 out before 1975 by any testing of Union Carbide?

20 A No.

21 Q As a matter of fact, do you know what Mellon
22 Institute for Research did in the way of testing back in
23 1937 and 1947 in connection with your product?

24 A I have given you -- I asked that they summarize it
25 for me and I passed this on to you.

1 All the test work they did with relation to poly-
2 vinyl chloride, I passed on to you.

3 Q All right.

4 As a matter of fact, in answer to Number 45, which
5 I referred to in this letter of September 1978, there's no
6 mention made of a 1937 test by Dr. Smyth or research at the
7 Mellon Institute, is there?

8 A Excuse me.

9 Now this particular interrogatory limits itself
10 to work done at the request or behest of Union Carbide.

11 Q Are you telling me, then, that Union Carbide did
12 not ask the Mellon Research people or Dr. Smyth to do any
13 testing for you on your behalf?

14 A Except for the items listed.

15 Q Well, which items did they actually do for Union
16 Carbide?

17 A The skin sensitization, the feeding study, one or two.
18 Now these are spread over a considerable period of time.

5 19 Q As a matter of fact, the only thing they did on
20 your behalf, you say, is one or two, and that is in answer
21 to Question 45, correct?

22 A Yes.

23 Q That is the skin sensitization test in 1943 and --

24 A No, no. These were multiple tests.

25 Q What's that?

A You'll note that there

1 were five. ~~There were five resins manufactured~~

2 Q All right. I'll read it.

3 "Five Union Carbide Corporation vinyl chloride
4 resins were tested for skin sensitization on human subjects.

5 ~~No skin sensitization~~ was noted in over 200 subjects.

6 Monomer content of the resin is not known. Union Carbide
7 Corporation's Industrial Hygiene Fellowship, 1943."

8 Now let me understand this.

9 Union Carbide Corporation established an Industrial
10 Hygiene Fellowship at Mellon Institute for Research?

11 A Yes.

12 Q They paid for it?

13 A Yes.

14 Q And they sent some doctor up to do some research
15 along these lines, correct?

16 A Yes.

17 Q And he, in turn, did skin sensitization tests on
18 human subjects of the various products; that is, the five
19 resins manufactured by your company?

20 A Yes.

21 Q Okay.

22 Now his sole function was just skin sensitization
23 tests, right?

24 A No, no.

25 He would do many other types of testing. These

1 ~~Wheeler: Only types of tests that were related to the current~~

2 ~~investigation.~~

3 Q The PVA? A Yes.

4 Q Okay.

5 Now what made you have that test done? Did you
6 have problems with skin sensitization in 1943?

7 A No.

8 But we didn't want to have problems.

9 Q Well, for example, did you check at that particular
10 time problems with carcinogens, this particular problem being
11 a carcinogen?

12 A I would say considering the feeding test --

13 Q Now I -- all right, go ahead.

14 A We did do, as I say, one of the two long-term feeding
15 tests that were conducted on this material.

16 Q Well, what is your answer? I don't understand.

17 A Well, you say we did no carcinogen testing.

18 ~~We did not do any carcinogen testing~~ but,
19 nevertheless, if I were going to test PVC for carcinogenicity,
20 then I would do it the way it's done by Smyth in --

21 Q No, no, Mr. Wheeler. I don't want to argue with
22 you, but on the other hand wouldn't you just be testing
23 pure toxicity?

24 If a worker got this dust in his mouth and
25 swallowed it, you wouldn't want him to die from the toxic

1 element involved in this product, would you?

2 A If I were going to do that, I would do no more than
3 the so-called ~~inhalation test~~, which usually involves
4 ingestion over a period of 28 days.

5 Q How do you know that wasn't done here?

6 A Because it ran for two years.

7 Q Now was there any carcinogen test done for cancer
8 of the lungs by inhalation?

9 A No.

10 Q So they weren't concerned with cancer in that
11 particular area?

12 MR. HOLLINGSHEAD: Objection to the form of
13 the question.

14 Q U.C.C. was not concerned with that particular
15 product as a carcinogen reacting on the lungs?

16 MR. HOLLINGSHEAD: Same objection.

17 MR. LEVINSON: You can answer it.

18 A As I mentioned earlier, we ~~were always concerned~~

19 ~~with the health of our employees and our customers.~~

20 ~~But there is no good way to do bioassay testing.~~

21 ~~particularly for inhalation of solids.~~

22 Q Are you testifying at this particular point as
23 a medical expert now or as a chemical expert?

24 A I'm simply reporting what I've read in the literature.

25 Q But you, yourself, have no first-hand knowledge

1 of radical testing of chemicals, do you?

2 A I have some knowledge.

3 MR. HOLLINGSHEAD: What does "first-hand
4 knowledge" mean in the question? Did he ever
5 do it himself?

6 MR. LEVINSON: Yes.

7 Q Did you ever do it? Do you have training in
8 chemical relationships and testing? Do you hold yourself
9 out to be an expert in this field?

10 A No.

11 I will say, though, that I have read extensively
12 and I have a great deal of informal training in this area.

13 Q Well, your formal training now is just what
14 you've told us about earlier, is that correct?

15 A Starting from about the period 1971 onward.

16 Q All right.

17 Just so we understand each other, your entire
18 professional career has been associated with Union Carbide
19 Company?

20 A Yes.

21 Q Your entire technical training and professional
22 training has been through four years of college, during
23 which time you received a degree in Chemical Engineering,
24 correct?

25 A Correct.

1 Q Your only other training has been lectures
2 on a periodic basis, a one-day or a little more than one-
3 day basis from various people you've gone and listened
4 to?

5 A Yes.

6 Q All right.

7 You've never operated a laboratory or concerned
8 yourself with the investigation of medical/chemical problems?

9 A Only as regards to my reading and study of the various
10 research reports and my association with other toxicologists.

11 Q And everything you've done in connection with the
12 investigation of the vinyl chloride monomer and its toxico-
13 logical effects upon workers or those people exposed to
14 it is set down in your report which has been marked PW-1.

15 MR. HOLLINGSHEAD: Repeat that.

16 (The pending question is read by the
17 Reporter.)

18 MR. LEVINSON: Is that a fair statement?

19 A If you'll give me the latitude that in my report
20 I attempted to summarize and keep it as concise and as
21 readable as possible.

22 Q Well, your report would appear to be well over
23 300 pages, I would say.

24 It comprises almost a total -- it does comprise
25 a large notebook.

1 Are you telling me this is a concise report?

2 Are you telling me --

3 MR. HOLLINGSHEAD: I don't know where you
4 get the figure "300" from.

5 MR. LEVINSON: Well, it's about three inches
6 high. What do you think?

7 MR. HOLLINGSHEAD: The report, itself, has
8 been marked PW-1, except for the attachments
9 which are documents that he has not necessarily
10 written. The report itself runs about 60 pages.

11 MR. LEVINSON: Strike that.

12 Q Now you've given me a report and attachments,
13 that is an appendix that you used to make part of your
14 report, correct?

15 A Yes.

16 Q And that's what I have in front of me now.
17 You can look at it. Is that correct?

18 A Yes.

19 MR. HOLLINGSHEAD: Unless you let him look
20 at every single page in there, I object to it
21 because it's your document.

22 MR. LEVINSON: Well, look at it.

23 MR. HOLLINGSHEAD: I don't intend to sit
24 here and let him look at over 300 pages to see
25 what you put in that report.

1 THE WITNESS: I would either take the next
2 wish to look at it or --

3 MR. LEVINSON: Well, take my word for it.
4 This is your report. This is the report you gave
5 me or Mr. Hollingshead gave me.

6 MR. HOLLINGSHEAD: Well, that we're happy
7 to do.

8 But don't ask him to substantiate that that
9 is so.

10 I'll take your word for it that you've got
11 here in this tome whatever we've sent you. But
12 you're not going to ask him to state that that's
13 so.

14 MR. LEVINSON: All right.

15 Q Let me ask you this question: Look at your
16 reports, the ones that you have in your hand. That's just
17 the basic report and not the appendix to it. Look at that
18 and tell me if there's anything else you wish to add to
19 that report by way of any further information, research
20 or knowledge you have concerning the toxicological effects
21 of VC as contained in the PVC that people were exposed to.

22 MR. HOLLINGSHEAD: I object to it and I
23 direct him not to answer.

24 MR. LEVINSON: All right.

25 Q Now you have before you a report which you told us

1 contains all the work which was done by Union Carbide in
2 connection with testing of this particular product, is that
3 correct?

4 A With the qualification that I have attempted to make it
5 as brief and as readable as possible.

6 Q Well, let me tell you this right now, Mr. Wheeler:
7 We're here to take your deposition and find out everything
8 you know about what has happened in the background of PVC
9 manufacturing.

10 Now if you're telling me at this point that the
11 information you've given us in your report is brief, my
12 question is this: Is there anything else that you haven't
13 told us about the toxicological effects of VC on the
14 person exposed to it that you may know about by way of
15 testing or actual --

16 MR. HOLLINGSHEAD: That question is so
17 broad, I would object to it and direct him not
18 to answer it.

19 MR. LEVINSON: Well, then, I'll have the
20 witness back on a motion.

21 MR. HOLLINGSHEAD: You can bring any motion
22 you like. That's your privilege.

23 But that question in its current form is
24 totally improper.

25 It's improper to ask him if there's anything

1 he wishes to add. He has supplied an expert
2 report and as part of that expert report he has
3 determined what is necessary to advise you of
4 and, ultimately, the Court will assess the basis
5 for whatever his opinion may be.

6 Now to ask him if there's anything in the
7 manufacturing history of Union Carbide, in effect,
8 which is what you're asking, that he has left
9 out --

10 MR. LEVINSON: No, no, I'm not asking that.

11 MR. HOLLINGSHEAD: -- I find that totally
12 improper.

13 MR. LEVINSON: I'm not asking that.

14 I'm asking him if he knows of any other
15 testing that was done, besides what is in the
16 report marked PW-1, that he hasn't given us in
17 this report, concerning the toxicology of this
18 particular product.

19 THE WITNESS: Testing by whom?

20 MR. LEVINSON: By Union Carbide. Either
21 by them directly or by anyone else at the request
22 of Union Carbide.

23 A Well, sir, I tried to include everything in this report
24 which was pertinent.

25 As I said earlier, I have not included very detail

1 because I would have ended up with a completely unmanage-
2 able package. So I have, in effect, summarized it.

3 Now I may have left some things out through error,
4 but insofar as I know this is a final and complete document.

5 Q All right.

6 Now look at your answer as set forth in the
7 letter of Mr. Hollingshead dated December 19, 1978, and tell
8 me if that is complete or if you wish to add anything to it.

9 MR. HOLLINGSHEAD: I object to it on the
10 grounds that you've supplied the defendant with
11 what my count at the moment shows to be five
12 sets of extensive Interrogatories.

13 You've been supplied so far with four sets
14 of Answers, with another one being prepared and
15 still to be submitted to you.

16 Many of those Interrogatories overlap, as
17 this one may, and I don't know -- without looking
18 at it.

19 I would suggest that you ask him if there
20 is anything other than what is in his Answers
21 to Interrogatories and in his report that he
22 may find necessary to be added.

23 MR. LEVINSON: What is Question 45?

24 MR. HOLLINGSHEAD: Actually, I think you'd
25 have to go to the Interrogatory itself, because

1 it was modified by Court Order.

2 MR. LEVINSON: What is 45?

3 MR. HOLLINGSHEAD: I'll read the original
4 question, if you wish, and then you can see the
5 modification made by the Court.

6 "45. With response to the PVC resins and
7 any VCM monomers, if any, set forth all toxicologic
8 studies associated with the subject resins and
9 (a) What tests were conducted, if any? (b) Were
10 only animals used for such tests? (c) Were the
11 test animals and/or humans specifically subjected
12 to the effects of ingested resin dust particles
13 as inhaled or swallowed? (d) Were the test
14 animals subjected to varying levels of VCM in
15 ambient air that is inhaled under controlled
16 conditions? (e) What were the levels of residual
17 free VCM in the resins ingested by the test
18 animals? (f) What were the specific findings
19 from these kinds of tests?"

20 MR. LEVINSON: All right.

21 Then the Court, pursuant to your objection,
22 said that this question should be answered
23 with the following addendum: "Pursuant to the
24 Court Order of March 23, 1978, this answer
25 should be limited to toxicological studies per-

1 formed by or at the request or behest of Union
2 Carbide."

3 BY MR. LEVINSON:

4 Q Now I ask you to look at the answer given and
5 read it, if you wish, and then tell me if that's a complete
6 answer to the question or if you wish to add anything. If
7 you wish to add anything now, tell us.

8 MR. HOLLINGSHEAD: Well, while he's looking
9 at that, let me state that if you wish that kind
10 of response, I'll ask him -- not at the moment
11 perhaps -- to go back over all of the Interroga-
12 tory Answers that we've supplied and to indicate
13 if there's anything contained in another answer
14 which ought to be tacked onto that.

15 MR. LEVINSON: Well, Mr. Hollingshead --

16 MR. HOLLINGSHEAD: And then I'll supply you
17 with it, if that's the case.

18 MR. LEVINSON: Well, Mr. Hollingshead, I
19 assumed this was a complete answer that you gave
20 us pursuant to Court Order.

21 MR. HOLLINGSHEAD: So do I.

22 MR. LEVINSON: I assumed you weren't trying
23 to hide things that should be in there. Now
24 I also assumed Mr. Wheeler, who is your expert,
25 drew up the answer to that question and not you.

1 And I assumed, therefore, since he put everything
2 in that particular answer, that he would know
3 whether it's complete.

4 My only purpose in asking the question is I
5 don't want to be surprised in court by something
6 else.

7 MR. HOLLINGSHEAD: You will certainly not be
8 surprised in court by anything else.

9 But what I'm saying is that you have taken
10 the tack of asking five sets of Interrogatories,
11 many of which overlap to a great extent.

12 In other words, you're asking the same
13 question from many different angles, and I don't
14 know what you're seeking to obtain by it.

15 We have done our best to supply whatever
16 answers are appropriate to each of those questions,
17 and I assume that Number 45 has been answered
18 completely and accurately and that there is nothing
19 missing.

20 And if I find out that there is anything
21 contained elsewhere in any of the other answers
22 that might even arguably go under 45, I'll advise
23 you of it.

24 But I don't care to be put in the position of
25 having to be tied down to one set, to one answer

1 or one interrogatory somewhere, such as Number 300
2 or something.

3 MR. LEVINSON: Now, now, Mr. Hollingshead,
4 there's no point in making summations or arguments
5 at this time.

6 I don't wish to be involved in that.

7 But I do object to the position that we have
8 put five sets of Interrogatories by different
9 tack.

10 Now you're a seasoned trial lawyer and I
11 think you've made objections to most of these
12 Interrogatories at different times, and if there's
13 anything improper the Court will sustain your
14 position.

15 Now these requests were all subsequently
16 answered and I assumed they were answered
17 properly because the Court ordered you to answer
18 them.

19 MR. HOLLINGSHEAD: Mr. Levinson, I would
20 answer them properly if the Court ordered me to
21 do so or not.

22 MR. LEVINSON: The Court so found.

23 MR. HOLLINGSHEAD: No, they weren't --

24 MR. LEVINSON: Well, I object to this on the
25 record and let me say this, Mr. Hollingshead:

1 This is no time to get involved in this sort of
2 shenanigans. If we have to try the case, we'll
3 try it.

4 MR. HOLLINGSHEAD: Are you suggesting it's
5 shenanigans?

6 MR. LEVINSON: I don't care to go into it.
7 When you suggest it on the record that I'm
8 using different tactics and subversive arrangements
9 in order to --

10 MR. HOLLINGSHEAD: I didn't say that at all.
11 I said I didn't know what your point was
12 in asking the same interrogatory four times.

13 MR. LEVINSON: Well, what inference can
14 we draw from that?

15 MR. HOLLINGSHEAD: What the hearer or reader
16 puts to it.

17 MR. LEVINSON: Precisely.

18 And that's the inference I'm getting at.

19 MR. HOLLINGSHEAD: Off the record.

20 (Discussion off the record.)

21 MR. HOLLINGSHEAD: Back on the record.

22 BY MR. LEVINSON:

23 Q Now give us the answer, as best you can. Read
24 that particular document and tell us whether that fairly
25 embodies all the testing that was done.

Exhibitor - direct

1 A Insofar as I know, it was done, up and down, even
2 which was to the best of my knowledge, and there is still
3 no change at this moment.

4 Q All right.

5 Now when you first started manufacturing PVC in
6 Charleston, did you also manufacture the VC, the original
7 vinyl chloride?

8 A Yes.

9 Q Now do you still manufacture polyvinyl chloride?

10 A We operate the solution vinyl chloride resin process.

11 MR. LEVINSON: I didn't hear you.

12 A We operate only the solution vinyl chloride resin
13 process, which is the original one referred to.

14 Q Do you still manufacture the vinyl chloride?

15 A No.

16 Q When did you stop manufacturing vinyl chloride?

17 A I think that's in my -- excuse me. I'm sure you want
18 that back. That's yours.

19 (A document is handed to Mr. Levinson by
20 the witness.)

21 That's in my listing.

22 Q In 1947, I believe?

23 A 1967.

24 Well, 1947 was when we changed the vinyl
25 chloride process and went to the dehydrochlorination of

Q - direct

1 ethylene chloride and then we went completely out of
2 vinyl chloride business in 1967 and began buying from Dow
3 Chemical.

4 Q Why did you stop manufacturing the vinyl chloride?

5 A Because our process was obsolete and the high cost.

6 Q Now when vinyl chloride was manufactured by you
7 prior to 1967, was that manufactured in a closed system?

8 A Yes.

9 Q Now explain to me what a "closed system" is, as
10 you describe it here.

11 A The vinyl chloride process was a closed -- was operated
12 under pressure, and as you pumped in ethylene dichloride you
13 ran it through a cracking furnace and you dehydrochlorinated
14 it into vinyl chloride and hydrogen chloride.

15 The vinyl chloride then was distilled to yield
16 a refined product. The hydrogen chloride was either
17 combined with acetylene to make additional vinyl chloride
18 via the so-called synthesis process or it was neutralized
19 and dumped as sodium chloride or calcium chloride.

20 Q Did you ever at any time in manufacturing this
21 product suspect any danger element in PVC?

22 MR. HOLLINGSHEAD: In any regard?

23 MR. LEVINSON: Toxicologically, to any
24 person exposed to it.

25 A Only with regard to acute exposure.

1 Q And what was the danger there?

2 A The man became drunk, giddy. He was likely to fall.

3 And in the literature there were several fatalities
4 which were the result of people being exposed to -- I think
5 in one of my answers I've listed the physiological effects
6 of vinyl chloride, but I'm thinking in terms of five to ten
7 per cent concentration in air, which will render you un-
8 conscious.

9 Now I could be off in my memory of that somewhat.

10 Q All right.

11 Now the product -- were you also manufacturing
12 the PVC, itself, in a closed system or an open system?

13 A The resin was manufactured in a closed system. The
14 resin was recovered in what you might term an open system.

15 Or to explain that somewhat further, vinyl
16 chloride has to be maintained under pressure, under the
17 condition of the reaction.

18 So you react it to the particular processes,
19 the degree of conversion, and then you transfer that to
20 a second closed system which you strip off, the unconverted
21 vinyl chloride, and at that point then the resin is
22 usually either given further treatment or it may be
23 centrifuged and air dried in some form of hot air dryer,
24 and then at that point I would say it's in the open.

25 Q Now the resin you produced that had the greatest

1 amount of residual polyvinyl chloride monomer was what

2 A Suspension resin.

3 Q Now was this suspension resin shipped to ATC in
4 Perth Amboy during the years 1962 to 1970?

5 A I think we started in 1962.

6 Q All right.

7 And did --

8 THE WITNESS: Excuse me. Let me check that.

9 Bob (indicating Mr. Hollingshead), you've
10 got that table there.

11 MR. HOLLINGSHEAD: There's been a chart
12 that's been supplied to the plaintiffs in
13 Answers to Interrogatories.

14 Yes, it's attached to the Answers to
15 the Supplemental Interrogatories.

16 A We started shipment to ATC in 1962.

17 MR. HOLLINGSHEAD: That looks like "3" to
18 me.

19 A It was in 1963. The facilities at ATC were built in
20 1962.

21 Q All right.

22 Now in 1963, was the bulk of the resin you
23 shipped to them, that is, the PVC, was that the solvent,
24 bulk or suspension type resin?

25 A The bulk type.

1 MR. HOLLINGSHEAD: By "bulk", you mean the
2 majority?

3 MR. LEVINSON: I should rephrase it.

4 Q Was the majority of the resin shipped suspension,
5 bulk or solvent type resin that was manufactured?

6 A Well, let me check what I have here.

7 Q While you're checking, check for the figures for
8 1963 to 1970.

9 A I'll have to give you those at a later date.

10 MR. HOLLINGSHEAD: The chart, I might add,
11 doesn't break it down.

12 It only refers to polyvinyl chloride.

13 Now I might have been mistaken when I thought
14 it referred to something else.

15 Q In other words, you can't answer that question
16 now, is that correct?

17 A I can answer it in part.

18 Q Well, answer as well as you can, then.

19 A Okay.

20 I want to use the same answer I used here.

21 In a typical year during the period 1960 to 1965,
22 61.5 per cent was solvent resin, 12.8 per cent was bulk
23 resin and 25.7 per cent was suspension resin.

24 MR. HOLLINGSHEAD: The answer is on Page 27
25 of PW-1.

Whelan - direct

1 Q Are solutions ~~of the same resin~~ the same
2 thing?

3 A Right.

4 Q So during those years ~~9.7 per cent of the product~~
5 ~~shipped was of the suspension~~ ~~manufactured?~~

6 A Yes.

7 Q And that particular type of resin had the ~~greatest~~
8 ~~amount of residual vinyl chloride monomer?~~

9 A Yes.

10 Q Now I know I believe I asked this question before,
11 but I forgot the answer for the moment: When were you first
12 able to make testing for the RVCM in your various resins?

13 A I think I mentioned that we had done some initial
14 testing which was quite gross, and I could not identify
15 the year.

16 Q Well, you've given me figures here in this
17 particular report of yours as to the RVCM's in these
18 various type resins.

19 Now when were those figures made?

20 A They were made primarily in 1974 and 1975.

21 Q So you have no idea of how it measured in 1960 to
22 1970, do you?

23 A Only to the extent that the processes were basically
24 the same, so you would expect the materials to be approxi-
25 mately the same composition.

1 MR. HOLLINGSHEAD: I object to the form
2 of the question.

3 Q Did it become aware after 1970 that this
4 particular product -- PVC and its monomer -- had certain
5 toxicological effects?

6 MR. HOLLINGSHEAD: Same objection.

7 MR. LEVINSON: Do you understand that?

8 THE WITNESS: Well, should I answer the
9 question?

10 MR. LEVINSON: Yes, answer the question.

11 MR. HOLLINGSHEAD: You can answer the
12 question.

13 My objection goes to the part of the
14 question -- in case Mr. Levinson cares to correct
15 it -- that makes it a fact that it has those
16 carcinogenic qualities.

17 A Well, we were aware, ~~in late 1972, that Maltoni had~~
18 ~~soon found in his rats at a level of 250 ppm.~~

19 Q All right.

20 Well, did you --

21 A Now we also were made aware in January of 1974, that
22 a connection had been made with ~~carcinogenic~~ qualities. And
23 I -- now I'm distracted.

24 MR. LEVINSON: Read back the last question.

25 (The requested question is read by the

Mr. [redacted] - direct

Reporter.)

A Okay.

I would like to change my answer slightly.

MR. LEVINSON: Well, you can start all over again. If you want to strike out your answer, you can start again.

THE WITNESS: Okay.

A In my opinion, to this date the fact is that PVC is an inert material and is essentially nontoxic to humans. It's a proven fact that the only toxic material is vinyl chloride monomer, and it's only the amount of residual vinyl chloride monomer which may be left in the resin which could conceivably be toxic.

MR. LEVINSON: That's what we're talking about.

I'm not trying to mislead you, Mr. Wheeler.

Perhaps I was inartistic in setting up the question.

A Now as I mentioned earlier, we were informed -- and it's a matter of record -- in late 1973 that Maltoni had seen tumors in his rats at the level of 250 ppm and we made arrangements to get this data released and we took it to NIOSH and we still had not seen any connection between the Maltoni rat data and human toxicity until [redacted] made the connection and announced it in [redacted]

Q All right.

1 So you felt that there was no connection between
2 Maltoni's report in 1972 and this particular vinyl chloride
3 monomer?

4 MR. HOLLINGSHEAD: I object to the form of
5 the question. I don't -- well, I find that
6 confusing.

7 MR. LEVINSON: All right.

8 MR. HOLLINGSHEAD: You connected the report
9 to the PVC. I don't think you meant to do so.

10 MR. LEVINSON: All right.

11 Q What did you say about Maltoni's report a moment
12 ago?

13 A Okay.

14 I said that Maltoni -- now this was a second-
15 hand report, in that it was material which was reported to
16 Imperial Chemical Industries, who were a sponsor in the
17 Maltoni work, and then it was later relayed to the Vinyl
18 Chloride Task Force of MCA by Dr. David Duffield in late
19 '73, under pain of a secrecy agreement.

20 And the industry did go back to the European
21 sponsors and asked permission to release this data and we
22 did meet with ~~Dr. Maltoni~~ in mid '73.

23 We discussed the situation with him at that
24 time and, basically, he said that he thought -- he said he
25 felt we were doing everything in the proper fashion, so we

1 took --

2 Q Who is Dr. Marcus Kay?

3 A Head of NIOSH at the time.

4 MR. LEVINSON: I'm sorry.

5 Are you finished with your answer?

6 THE WITNESS: No, I'm not through. I just
7 ran out of wind.

8 Q All right, continue with your answer.

6 9 A Then, as I say, the next step in the consideration
10 was the connection made by Dr. ~~Smith~~ in, I guess, ~~the~~ ~~labor~~
11 when he pointed out that he was having ~~excess angiosarcomas~~
12 ~~cases in the Louisville, Kentucky, plant of B.F. Goodrich.~~

13 Now let's just back up a little on that answer
14 and say that we -- ~~Smith~~ -- were making extensive efforts
15 to ~~operate well below 50 ppm on our exposure~~

16 Q At what time was this?

17 A ~~This~~

18 Back in ~~1969~~ we had made a commitment, which we
19 were trying to carry out, to operate and make sure that
20 no person was exposed higher than 50 ppm.

21 Q You say you tried to do this in 1969?

22 A We began this in 1969 and we were reasonably successful.

23 Q Why did you begin it in 1969?

24 A Because of the conclusions and assumptions resulting
25 from the ~~Angiosarcoma~~ Study.

1 Q In 1969, then, your company had the feeling or
2 it felt that the vinyl chloride monomer was in some way
3 responsible for the acroosteolysis?

4 A We endorsed the report and that was an assumption of the
5 report, and we did act on the recommendations in good faith.

6 Q All right.

7 But my question to you is this: You assumed then
8 that the report was accurate and that there was a connection
9 between vinyl chloride monomer and acroosteolysis?

10 A No, we did not. The report assumed this.

11 Q And you did not assume the report to be correct?

12 A We accepted the report in its recommendations and
13 went with it.

14 Q Well, I don't understand the connection.
15 Perhaps you can clarify it for me. You have the report
16 before you.

17 A Yes.

18 Q You felt you acted pursuant to the report?

19 A Yes.

20 Q But you did not accept the contents of the report
21 as being valid?

22 A I still felt that there had not been a satisfactory
23 connection established between vinyl chloride and acro-
24 osteolysis at that time.

25 Q Were you the person who had to make a conclusion

1 Q Was it somebody else?

2 A No.

3 Q Well, what was it?

4 A It was also made by Carl [REDACTED], who went the other
5 way.

6 Q He felt there was a connection?

7 A He felt this is what we should do, and as head of the
8 medical toxicologists that's what we did.

9 Q All right. You're getting one step ahead of me
10 now.

11 Just so I understand it, you're telling me that
12 you felt, despite the fact that the report came out stating
13 this and despite the fact that Union Carbide followed the
14 report in trying to get their VCM down to below 50 ppm,
15 that the substance of the report was invalid?

16 A ~~I felt that the conclusion was not warranted by the~~
17 ~~report's content.~~

18 Q By that you meant what? That VCM was not the
19 cause of acroosteolysis?

20 A I felt no connection had been made.

21 Q But, on the other hand, Dr. Darnahl felt there
22 was, is that correct?

23 A I think you'll have to ask him about his own conclusions.

24 Q Well, I thought you just said so.

25 A (No response.)

1 MR. LEVINSON: If you can't answer the
2 question, don't answer it.

3 MR. HOLLINGSHEAD: I think you could ask
4 him not what Dr. Darmahl felt, but if he's aware
5 of any expression by Dr. Darmahl.

6 MR. LEVINSON: I thought he just said some-
7 thing to that effect.

8 I'll rephrase the question.

9 Q Did Dr. Darmahl ever tell you he felt there was
10 some connection between the two?

11 A No.

12 But he said that he felt -- in view of the
13 situation, he endorsed and felt that we should accept the
14 50 ppm.

15 Q And this was in 1969?

16 A Yes.

17 Q But your particular suspension operation, as the
18 manufacturer of ~~some type~~ type polyvinyl chloride, still
19 had in it as late as 1974 ~~85 ppm~~ ~~residual VCM~~, correct?

20 A Now we're putting apples with oranges.

21 Q I know exactly what you're saying. They're two
22 different things.

23 But it had that amount of RVCM in it?

24 A That was about an average situation.

25 Q All right.

1 Now when a product of polyvinyl chloride,
2 of the ~~type~~ type was shipped out containing or
3 having attached to it or inside of it ~~VC~~,
4 ~~would that residual product leave the PVC.~~
5 that is to say, the VC, would it leave the PVC and dissipate
6 into the air?

7 A Yes. That's what I say in my report, too.

8 Q So it's true, is it not, that the greater the
9 amount of RVCM, the greater amount of VC in the atmosphere
10 in any place that this particular product is stored or
11 placed?

12 A Now you're saying the greater amount of residual,
13 and I will say yes, for a particular material.

14 Don't forget now there were three varieties or
15 maybe -- ~~there were three types of polyvinyl~~
16 chloride.

17 MR. LEVINSON: All right. Perhaps I should
18 rephrase that.

19 Q For ~~suspension~~-type resin, which you indicated
20 to me at some point you don't know when it was measured,
21 but it had ~~10~~ ppm of RVCM and the ~~100~~ ~~type~~ had ~~100~~ ppm
22 of RVCM and for the ~~suspension~~ type it was ~~100~~ ppm of RVCM.

23 A Yes.

24 Q So is it reasonable to assume then, if you have
25 suspension resin in a room that contains 860 ppm's of

1 RVCM you'll have a greater degree of VC in the air?

2 A Well, if you'll give me this: Unfortunately, t
3 are subdivisions of suspension PVC. We made, in Texas City,
4 a suspension --

5 MR. DEVINSON: You'll have to keep your
6 voice up. I can't hear you.

7 THE WITNESS: Sorry. I mumble.

8 A We made suspension resin vinyl chloride homopolymer,
9 which was the most porous of the material intended to lose
10 vinyl chloride the most rapidly.

11 We also made an ethylene vinyl chloride copolymer,
12 which was somewhat less porous and lost its vinyl chloride
13 relatively slowly.

14 And we made a third material, which was vinyl
15 chloride vinyl acetate polymer, which was quite glassy
16 and nonporous and it contained on the order of 1,000 ppm
17 of residual vinyl chloride, but the damn stuff would not
18 come out and weather off.

19 So for the purposes of my report I chose the
20 number based on the ethylene vinyl chloride copolymer,
21 which I felt represented the worst case of vinyl chloride
22 emission.

23 Q Well, between the years 1960 and 1970 do you
24 know what type of suspension resin you were shipping to
25 ATC?

1 Was it the ethylene vinyl chloride copolymer or
2 one of the others?

3 A We shipped some of all three that I just went through.

4 Q And do you have the figures there in that chart
5 that you have in front of you, the figures showing the
6 different types that were shipped during that period of time?

7 A No.

8 I can get them for you, if you want them.

9 Q You don't know the exact breakdown at this point?

10 A I can't quote you any exact breakdown at this point.

11 All I'm saying is in my report in order to be
12 very conservative I chose what I felt to be the worst
13 case situation with regard to the type of resin input to
14 ATC, and I would strongly feel that if that were vinyl
15 chloride vinyl acetate copolymer or if that were vinyl
16 chloride homopolymer, that the number which I have quoted
17 as far as airborne vinyl chloride monomer would be much
18 lower.

19 Q All right.

A Now if you want
20 an approximate breakdown, I would say that 15 per cent
21 of the 25.7 on here -- yes, about 15 per cent of the
22 25.7 would be the so-called ethylene vinyl chloride co-
23 polymer which I chose as the worst case.

24 About 50 per cent would be the vinyl chloride
25 homopolymer, or straight PVC.

1 And the remainder would be the vinyl chloride
2 vinyl acetate copolymer.

3 Q All right.

4 Now you also indicated on Page 47 --

5 A Now that right now is strictly an opinion with regard
6 to the fractions.

7 MR. LEVINSON: All right.

8 Q Now when were these figures made, these figures
9 that you are talking about? You are now measuring ppm
10 with some degree of fraction of RVCM, correct?

11 A Yes.

12 Q When were these figures arrived at? Was it in
13 1975, would you say?

14 A We started working out one or two pieces of informa-
15 tion late in -- it was in late '73. We have a great deal
16 of information in '74.

17 Q Now you have practically no information, or do
18 you have any information for the years 1960 to 1970?

19 A Essentially, none.

20 Q All right.

21 Now you've given me in the paragraph above the
22 one you've just read from on Page 47 -- you've stated the
23 resin RVCM, what the time of bagging at ATC was and you've
24 given me three breakdowns as to solution resin, bulk
25 resin and suspension resin. Do you see that?

1 A Yes.

2 Q When were these figures made?

3 A This was based on the 1974 data.

4 Q Again, you don't know what the data was in 1960 to
5 1970 at ATC, do you?

6 A Except for the fact that I said the processes were
7 basically unchanged.

8 Q Well, do you know, for example, what the conditions
9 were at ATC for the years 1960 to 1970 in comparison to
10 how they were in 1975, that is, the physical conditions
11 of the plant itself as to ventilation, as to heat, as to
12 any other factors of bagging?

13 A I think that you have a much better description of
14 that from Mr. Archer.

15 Q That's fair enough.

16 So you can't tell us from your own knowledge?

17 A I base this on the conditions at ATC in 1974.

18 Q Did you personally go to ATC in 1974 to get
19 these figures yourself?

20 A No. These came by way of Archer, and also part of
21 them came from Texas City, depending on the need for the
22 information.

23 Q And who is Mr. Archer?

24 A Tom Archer, who was the Union Carbide representative
25 to ATC.

1 Q And what was his relation to ATC? I'm sorry,
2 I believe you said he was Union Carbide's representative for
3 ATC.

4 A No, no, to ATC.

5 Q To ATC? A Yes.

6 Q Which means what?

7 MR. HOLLINGSHEAD: Well, let me interject
8 this: That of course was part of Mr. Archer's
9 deposition and he, of course, is the best judge
10 of it.

11 MR. LEVINSON: I know.

12 MR. HOLLINGSHEAD: Mr. Wheeler will tell
13 you as best he can, but I think you already
14 have that information.

15 MR. LEVINSON: That's true.

16 But I want to hear it from Mr. Wheeler,
17 though.

18 A Well, he conveyed information from Carbide to ATC
19 and from ATC to Carbide.

20 He was, in effect, Carbide's agent to ATC. He was
21 not their Supervisor or anything else. He simply was the
22 agent.

23 Q Did you personally ever visit ATC?

24 A No.

25 Q You were never there in your lifetime?

1 A No.

2 MR. HOLLINGSHEAD: Off the record.

3 (Recess: 3:00 P.M.-3:05 P.M.)

4 MR. LEVINSON: Back on the record.

5 Repeat the last portion.

6 (The requested portion is read by the
7 Reporter.)

8 THE WITNESS: May I clarify that a little
9 bit?

10 MR. LEVINSON: Sure.

11 A ATC is an independent contractor and I had no reason
12 to visit them.

13 Q Now when you say they were an independent
14 contractor, do you know if they had any other customers
15 besides -- first of all, what was their business?

16 A Their business was operating the Union Carbide Bulk
17 Terminal facilities at Perth Amboy.

18 Q So that their only customer was Union Carbide?

19 A Insofar as I know.

20 Q And they only shipped to Union Carbide customers?

21 A Yes.

22 Q And they only received their product from
23 Union Carbide Company?

24 A Yes.

25 Q The only product they had was Union Carbide

1 product?

2 A To my knowledge, yes.

3 Q And Union Carbide would bill the customers
4 directly, the customers that they shipped to?

5 A Right.

6 But my management took a dim view of this.

7 MR. LEVINSON: Off the record.

8 (Discussion off the record.)

9 MR. LEVINSON: Back on the record.

10 A My management discouraged any unauthorized persons
11 dealing with contractors other than people such as Tom
12 Archer.

13 Q Well, I don't understand that.

14 You say Tom Archer was an employee of Union Carbide?

15 A Yes.

16 Q And he was in their Bound Brook plant in New
17 Jersey?

18 A He was the man who was to handle all communications
19 and whatever with --

20 Q With ATC? A -- ATC.

21 Now unless Tom Archer had reason to want me to
22 visit ATC, there was no reason and no way I could visit
23 ATC. That's what I'm saying.

24 Q Okay. Now I understand.

25 Now let's get back to this business of the determining

1 tion at some point that semioctalysis was somehow
2 associated with VC. I believe you said that it was in 1969
3 that Mr. Bernohl decided that you ought to get your ppm's
4 down to 50 ppm. Your VC, rather.

5 A Dr. Bernohl.

6 MR. LEVINSON: I'm sorry. I'm not trying
7 to be disrespectful.

8 MR. HOLLINGSHEAD: Off the record.

9 (Discussion off the record.)

10 MR. LEVINSON: Back on the record.

11 Q Now this was in 1969, I believe, is that right?

12 A Right.

13 Q How did you ever change your technology at any
14 time, from 1969 to the present time, in the manufacturing
15 of your product; that is, of PVC in an effort to get down
16 the residual vinyl chloride monomer count?

17 A Not until 1974, and you've got most of the records of
18 the work that's been done.

19 Q Well, tell me briefly what you did do in 1974
20 to your operations there to get the count down.

21 A Their initial move was to increase the stripping time
22 and to raise the temperatures of the stripping operation,
23 and ultimately they did have to install and change some
24 equipment.

25 Q Okay.

1 Well, what did you get the count down to? By
2 the way, at this point in 1974 or 1975 you were working
3 with the suspension-type manufacturing?

4 A Yes.

5 Q What did you get the residual vinyl chloride
6 count down to?

7 A I'd have to look that up. I can't recall.

8 Q Well, I believe you told us last time that under
9 the old system it was 860 ppm.

10 A Yes.

11 Q And what was it under the now advanced technology,
12 under this system?

13 A I'll have to give you an estimate --

14 Q What's your best estimate?

15 A -- which may or may not be what I've already told you
16 in some of the other papers.

17 The vinyl chloride homopolymer was less than 100
18 ppm.

19 Q And you did that in 1975?

20 A Yes.

21 The vinyl chloride vinyl acetate copolymer, which
22 we have an example there that I've quoted, that only got
23 down to about 500.

24 Q Well, back in 1969 -- by the way, what's the
25 chronology page?

1 MR. HOLLINGSHEAD: 27.

2 A It's Page 27.

3 Q All right.

4 Now in 1966 you first had reason to believe or
5 there was some discussion, rather, according to the
6 chronology, that there was a condition known as acro-
7 osteolysis among PVC workers, and then in 1969 your company
8 at that point did something about it. I believe you
9 testified to that, is that correct?

10 A No.

11 Q Well, maybe I'm phrasing it improperly or in-
12 correctly, but you testified in 1969 that --

13 A I'm saying that in 1966 there was a question as to
14 whether or not this condition known as acroosteolysis was
15 caused by exposure to vinyl chloride or something in the
16 PVC plants.

17 Q All right.

18 And then in 1969 your company decided to get
19 their VC down to 50 ppm in the atmosphere, right?

20 A Right.

21 Because this was also part of our long-term
22 policy, you know, to try to minimize exposure to everything.

23 Q But my point is that in 1969 something was done
24 about it. You tried to get your VC down to 50 ppm in the
25 atmosphere, correct?

1 A Well, now, don't forget that we're talking about a
2 special compartment of a PVC plant.

3 We're talking about the reactor area only. This
4 is where the sarcosynthesis appeared, and this did not
5 involve changes in technology so much as it involved changes
6 in the way you prepared the vessels for entry prior to
7 cleaning.

8 Q Regardless of what was done or where it appeared,
9 you reached some conclusion that above 50 ppm there might
10 be some danger to anybody exposed to it, is that correct?

11 A We made an assumption that this was a good possibility.

12 Q All right.

13 And I believe you've told us that you disagreed
14 with the assumption and Dr. Bernshi said, "Let's go along
15 with it."

16 A Right.

17 Q Okay.

18 Now after that did you label your product in any
19 way, that there might be some problem with this thing to
20 the health of any person exposed to it?

21 A No, because again, as I said, the sarcosynthesis was
22 confined to the reactor area and confined to one occupation
23 in that reactor area, which was the guy who went inside
24 the reactor and did the cleaning.

25 Q All right.

1 Did you feel or did you have any concern for the
2 danger of this particular product to any people who might
3 be exposed to it at the packaging plant of ATC?

4 A No, because we felt that the exposures at ATC were
5 insignificant.

6 Q When you say "we", you were never there, were you?

7 A No.

8 Q And you, personally, don't know what the conditions
9 were at ATC from 1960 to 1970, do you?

10 A I've had discussions with Mr. Archer and --

11 Q No, no, no. I realize you must have talked to
12 Mr. Archer.

13 My question is that you personally don't know
14 what the conditions were there.

15 MR. HOLLINGSHEAD: By "conditions", you
16 mean the physical layout?

17 MR. LEVISON: Yes.

18 A Well, I can reconstruct that layout because I have
19 the drawings and I also -- well, don't forget I was
20 the man in charge of the other end of this chain, which was
21 the loading and manufacture of resin, the loading of
22 boxes and the loading of the ships in Texas City, and
23 so there wasn't -- there wasn't all that much difference
24 between the two systems.

25 Q You, for example, Mr. Wheeler, do not know of your

1 own personal knowledge, during the bagging operations,
2 the amount of dust in the air there, do you?

3 MR. HOLLINGSHEAD: Now is that question
4 with regard to the visual eyesight or as reported
5 in tables or graphs or anything?

6 MR. LEVINSON: Yes.

7 Do you understand my question?

8 THE WITNESS: I understand your question.

9 MR. LEVINSON: Can you answer it?

10 A I did not have any knowledge of the conditions at
11 have ATC. I do/knowledge of packing lines which were operated
12 both in Texas and South Charleston, which were similar
13 in design to the ones at ATC.

14 Q All right.

15 Did you, for example, know what the ventilation
16 situation was at ATC in those years?

17 A Only what I've been told by Mr. Archer.

18 Q You, yourself, don't know from personal observation?

19 A No, with the exception -- don't forget that I was
20 familiar with the same type of packaging lines in two
21 other plants.

22 Q All right.

23 Now you say you're familiar with two other plants.
24 Is your familiarity with those two other plants the same
25 as it was with ATC or were you actually physically present

1 at the other plants?

2 A I was actually physically present and in charge at th
3 other plants.

4 Q All right.

5 Now is there any connection between the amount of
6 fine dust in the air, that is the white dust from the
7 powder of PVC, and the loose VC count?

8 MR. HOLLINGSHEAD: I confess, I don't under-
9 stand that question.

10 THE WITNESS: I'm not sure I understand it.

11 MR. LEVINSON: All right.

12 Assuming we're in this room here and we're
13 bagging -- and this room is approximately 30 feet
14 by 12 feet. Assume that we're bagging in this
15 room and assume the room is full of powder.

16 THE WITNESS: You're talking about a powder
17 that's fine enough to be suspended in air?

18 MR. LEVINSON: Correct.

19 THE WITNESS: Okay.

20 Q Is there a greater danger of a higher VC count
21 than in a room where you don't have any dust in the air
22 from the PVC?

23 THE WITNESS: Well, are you wanting me to
24 compare a zero to --

25 MR. LEVINSON: No, no, no.

1 Maybe you don't understand. I'll give it
2 to you again.

3 Q Say that we have two rooms, both the same size.
4 All right?

5 A All right.

6 Q And both rooms have PVC bags in them.

7 A Right.

8 Q Open bags.

9 Now assume one room is full of dust and the other
10 room has no dust, except that you have the PVC bags sitting
11 there. Now is there a greater danger from loose VC in the
12 room that's full of dust than in the other one?

13 THE WITNESS: If you qualify it and say
14 I've got the same kind of resin in each room.

15 MR. LEVINSON: All right.

16 I assumed that you knew we were working
17 with the same type of resin.

18 THE WITNESS: Exactly the same resin?

19 MR. LEVINSON: Yes.

20 A Then there would be no more danger in one room than
21 in the other.

22 I think I tried to make this plain in one of my
23 reports or one of my interrogatories, where I discussed
24 the fact that we had investigated dispersion resin in the
25 respirable dusty range and it's very easily suspended in air.

1 It started off going into the dryer at 2,000 ppm,
2 and this was by weight, and it was aerated roughly two
3 minutes, three minutes, and then it came out in the bag
4 at something less than 200 ppm vinyl chloride monomer.

5 In other words, if you got a very small respirable
6 particle, 10 microns or less, the pathway from the inside
7 of the particle to the surface is so short that the vinyl
8 chloride doesn't stay with the resin but for a very, very
9 short time, whereas if you got a large 100-micron particle
10 and you got a long pathway for the vinyl chloride contained
11 to move through the solid to the external air -- this is
12 why you could take a 100-micron suspension particle and
13 ship it from Texas City to ATC and it would arrive there
14 containing a fair amount of residual monomer.

15 But, nevertheless, that 100-micron particle is
16 sandy and you really have a very difficult time suspending
17 a very coarse material like sand in the air. It's very
18 hard to breathe sand unless you shovel it in a guy's face.

19 Q Are you suggesting, first of all, that VC in a
20 PVC particle is only on the inside of the particle and a
21 porous PVC particle?

22 A No, no, I'm saying that it can be contained in the
23 particle, regardless of whether the particle is porous
24 or not.

25 Q Well, VC will adhere both to the outer as well as

1 the inner part of the PVC particle, will it not?

2 A No, it will not.

3 Q Where does it adhere to?

4 A It's contained within the solid particle.

5 Q Only? A Right.

6 The solid portion of the particle, if it's a
7 porous particle.

8 Q As I understand your answer, then, it makes no
9 difference how dusty the room might be with PVC dust, as
10 to the relative danger of loose VC?

11 A In the case of the ATC operation, they were con-
12 siderably removed from the plant and, in the first place,
13 in order to have a room fairly filled with dust you would
14 have to have a very small particle size and, as I say,
15 the smaller the particle size, the less the inclination
16 for the resin to retain the vinyl chloride monomer.

17 Q All right.

18 So as I understand it then your position is --
7 19 and you correct me if I'm wrong -- that under no circum-
20 stances, based on what was shipped to ATC by Union Carbide,
21 was there any danger to the employees from VC?

22 A I think that I tried to make that plain in my report.

23 Q Just tell me if that's true or false, the state-
24 ment I just made. Is that your evaluation?

25 A Yes.

1 Q Okay.

2 There was a point, was there not, when Union
3 Carbide started to label their product coming out of
4 Charleston?

5 A Yes.

6 Q When was that point?

7 A No, no, I beg your pardon. The product coming out of
8 Charleston was never labeled.

9 Q Well, why wasn't the product coming out of
10 Charleston ever labeled?

11 A Because it had such a small amount of residual poly-
12 vinyl chloride that OSHA accepted the fact that this was
13 not a significant hazard under their standards.

14 Q Where was that particular product shipped?

15 A We were shipping dispersion resin to many customers
16 up and down the East Coast.

17 Q Was it shipped to ATC?

18 A No.

19 Q All right.

20 Now how about the product that came from Texas
21 City?

22 A The solvent resin from Texas City or solution resin,
23 again, has never been labeled because OSHA did not require
24 labeling.

25 Q That product was never labeled?

1 A That is correct.

2 Q Is that product shipped to ATC?

3 A Yes.

4 That's the 60 some odd per cent we talked about
5 a moment ago.

6 Q Was any product of PVC in your plant that was
7 shipped to ATC ever labeled?

8 A Yes, the suspension and bulk resin.

9 Q Where was that manufactured?

10 A Texas City.

11 Q And what sort of labeling was put on?

12 A The labeling as required by OSHA.

13 Q And what was that labeling? What does it say?

14 MR. HOLLINGSHEAD: The label's been marked
15 as an exhibit, I think.

16 MR. LEVINSON: That's correct.

17 A If you don't mind, I'd just as soon not quote it,
18 but it says something like "Cancer suspect agent. Warning!
19 Contains vinyl chloride."

20 Q And when did you start putting those labels on
21 your suspension and --

22 THE WITNESS: And bulk.

23 Q -- and bulk-type resins? When did you start
24 doing that?

25 A When the OSHA standard became effective.

1 Q And that was approximately when? Do you recall?

2 A Let's see. That label was -- I'd say April 1975.

3 Q It was some time after 1974, was it?

4 A I think it was April 1, 1975.

5 Q Okay.

6 How do you agree to the necessity for the labeling?

7 A I didn't feel that it was necessary to label the bulk
8 resin.

9 Q What about the suspension resin?

10 THE WITNESS: Now you're asking me did I
11 personally agree?

12 MR. LEVINSON: Personally, yes.

13 A I think it was probably not necessary.

14 Q For the same reason you gave us before, namely
15 that it's an inert product and you don't think it has a
16 sufficient amount to cause any danger to the worker?

17 A I think that the manner in which suspension resin is
18 handled and processed, in general, prevents worker exposure
19 in the downstream plants to any significant degree.

20 Now I'll concede that the vinyl chloride is there.
21 I will concede that it's driven off in the first hot pro-
22 cessing step, but then at this point you also have to have
23 ventilation to take away the heat and dust and any fumes
24 given off.

25 Q Excuse me.

1 But you don't know what the heat conditions were
2 there, do you?

3 THE WITNESS: Were where?

4 MR. LEVINSON: At ATC, at Perth Amboy, over
5 a period of ten years, the period from 1960 to
6 1970.

7 MR. HOLLINGSHEAD: What the heating conditions
8 were?

9 MR. LEVINSON: What the heating conditions
10 were, yes.

11 A Well, I wasn't talking about ATC. I was talking about
12 the fabrication of polyvinyl chloride.

13 You asked me did I feel that the label on sus-
14 pension resin bags was wholly justified and I said that I
15 felt it was a minimal hazard because of the manner in which
16 suspension resin is handled.

17 The degree of worker exposure is probably not
18 all that hazardous.

19 Q Now so that I understand you --

20 THE WITNESS: And I didn't realize that you
21 wanted to talk about ATC.

22 MR. LEVINSON: I'm sorry.

23 Well, you're talking about the fabricating
24 workers in the fabricating end and I'm talking
25 about the workers in the packaging end, namely

1 ATC.

2 THE WITNESS: All right.

3 Q Now do you feel that particular label is necessary
4 as to --

5 A Well, I think it would be necessary to make sure that
6 some guy did not go out and poke his head in a vinyl
7 chloride car.

8 MR. LEVINSON: I didn't hear that.

9 A I think the label is necessary to make sure that a
10 particular man doesn't go into a closed space containing
11 vinyl chloride resin.

12 Q Why? A Because he's likely to be
13 exposed to a comparatively high concentration.

14 Q Do you think that might be carcinogenic?

15 A I have no idea, but I think --

16 Q Well, I thought you told us a short time ago --
17 and you correct me if I'm wrong-- that you felt the only
18 danger from VC is that it gives you a heady feeling.

19 A No, I didn't.

20 MR. HOLLINGSHEAD: No, no. I object to the
21 characterization.

22 THE WITNESS: You're putting words in my
23 mouth.

24 MR. LEVINSON: I'm sorry. I misunderstood
25 you. I don't want to do that.

1 Q What is the danger, then, of high concentrations
2 of VC?

3 A All right.

4 Let's say you have a man who's going to work for
5 you for many years. If he makes a habit of sticking his
6 head in a closed vessel he's going to get a cumulative
7 exposure to vinyl chloride, in the first place.

8 Q Well, do you think that's toxic, based on your
9 experiences?

10 A As I said, long-term, high exposure to VC is toxic
11 and does cause angiosarcoma.

12 Q Any other types of cancers?

13 A The only other ones that appear to be a problem, that
14 I've noted, are angiosarcomas.

15 Q And what is that?

16 A It's a form of tumor.

17 Q Where? A In the -- I'd have to
18 dig up my records and my literature on that one.

19 Now I was about to go ahead and answer your
20 original question.

21 Q Go ahead. A For the second part,
22 there most certainly is an acute and immediate hazard to
23 breathing high concentration of vinyl chloride, because
24 the man may fall into the vessel.

25 Q Well, I realize that. But my question to you --

we're talking about cancer in this case.

My question to you is this: Do you feel there's a relationship between inhalation of vinyl chloride monomer and cancers, neoplasms?

A A relationship between long-term exposure to high concentrations of vinyl chloride and angiosarcoma. And I said this was based on my readings. There appears to be possibly a relationship between that and angiomas.

Q You say this as a chemist and not as a doctor?

A I said based on my readings.

Q All right.

Well, in your report to us -- and I refer to Page 22 -- you say, "The Manufacturing Chemists Association Industry-wide VC-PVC Worker Study on 10,173 workers and 669 deaths showed excessive standardized mortality ratios for brain tumors, miscellaneous cancers and leukemia but the numbers of cases were small. 72/, 96/ The conclusion of this study was that there may be some support for the hypothesis that vinyl chloride is a general carcinogen."

Do you accept that theory?

A No.

There I'm trying to give you a summary of the report and its conclusions.

Q So that's just a summary by the Manufacturing Chemists Association which you don't subscribe to, is that

1 10?

2 A I don't feel that the other data wholly supports that
3 statement.

4 Q All right. Let me go on and ask you the next
5 question.

6 In the next paragraph, in the middle of the next
7 paragraph starting with the word "Proportional", you say --
8 do you see that?

9 A Okay.

10 Q It says, "Proportional mortality ratios showed
11 excess deaths in digestive, respiratory and all other
12 neoplasms as well as deaths from circulatory disease."

13 Now do you accept that?

14 MR. HOLLINGSHEAD: That paragraph, by the
15 way, begins to talk about the PVC fabricating
16 industry.

17 MR. LEVINSON: That's correct.

18 Q Now do you accept that?

19 A Not entirely, no.

20 Q But you will --

21 A Now let me
explain my position.

22 MR. LEVINSON: I'm sorry. You're talking
23 very slowly and quietly now and sometimes I think
24 you're through with your answer and I'm starting
25 to run into you, so raise your hand if you're

1 still going.

2 A In the case of the first study we discussed, we had
3 standardized mortality ratios, which are relatively good
4 numbers.

5 And when you get into proportional mortality
6 you're talking about a study of -- you simply look up a
7 bunch of death certificates. You do not have a complete
8 sample. You take all these death certificates and you lay
9 them out in little piles and you then relate that to a
10 whole population sample.

11 In other words, you use an incomplete sample
12 and you then relate the proportional mortality ratios to
13 a large, say, U.S. white male population, which you've got
14 pretty good solid data on, and then you end up with the
15 fact, as in this case, where they say, ". . . excess deaths
16 in digestive, respiratory and all other neoplasms. . ."

17 Well, you could have an excessive death from
18 "digestive" via a proportional mortality ratio, and still
19 on a complete sample of the population not be out of line
20 with the U.S. white male population.

21 I'm not sure if I'm making sense or not.

22 Q I understand.

23 But the fact is that you disagree with the state-
24 ment made there, is that right?

25 A I think the proportion of mortality ratio is more an

1 indication of a place where you need to do more study and
2 cannot be a conclusion in itself.

3 Q But didn't you just tell us at the very outset
4 you agreed generally with the idea that this particular
5 product -- VC -- is an inert product and the only reason
6 a man should not be in a closed area is he might choke from
7 the dust from the bags or he might just suffocate from it?
8 Isn't that what you said?

9 MR. HOLLINGSHEAD: No, no.

10 The testimony is clear on the record, I
11 think, and I believe if you ask him what he said,
12 he can tell you again.

13 Q What did you say? A The danger of
14 VC to the worker -- I said that he should not have
15 repetitive, long-term exposure to high concentrations.

16 I also said there was a hazard from acute
17 inhalation in that he might actually fall into the vessel
18 and eventually die of suffocation.

19 Q And I think you did say something about the fact
20 that you felt there might be a connection between angio-
21 sarcoma and anionax, with high exposure?

22 A Based on my reading. And these are my conclusions.

23 Q But that's as far as you'll go?

24 A Right.

25 Q You feel this is not a general carcinogen?

1 A I don't feel so, no.

2 I might point out with regard to the preceding
3 question --

4 MR. LEVINSON: What page are we on now?

5 THE WITNESS: We're talking about the
6 PVC fabricating workers.

7 A Now it says here, "Dr. G.M. Paddle in a letter to
8 R.N. Wheeler observed that the apparent excesses in PMR's
9 "#-1 were a common feature of industrial employess studies."

10 Now Dr. Paddle is a well-respected biostatistician
11 in the United Kingdom.

12 Q What page is that on?

13 A 22.

14 Q And what does "PMR's" stand for?

15 A Proportional mortality standards.

16 Q And what does "#-1" stand for?

17 A It's --

18 MR. LEVINSON: Oh; I see it here at the
19 bottom of the page.

20 Q And what is he saying there? What is Dr. Paddle
21 saying there? I don't understand it. Explain it to me.

22 A He's simply saying that when you do an epidemiological
23 study and end up with proportional mortality ratios that
24 have excess, then having excess ratios shows it's quite
25 common.

1 Q But that does not negate necessarily what the
2 Manufacturing Chemists Association Report indicates in the
3 second paragraph on Page 22, that I asked you about, does
4 it?

5 A No.

6 I highly respect and I think the Manufacturing
7 Chemists Association Study is a much better quality and
8 much more reliable and useful study.

9 Q But when that label was put on your product in
10 Texas City, on the cartons, and they were shipped to ATC
11 in Perth Amboy, that label was meant for the well-being
12 of those people in Perth Amboy, was it not?

13 A And it was also to be put on the labels of every carton
14 they filled which went to the customers.

15 Q So it was for everybody along the line that was
16 exposed to that product, correct?

17 THE WITNESS: Would you restate that?

18 Q So it was meant for everybody along the line that
19 was exposed to that product, correct?

20 A Yes.

21 MR. LEVINSON: Let's take a short recess.

22 (Recess: 3:40 P.M.-3:42 P.M.)

23 MR. LEVINSON: Back on the record.

24 I have no further questions.

25 MR. HOLLINGSHEAD: No questions.

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(Whereupon, the hearing is adjourned.)

I, FRANK ANTHONY, 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 by me, and that said deposition is a true record of the testimony given by said witness; that I am neither attorney nor counsel for nor related to or employed by any of the parties to the action in which the deposition is taken; and further that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in the action.

Frank Anthony

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