

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF FLORIDA
JACKSONVILLE DIVISION

INDEPENDENT LIFE & ACCIDENT
INSURANCE COMPANY, a FLORIDA
corporation,

Plaintiff,

V.

GENERAL ELECTRIC COMPANY, a
foreign corporation,

Defendant.

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) Case No. 83-613-CIV-J-12
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DEPOSITION OF WILLIAM RICHARD, JR.
TAKEN ON BEHALF OF THE PLAINTIFF.

April 8, 1986

Richard E. Schroeder

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621-0107

UNITED STATES DISTRICT COURT
MIDDLE DISTRICT OF FLORIDA
JACKSONVILLE DIVISION

INDEPENDENT LIFE & ACCIDENT)
INSURANCE COMPANY, a FLORIDA)
corporation,)

Plaintiff,)

V.)

Case No. 83-613-CIV-J-12

GENERAL ELECTRIC COMPANY, a)
foreign corporation,)

Defendant.)

DEPOSITION OF WITNESS, taken to be used in an action
pending in the United States District Court, Middle District
of Florida, Jacksonville Division, wherein Independent Life &
Accident Insurance Company, a Florida Corporation, is
plaintiff, and General Electric Company, a foreign corpora-
tion, is Defendant, pursuant to agreement between counsel,
under the provisions of Rule 26(a) of the Rules of Civil
Procedure, taken on the 8th day of April, A.D., 1986, at the
law offices of Messrs. Paper, Martin, Jensen, Maichel &
Hetledge, in the City of St. Louis, State of Missouri, before
Retha R. DeMartino, RPR, CSR (IL) and Notary Public within
and for the County of St. Louis, State of Missouri.

A P P E A R A N C E S:

Messrs. Gallagher, Baumer, Mikals, Bradford, Cannon & Walters,
By: Lawrence J. Hamilton, II, Esq.,
and Thomas M. Baumer, Esq., For the Plaintiff.

1 Thomas M. Burke, Esq., For the Defendant,
2 Messrs. Miller & Martin,
3 By: George Derryberry, Esq., For The Monsanto Company
4 and William Richard, Jr.
5

6 WILLIAM RICHARD, JR.

7 of lawful age, produced, sworn and examined on behalf of
8 the Plaintiff, deposes and says:

9 DIRECT EXAMINATION

10 QUESTIONS BY MR. HAMILTON:

11 Q Would you please state your full name for the
12 record?

13 A William Ralph Richard, Jr.

14 Q And your address?

15 A 739 Delchester Lane, Kirkwood, Missouri.

16 Q Could you run through your educational background
17 since high school?

18 A I'm a graduate of Elmhurst College, class of '43,
19 got out in December, '42. I have a Master's in Chemistry
20 from the University of Michigan in '47, and a Ph.D. in
21 Organic Chemistry from the University of Michigan in '51,
22 got out in '50.

23 Q Have you had any other training since your Ph.D.?

24 A Industrial courses and some one or two-week courses
25 such as Harvard Business School, things like that.

Q Management type courses?

1 A Management courses.

2 Q Since your Ph.D., have you have any special train-
3 ing concerning polychlorinated biphenyls?

4 A You mean special training? Outside training?

5 Q Right.

6 A I've attended some conferences on the environmental
7 aspects of it. I've read a good deal of literature up
8 through 1974. We were pretty well posted in labor and so
9 forth and newspapers. I was in the midst of most of that,
10 and after that time I paid very little attention to it.

11 Q After 1974?

12 A '74, '75.

13 Q What kind of conferences did you attend.

14 A There were one or two executive-type conferences
15 in Washington, D.C. that were briefings on environmental
16 law and environmental matters. I've forgotten the name of
17 the companies that put it on.

18 Q About what time period?

19 A Oh, in the 60's. I also had some U. S. Senate
20 hearings in, oh, in, I guess the 1970's or '80's.

21 Q And at the conferences in Washington in the 60's,
22 PCB was one of the topics?

23 A No. I think it was more general in that it was
24 not geared to anyone. It was on things like product lia-
25 bility.

1 Q Since your -- since you graduated with your Ph.D.
2 from Michigan in 1951, could you go through your work
3 history?

4 A Yes. Well, I actually came back to Monsanto in
5 Dayton, Ohio, at the Central Research Laboratories roughly
6 October of 1950, and I stayed there and worked in the Central
7 Research Labs until 1961 when I came to St. Louis. And I
8 was a member of their Research and Engineering Division at
9 that time, and in 1963 I went to the Organic Division. I
10 was in the Organic Division until it was dissolved sometime
11 about 1973, and Monsanto Industrial Company was formed about
12 that time. I was made a manager of Research in 1961 until
13 the Organic Division. Previous to that time I had been a
14 research chemist group leader, section leader, project
15 manager. 1973, '74, in that region, MLC was formed and I
16 became Director of Research. And in 1976 I went to the
17 Intermediate Company, which was newly formed, as a Director.
18 Monsanto Intermediates -- Chemical Intermediates, MCI, is what they call it
19 and I was Director of Process Chemicals. I was in there
20 until about 1982 when it was dissolved and I went back --
21 merged back into the Industrial Company. I was still a
22 Director of Research, and I had Special Chemicals at the
23 end of 1985, '84, '85. I resigned in December of '85 from
24 Monsanto.

25 Q Are you retired now?

1 A I'm retired now from Monsanto.

2 Q Okay. Are you working for someone else?

3 A I'm working for myself. I started a small com-
4 pany.

5 Q Consulting?

6 A That's right.

7 Q During what time period did you work with chemicals
8 that contained PCB's?

9 A From '63 through '74, '75. I was Manager of
10 Research for the functional fluids part of the Organic
11 Division which was part of the Industrial Company as well.

12 Q What was your involvement as Manager of Research
13 for the functional fluids with PCB's?

14 A Well, I was responsible for the research product
15 applications and for guidance of -- research guidance and
16 manufacturing of those products.

17 Q What kind of functional fluids did Monsanto pro-
18 duce for what uses containing PCB's in 1963?

19 A Well, they were all for fire-resistant applications.
20 One was heat transfer.

21 Q What sort of products would heat transfer fluids
22 be used?

23 A It was used across the whole process industry for
24 transferring heat from a boiler fire to a -- some sort of
25 process, all kind of processes. It was also used in part

1 as a fire resistant hydraulic fluid. It was used as a
2 capacitor impregnant dielectric properties. It was used in
3 transformers. Not under my jurisdiction, but it was also
4 used in carbonless carbon paper. It was used as a plasti-
5 cizer in certain industrial applications.

6 Q Those latter two weren't under your jurisdiction?

7 A They were not. I think the product carbonless
8 carbon paper was at least initially in the plasticizer
9 group. It was later transferred to the fluids group. I
10 don't know the exact date.

11 Q Was your involvement during this '63 to '74-'75
12 time period primarily with PCB's primarily because you were
13 the Manager of Research-Functional Fluids?

14 A That's correct.

15 Q Did there come a time when there became a concern
16 or debate concerning PCB's?

17 A Why sure, yes.

18 Q At what point in time did it come to your atten-
19 tion?

20 A I think it was first called to our attention in
21 1966 or '67.

22 Q What brought it to your attention at that point?

23 A I think the first was a report from David Wood,
24 and it started with Jensen's reports that it was a residue
25 along with DDT, a possible residence along with DDT.

1 Q David Wood worked under you at Monsanto?

2 A No. David Wood was in England, did not report
3 directly to me. I think he was in Marketing.

4 Q Okay. And he wrote a report that was brought to
5 your attention around 1966 or '67?

6 A That's correct. Probably 1966 or '7, yes.

7 Q Okay. What involvement did you then have?

8 A Well, I think our first thing was to try to find
9 out whether the report was valid, scientifically valid or
10 not.

11 Q How did you do that or other people in Monsanto
12 do that?

13 A Well, I know David went to Sweden to try to find
14 out more. I'm not sure exactly what he found, but I'm
15 pretty sure he probably talked with Widmark. I talked with
16 Bob Kelly, Dr. Robert Kelly, who was in charge of our
17 analytical section in the Organic Division, and he and I
18 discussed the situation about whether it could be valid or
19 it could not be valid and what to do about it.

20 Q What did you all decide as far as whether it could
21 be valid?

22 A Well, what we thought we better do was to find
23 the analytical methods and try to talk with Jensen to see
24 what he had to say, whether he was a competent analytical
25 person, and try to find out what his methods were to identify

1 these things.

2 Q Did you all make a determination as to that?

3 A We tried to. Kelly and I and Elmer Wheeler went
4 to Sweden. I don't know the exact date, '67, '68, some-
5 where along in there, to try to find Jensen. We did not find
6 Jensen. Jensen would not talk with us or we couldn't find
7 him, I don't know which, but we didn't talk with him. We
8 did visit Widmark, who was presumably Jensen's, I think,
9 professor. I think Jensen was a student at that time, either
10 a doctoral or post-doctoral student under Widmark. The
11 second thing we did was to begin to gather what we thought
12 would be a sensitive enough instrumentation to try to iden-
13 tify the araclor along with DDT in residues.

14 Q What Svorn Jensen and Widmark found was traces
15 of PCB's in many other materials?

16 A Well --

17 MR. BURKE: Object; leading. Excuse me.

18 A Well, they found it peaked.

19 Q (By Mr. Hamilton) Tell me what -- tell me what
20 Svorn Jensen or Widmark found.

21 A As far as I remember, they found peaks in the
22 gaschromatic graphic traces that were unidentified at the time,
23 and I think Jensen, I guess, suggested that they could be
24 araclor or chlorinated biphenyls, actually not araclors but
25 chlorinated biphenyl components, but the situation was really

1 extremely complicated.

2 Q Well, did Monsanto ever make its own determina-
3 tion as to whether chlorinated biphenyls were the peaks
4 that were found?

5 A After we got instrumentation together, which pro-
6 ceeded in '68-9, yes, we began to confirm that these peaks
7 were a chlorinated biphenyl, not necessarily araclor. I
8 think Monsanto published and went ahead with analytical
9 methods and increased the sensitivity and also worked with
10 other companies and other agencies to try to confirm that
11 this was true.

12 Q Was there a concern in the scientific community
13 that PCB's were being found?

14 A A concern, no. It was news to us that they would
15 be out there. It was kind of a surprise to us that they
16 would be found in residues. Certainly we were surprised
17 at that time and didn't want them there, but that's about it.
18 We didn't know there was a concern or not.

19 Q Why is that you didn't want them there, the PCB's?

20 A Well, just the presence, we didn't expect them to
21 be there. We were using them in industrial uses. I for one
22 thought that it would be entirely a different situation
23 between comparing DDT and chlorinated biphenyls, because
24 DDT was sprayed around the world and was used as insecticide,
25 and chlorinated biphenyls were everything but that. But I

1 guess eventually we had to say that Jensen's, at least guess
2 or remarks, whatever, were eventually valid, proved valid.

3 Q Did you have any discussions with anyone from
4 General Electric concerning PCB's being located in the
5 environment?

6 A It was not my job to have conversations with
7 General Electric. It was usually up to the Marketing
8 Department. I think later we tried to -- later, I don't
9 know when it was, '72 or so, we tried to show General
10 Electric that we were keeping, in the manufacture of
11 chlorinated biphenyls, and the handling of them, that we
12 were keeping the product out of the environment, out of the
13 air and water streams. This is concerning the manufacture
14 and handling of the product.

15 Q This is around 1972?

16 A I would guess there. I don't -- I don't know
17 the exact dates.

18 Q Who did you talk to at General Electric?

19 A I talked with their general manager named Hart.

20 Q Named Clark?

21 A Hart.

22 Q Hart?

23 A Hart. I think it's spelled H-a-r-t. At that time
24 this is in the Capacitor Division.

25 Q Where was he located, do you know?

1 A he was in Hudson Falls. There was a man named
2 Al Pozefsky who was a research manager or something like
3 that. I don't know his exact title. I talked with him about
4 it. At one time we visited the Hudson Falls plant, dis-
5 cussed handling of the product.

6 Q Did you ever meet a Mr. Raab?

7 A Yes, at the same time we visited the Pittsfield
8 Transformer Plant of General Electric and walked through
9 their plant, told them of our experience in handling the
10 product.

11 Q Who else at Pittsfield did you meet?

12 A Oh, a number of people, but I can't remember
13 their names.

14 Q Prior to this time in 1972, you don't recall --
15 or approximately '72, you don't recall any meetings or dis-
16 cussions between yourself and General Electric?

17 A I don't think I had any direct discussions with
18 G.E. people, no formal ones, I don't think any informal ones.

19 Q Are you aware whether Monsanto was having those
20 kinds of discussions?

21 A I feel sure they were.

22 Q At your visits to Hudson Falls and Pittsfield,
23 was the purpose of that to tighten control measures of PCB's
24 being released into the environment?

25 MR. BURKE: Objection; leading.

1 A We wanted to be sure that G.E. understood that
2 Monsanto was controlling the effluence in our plant at
3 Souget and we had taken steps at Anniston to prevent
4 any discharge to the river.

5 Q What measures, if any, did General Electric tell
6 you it was taking to control PCB's being discharged?

7 A We never -- we never entered into a direct dis-
8 cussion of what they were specifically doing.

9 Q Okay. Did you ever have such a conversation with
10 G.E.?

11 A We never tried to tell G.E. what to do. We tried
12 to tell them what we were doing.

13 Q I hand you exhibits -- what has been marked in
14 connection with the deposition of Mr. Biceline as Exhibits
15 17 and 37 and ask you to take a look at those.

16 Are you able to identify No. 17? Do you recall
17 this meeting?

18 A Which is 17? The top one?

19 Q This one here. It's dated March 10, 1969, and it
20 purports to be notes on a March 6th, 1969 meeting with
21 Industrial Biotest Laboratories concerning araclor and
22 wildlife. Do you recall this memo being sent to you?

23 A I think I wrote it.

24 Q Oh, you wrote this memo. Okay. You attended a
25 meeting with Biotest Laboratories?

1 A Yes.

2 Q In 1969?

3 A Uh-huh.

4 Q Is that "yes"?

5 A Yes. Sorry.

6 Q What was the -- what was the purpose of that meet-
7 ing?

8 A We wanted to find out what the potential environ-
9 mental toxicity might be for arachlor.

10 Q Okay. And why were you interested in finding that
11 out?

12 A Well, we had always known what the acute was, acute
13 toxicity, but we didn't know what the chronic low level
14 effects of chlorinated biphenyls were.

15 Q Okay. Why is it that in 1969 Monsanto decided to
16 find that out?

17 A Well, we thought it was the thing to do, and it
18 was desirable to find out what the chronic toxicity was
19 in terms of science and not headlines.

20 Q What do you mean by, "toxicity"?

21 A Well, it's the effect of -- on the test animal of
22 feeding whatever chemicals you are trying to identify or
23 trying to test.

24 Q Okay. Did Biotest Laboratories perform some
25 experiments or tests as to toxicity?

1 A Yes, I think subsequent to this meeting that they
2 did.

3 Q Do you recall what kind of tests they ran?

4 A I think they ran tests on chickens, they ran tests
5 on mice or rats, probably rats, and dogs.

6 Q What were the results of their studies?

7 A Well, that's the province of the Medical Department.
8 Elmer Wheeler was the Medical representative. He was at
9 that meeting. That was not my prerogative or duty to
10 interpret the medical results.

11 Q Do you recall what the results were?

12 A Well, it was a whole series of reports. You'd
13 have to look them up, get testimony from medical people.

14 Q Are you able to tell us what your best recollection
15 is?

16 A Again it's not my -- the only part that we played
17 in the Research Department was to do the analytical work
18 on tissues, and my main interest was to see whether or not
19 they were -- that the products were -- would biodegrade
20 in the presence of the animals, whether they would be washed
21 out or degraded.

22 Q You were then more interested yourself in bio-
23 degradation and accumulation than actual toxicity?

24 A That's right. The toxicity part was not for us
25 to determine or pass judgment on.

1 Q Dr. -- is it Dr. Wheeler or Mr.?

2 A No, I think it's a Mr. Wheeler.

3 Q He would be --

4 A he worked for Dr. Kelly in the Medical Department,
5 at Monsanto's Medical Department.

6 Q Dr. Kelly would be able to testify?

7 A To the results. He should be more familiar. He
8 and Wheeler would be more familiar than I was or am.

9 Q Okay. Is Dr. Cumming Paton involved?

10 A No. He was in Marketing. I doubt whether he would
11 have too much information on that.

12 Q What did you find as far as accumulation or bio-
13 degradation of PCB's and tissue?

14 A The general results were that the lower chlorinated
15 biphenyls were biodegradable and/or were easily eliminated
16 from the body, from the tissues. We found that the higher
17 chlorinated, 5 and 6 chlorinated products were fairly
18 resistant to either biodegradation or elimination.

19 Q Specifically would you call Araclor 1254 a lower
20 or a higher chlorinated biphenyl?

21 A I think that's a -- it's on the borderline, but
22 it tends to be on the high side, at least certain isomers
23 in 54.

24 Q Specifically, as far as Araclor 1254, what were
25 the results?

1 A They were slow to be degraded and slow to be
2 eliminated.

3 Q Eliminated from tissue?

4 A Uh-huh.

5 Q For her.

6 A From tissue.

7 MR. DERRYBERRY: You got to say.

8 Q (By Mr. Hamilton) When you are talking about
9 elimination from tissue, are you speaking, for instance,
10 from an animal?

11 A From a test animal.

12 Q How much PCB's would remain in it after so long
13 a time, is that the idea?

14 A Well, the feeding studies were carried on where
15 they would feed the chlorinated biphenyl at certain levels
16 and for certain periods of time and we would watch if it
17 went up as weeks passed, and then we would stop feeding and
18 watch the elimination.

19 Q You don't believe -- you don't recall enough or
20 do not believe you are within the area enough to testify as
21 to the toxicity studies?

22 A That's correct.

23 Q Were you involved or are you able to testify on
24 environmental studies of Monsanto?

25 A To a degree.

1 Q Okay. What involvement did you have in any
2 Monsanto studies or experiments concerning the environment
3 and PCB's?

4 A I helped initiate some biodegradation work that
5 we carried on in England. We were studying or tried to
6 study which particular chlorinated biphenyls were biodegrad-
7 able, which isomers, and which was carried on by Dr. Baxter
8 and Drs. Mainprize and Lidgett.

9 Q In England?

10 A In England in Ruoben, one of the Monsanto loca-
11 tions. We also did work here. Dr. Kelly's group and Dr.
12 Sager, Rick Sager, did a lot of work, Dr. Tucker did a lot
13 of work in sludge biodegradation, sewage sludge, trying to
14 find out at what rates, at what isomers would disappear.

15 Q Do you know what the people in England found as
16 far as Araclor 1254 in its degradation?

17 A This was published. I think -- again I think it
18 seemed to confirm that probably isomers 5, chlorinated
19 5 and below were degradable, and say those 6 and 7, a few
20 8's we had, would not.

21 Q What is 1254?

22 A Well, it's a -- it's a 5 chlorine on an average
23 containing a mixture of chlorinated biphenyls. So the
24 average is 5, but there are some 2's, 3's, 4's, some 6's,
25 7's in it.

1 Q Okay. By, "degradation," what do you mean?

2 A That it would actually disappear, presumably be
3 dechlorinated or oxidized.

4 Q Converted into --

5 A Converted into some other products, yes.

6 Q What did the sludge studies reveal concerning
7 Araclor 1254?

8 A I think they substantiate what I've just said.

9 Q Okay. Are you aware of studies or experiments
10 concerning degradation of PCB's in the environment by persons
11 other than Monsanto?

12 A Oh, yes. We tried to follow the literature during
13 this period, and we also talked with the Wisconsin Alumni
14 Research Foundation who were, I think, some of the early
15 -- initiated some of the early studies. I might say also
16 that analytically we tried to make sure that people were
17 not getting laboratory contamination into their experiments.
18 There were all sorts of difficulties in determining chlori-
19 nated biphenyls and the standards that should be set up
20 during that period.

21 Q Okay. Did the studies concerning degradation
22 and the presence of PCB's in the environment reveal that the
23 PCB's appeared to be those like Araclors 1254 and 1260,
24 primarily?

25 A The environmental residues, yes, were like that

1 and not like the lower chlorinated, not like Araclors 1242
2 and 1236.

3 Q Did you discuss the degradation work being done
4 by Monsanto or that you were keeping up with in the litera-
5 ture with anyone from General Electric?

6 A During that same visit that -- when we went to
7 Pittsfield Scott Tucker talked analytical methods with G.E. people.

8 Q Would one of them have been Mr. Raab?

9 A I don't know whether -- probably was more likely
10 some of his analytical people than Raab directly.

11 Q Is Scott Tucker still with Monsanto?

12 A No.

13 Q Where is he now, do you know?

14 A I don't know where he is.

15 Q How about Elmer Wheeler?

16 A He's retired.

17 Q Is he in the --

18 A North or South Carolina, I believe.

19 Q I want you to take a look at Exhibit -- well --

20 A It's marked 37 on the bottom.

21 Q I wanted you to see 27. One second.

22 Exhibit 27, there, do you recall a -- a 1980 --
23 1968 discussion with Dr. Calandra?

24 A Yes.

25 Q Who was Dr. Calandra?

1 A He was the head of or owner of the Industrial
2 Biotest Laboratories.

3 Q Okay. Was this preparatory to the later meeting
4 we just talked about in March, 1969?

5 A Yes. It probably was, yes.

6 Q And Biotest was going to perform studies as to
7 toxicity of PCB's?

8 A Right.

9 Q But I need to talk with one of the medical people
10 as far as their conclusions?

11 A That's correct.

12 Q Okay. Did you discuss -- well, first of all, are
13 you familiar with the Yusho incident?

14 A I'm not familiar with it. I know of it, but I'm
15 not familiar with it.

16 Q Did you ever discuss the Yusho incident with anyone
17 from General Electric?

18 A No.

19 Q Did you ever discuss with anyone from General
20 Electric any dangers in breathing vapors or fumes of
21 Askarel?

22 A There was a -- an air limit that had been imposed,
23 and I'm sure G.E. was aware of that.

24 Q Who imposed the air limit?

25 A It's -- it was an unofficial body. I have forgotten

1 who used to do the -- the publication of this, but they
2 were industrial standards. Industrial people had standards
3 which they tried to protect the workers in the industries
4 involved.

5 Q Okay. Do you know why these limits were set up?

6 A Yes. To protect workers, make sure they weren't
7 getting into harmful situations.

8 Q Do you know what breathing vapors or fumes, PCB
9 vapors or fumes, what about that made it a harmful situa-
10 tion?

11 A Well, I think the main thing was to not get it
12 in your lungs and have it present.

13 Q Do you know what harm there was in getting it in
14 your lungs?

15 A It's a toxicity medical problem, again.

16 Q Are you familiar with the shipping and sales
17 invoices that Monsanto used back in the early 70's?

18 A No, I'm not.

19 Q Okay. Are you aware of language on them concern-
20 ing the presence of polychlorinated biphenyls?

21 A This language and shipping and so forth was the
22 province of Marketing, and to some extent Manufacture, that's
23 not of Research.

24 Q You are not really familiar with it?

25 A I'm not.

1 Q Who in Marketing or Manufacture would you think
2 would be most familiar with it?

3 A I would think Benignus would be familiar with it
4 from a historical standpoint, and I think Papageorge from
5 the time he came on board as the environmental would be the
6 one familiar from that point on.

7 Q Are you aware of any reason why PCB should be
8 kept out of waterways?

9 A Well, it's been legislated against, I've forgotten
10 exactly when, but beyond the time period I had something to
11 do with it.

12 Q Do you know why?

13 A I think the general feeling was to keep foreign
14 substances out of water, and it was legislated, I think,
15 on the precedence of things that were not supposed to be there.

16 Q Are you familiar with the bioaccumulation of PCB's
17 within the food chain?

18 A In a general way.

19 Q What do you understand from a general standpoint?

20 A Well, I think that it's accumulated in fish if
21 they are exposed. The FDA set limits on edible fish con-
22 taining araclor.

23 Q What involvement, if any, did you have with
24 actual or proposed governmental regulations of PCB's during
25 the early 1970's?

1 A Proposed -- Monsanto reported to the PCB Task
2 Force the results of our findings on biodegradation and
3 our efforts to keep it out of the environment. I think we
4 also reported that it was possible to incinerate the product
5 and oxidize it. This was a task force which was formed in
6 Washington, I guess around the early 70's. Cumming
7 Paton was one of the presenters at this as far as Monsanto
8 is concerned.

9 Q Okay.

10 A I presume Bill Papageorge was also present. I'm
11 not sure of that.

12 Q I ask you to take a look at Exhibit 37 and ask
13 you if you recognize that Monsanto May 20, 1968 memorandum?

14 A Yes. That's mine.

15 Q Did you write that?

16 A Yes.

17 Q Can you tell me why you were writing that?

18 A I was receiving telephone calls from Dr. Glasgow
19 who wanted samples of araclor, as I said here, presumably
20 to look for parts per million toxicity or residues in wild-
21 life.

22 Q So in 1968 the FDA was looking into PCB's in
23 wildlife?

24 A They began to, yes. I don't know exactly when
25 they actually undertook work, but certainly they were asking

1 for samples to do their analytical work.

2 Q And in the second paragraph you posed the question,
3 "Are we preparing ourselves and customers to minimize or
4 prevent process stream and air pollution?"

5 A Uh-huh.

6 Q Did you get an answer to that question from anyone?

7 A Yes. I think Davis wrote me a memo back.

8 Q R. Davis?

9 A Yes.

10 Q Who was that?

11 A Richard Davis.

12 Q What was his title?

13 A He was something like Manager in Marketing, I think,
14 for the hydraulic fluids, hydraulic fluids.

15 Q Do you recall what he said in his memorandum back
16 to you?

17 A I think the drift was that hydraulics could be --
18 hydraulic fluids could be and were being renovated and
19 reclaimed. I'm not sure whether he said anything about heat
20 transformers or not.

21 Q I don't believe it says anything in here about
22 that. What did he tell you about Monsanto preparing its
23 customer?

24 A I don't recall specifically. You'd have to show
25 me his memo back. I don't recall.

1 Q Okay. Do you know if -- would that have been part
2 of the reason that you visited the Hudson Falls and Pittsfield
3 plants of G.E.?

4 A Well, our aim was to keep chlorinated biphenyls
5 out of the atmosphere and out of streams in its manufacture,
6 and this is what I wanted to do and what Monsanto wanted to
7 do.

8 Q Well, did you share that aim with your customers,
9 or did Monsanto?

10 A I'm sure they did.

11 Q Okay. Is Mr. Davis still with Monsanto?

12 A No. He's retired.

13 Q Is he in St. Louis?

14 A He's in St. Louis.

15 Q I ask you to take a look at Exhibit 39. Do you
16 recall this June 18, 1968 letter to a chemist at the U.S.
17 Department of Agriculture, Pesticides Regulations Division?

18 A I do now. I wouldn't of if you hadn't showed it
19 to me.

20 Q Do you know why Mr. Blickenstaff, the chemist for
21 the Department of Agriculture, wanted samples of various
22 Monsanto araclors?

23 A Like the FDA, I assume the Department of Agricul-
24 ture wanted to begin analytical work on those sort of resi-
25 dues.

1 Q This was in 1968?

2 A It says June 18, 1968.

3 Q Let me ask you to take a look at Exhibit 4. It's
4 a June 18, 1968, I guess, memorandum from Cumming Paton
5 to you, is that accurate?

6 A Uh-huh. It looks -- it appears to be, yes.

7 Q Do you recall this memorandum?

8 A Not specifically, but that's to me. Cumming wrote
9 it.

10 Q Do you recall whether in 1968 the United Bureau
11 of Commercial Fisheries based in Ann Arbor, Michigan and
12 studies on pollutants in Lake Michigan?

13 A Cumming reported. I had no direct contact with
14 Miss Carolyn Chandler that I remember.

15 Q Okay. I ask you to take a look at Exhibit 80.
16 It's a March 7, 1972, Monsanto sales information bulletin,
17 No. 72. Do you recall these bulletins being distributed
18 periodically?

19 A Yes. Similar things would be distributed. Sales
20 information bulletins would go out periodically.

21 Q Do you recall this bulletin concerning proposed
22 Food and Drug Administration legislation on PCB's?

23 A Not specifically.

24 Q Do you recall the Food and Drug Administration
25 in the early 1972 time period proposing tougher PCB legisla-

1 tion?

2 A I think I would have expected it.

3 Q That's --

4 A I assume that that's what they eventually did.
5 I don't know.

6 Q Okay.

7 A In other words, I think to keep it out of the
8 food chain, was, you know, important and was a job of the
9 FDA. Maybe I shouldn't say keep it out, but keep it at a
10 low level.

11 Q Okay. Did you discuss any of these inquiries and
12 proposed legislations that you just testified about with
13 anyone from General Electric?

14 A No. I think that -- that was a job left to the
15 Marketing people.

16 Q Mr. Benignus or Papageorge?

17 A Well, or maybe Cumming Paton, too.

18 Q Let me ask you to take a look at Exhibit 37 --
19 wait a second. I'm sorry. -- 34, which is, let's see, a
20 September 9, 1969, it appears, memorandum from you to Mr.
21 Wheeler --

22 A Right.

23 Q -- entitled, "Subject: Defense of Araclor, Func-
24 tional Fluids," is that correct?

25 A Right.

1 Q Do you recall this memorandum?

2 A Yes.

3 Q What was the background behind the preparation
4 of this memorandum?

5 A Can you define "background " a little bit more
6 for me?

7 Q Why did it come about that you were -- I guess
8 you all were having meetings or discussing this subject?

9 A Well, we were trying to find out, trying to
10 discern what Monsanto should do in light of the possibility
11 that araclor was found or would be found and what we were
12 going to do about it.

13 Q Okay. On the first page under "Probable Outcome,"
14 you made the statement "We can't defend everything, some
15 animals or fish or insects will be harmed." Do you recall
16 making that statement?

17 A Yes.

18 Q Are you talking about harmed from PCB's in that
19 sentence?

20 A Well, you have to define what you mean by "harmed."

21 Q Okay. Well --

22 A I don't think -- I don't think I knew and I still
23 do not know what a good definition of "harmed" is.

24 Q Okay. Well, what did you mean by "harmed"? First
25 of all, were you talking about from PCB's in that sentence?

1 A Yes.

2 Q What is your best recollection of what you meant
3 by "harmful" when you wrote that sentence?

4 A Some effect might be found, I guess is what I was
5 thinking.

6 Q By "effect," do you mean an adverse effect or
7 neutral?

8 A It could be beneficial or it could be non-
9 beneficial. I think in this sentence I was thinking it
10 would be non-beneficial.

11 Q And at the bottom of the first page you say, "There-
12 fore, we will have to restrict uses and clean up as much as
13 we can starting immediately." Was that undertaken by
14 Monsanto?

15 A Yes. I think from this time forward they began
16 to try to think of what to do in terms of cleaning it out
17 of the air and the water.

18 Q Okay. On the second page you discussed finding
19 of Araclor 1254 in the Gulf Coast, San Francisco area and
20 the Great Lakes. Do you recall that being found?

21 A Certainly. It was found in the -- in the affluent
22 at the Monsanto plant at Pensacola and it was used as a
23 compressor fluid, fire resistant compressor fluid in one
24 of their compressors. The second was reported in San
25 Francisco Bay. I don't know whether -- I guess we didn't

1 confirm that. This is a newspaper report. There was
2 reported twin eggshells in birds. We never confirmed that.

3 Q Was it Dr. Risebrough that had reported that?

4 A Risebrough reported it, right.

5 Q Okay. How about in the Great Lakes, was Araclor
6 1254 found?

7 A Eventually it was. I don't know at this time.
8 We had talked to WARE, and they were studying DDT, and we
9 talked to them at least once. I assumed that it was found
10 that it was. I was predicting that it would be found.

11 Q Thank you. Let me show you now Exhibit 50, which
12 is "Transformer Askarel Inspection and Maintenance Guide,"
13 apparently prepared and, I guess, distributed by Monsanto.
14 Do you recognize this kind of guide? Did you see this
15 guide or --

16 A I've seen it but I did not prepare it and I can't
17 really vouch for all of the things that are in it.

18 Q Okay. Let me take a look at the last page. Do
19 you know if this '73 at the end of there would -- would this
20 12/73 be an indication of the date of publication?

21 A You'd have to ask one of the Marketing people.
22 Benignus I think would know.

23 Q In Appendix K, Page 25 of Exhibit 50, there is a,
24 what is labeled a "Caution Label" having to do with a
25 certain language concerning PCB's that was to be affixed

1 on all containers of Askarel and the transformers them-
2 selves. Do you recall Monsanto recommending a caution label?

3 A I didn't write this, and you'll have to ask the
4 Marketing people on this.

5 Q You do not recall if Monsanto recommended that
6 people label transformers?

7 A Well, I'm sure we were going through all our
8 applications and trying to warn people and make them aware
9 of possible problems.

10 Q But other people would have been undertaking to
11 do that within Monsanto?

12 A That's right. That's not my job to do that.

13 Q Who would that be?

14 A Marketing and -- principally Marketing. They
15 were the customer contacts.

16 Q Did you have any -- do you have any knowledge
17 concerning the NEMA Official Standards Proposal dated January
18 25, 1973?

19 MR. DERRYBERRY: What's the number on that?

20 MR. HAMILTON: That's Exhibit 88.

21 Q (By Mr. Hamilton) Do you recall NEMA meetings
22 concerning PCB's?

23 A I never attended NEMA. I knew that they had these
24 meetings, and I think our representative was probably
25 following this.

1 Q Do you have any knowledge of what NEMA or ANSI
2 C-107 may have decided with respect to PCB's?

3 A No, I don't. I don't have any direct recollection
4 of that.

5 Q That would be Mr. Benignus or Mr. Papageorge?

6 A I would think Benignus, maybe Papageorge, too.

7 Q Let me show you Exhibit 275, which is an October
8 3, 1975 Monsanto memorandum which appears to be from David
9 Wood to you and Mr. Papageorge and a couple of other people.
10 Is that accurate?

11 MR. DERRYBERRY: You mean is your description of
12 it?

13 MR. HAMILTON: Right.

14 Q (By Mr. Hamilton) Do you recall this memorandum,
15 Dr. Richard?

16 A I'd have to read it. No, I don't recall without
17 reading the thing.

18 MR. DERRYBERRY: Look at it.

19 Q (By Mr. Hamilton) Do you recall meetings between
20 General Electric and the National Bureau of Standards in
21 1975?

22 A No. I wasn't -- I wasn't there. I don't recall.

23 Q Were you involved or have any knowledge concerning
24 the development of alternative fluids for transformers and
25 capacitors within the industry?

1 A Yes. As far as capacitors, we -- we developed
2 Araclor 1016, which we thought would be an initial replace-
3 ment, a good replacement for Araclor 1242, and later we
4 worked on combinations of sulfones, aeromatic sulfones and
5 hydracarbons as replacement for capacitors. We never did
6 work on transformer replacement.

7 Q Do you have any really specific knowledge concern-
8 ing the matters set forth in the attached trip report?

9 A No. I'm not familiar with this.

10 Q Okay. Let me ask you what knowledge you have con-
11 cerning workers at Monsanto being treated for any complaints
12 associated with PCB's?

13 A I don't think we had any. If there were, I was
14 not aware of any.

15 Q Were you aware of any reports of chloracne or skin
16 rashes?

17 A In the Araclor Department?

18 Q Yes.

19 A No.

20 Q Was Dr. Kelly the medical director who would have
21 been most involved in seeing workers?

22 A Well, he might not have seen them directly, but cer-
23 tainly he was responsible for the overall Monsanto, you know,
24 medical and worker thing during that -- during his stay. I've
25 forgotten when he retired.

1 Q Were you involved in the area of treatment or
2 diagnosis of workers?

3 A None.

4 Q Do you know if Monsanto at any time developed any
5 safeguards concerning the handling of PCB's to protect
6 workers?

7 A I think we made concerted efforts to make sure
8 that it was contained in all our equipment, and I think we
9 also made stringent efforts to -- in terms of drum handling
10 and recovery. We installed an incinerator to make sure it
11 wasn't going to go to the dump. We tried to maintain a
12 spotless plant.

13 Q Okay.

14 A I don't know. We were -- we exercised all sorts
15 of precautions to keep it contained.

16 Q Were you involved in drafting Exhibit 1, which,
17 I believe is properly labeled the Monsanto white paper?
18 Would that be a correct title for that?

19 A You better show it to me first.

20 Q Let me find the original. (Handing document.)

21 A When was this published?

22 Q Well, that was one of the questions I was going
23 to ask you.

24 MR. DERRYBERRY: That's the way it's supposed to
25 be.

1 Q (By Mr. Hamilton) My understanding is that this
2 would have been published in the -- sometime in the early
3 '80's.

4 A Well, if it was early '80's, then I didn't have
5 anything to do with it.

6 Q You don't recognize it?

7 A I probably have seen it, but I don't think I had
8 any -- anything to do with its preparation.

9 MR. HAMILTON: Okay. That's all I've got.

10 MR. BURKE: You want to take five, Doctor?

11 MR. DERRYBERRY: You want to take a short break?

12 A Sure.

13 (WHEREUPON, A SHORT RECESS WAS HAD.)

14 CROSS EXAMINATION

15 QUESTIONS BY MR. BURKE:

16 Q Dr. Richard, would you describe for us briefly
17 what analytical chemistry is?

18 A It's the determination of the presence of certain
19 compounds, identify them well enough to think you know what
20 the compound is.

21 Q Is it methods and procedures that chemists use
22 to analyze what is in a substance? Is that a good defini-
23 tion?

24 A Well, that definition uses analytical in it, so
25 I'm not sure that it is, but --

1 Q Okay. For example, if you had a glass of water
2 and you wanted to find out what was really in it, would you
3 use the methods of analytical chemistry?

4 A Yes, that would be the normal procedure.

5 Q Okay. And is it accurate to say that analytical
6 chemistry is a precise and defined procedure or includes
7 defined and precise procedures to conduct an analysis?

8 A At any given time I think that's true, but pro-
9 cedures and methods change and there are always improvements
10 or sensitivity. I don't think they will ever find a really
11 pure substance in terms of anatomic or molecular purity
12 where it's ten to minus ninth. You have to be to the ten
13 to minus twenty-third's. The analytical chemists have a
14 ways to go.

15 Q Is it accurate to say that the methods and proce-
16 dures of analytical chemistry in 1986 have improved over
17 the methods and procedures used in 1966?

18 A I think the answer is yes, to sensitivity.

19 Q What do you mean by "sensitivity"?

20 A Ability to analyze small quantities. To probably
21 make a more accurate definition, determination of what was
22 really there.

23 Q Is one part in a million a small quantity?

24 A In my language it is an exceedingly small quantity.
25 In terms of other disciplines, it might not be.

1 Q In terms of analytical chemistry in 1966, what
2 is your estimate of the sensitivity of measuring devices to
3 detect parts per million back in 1966?

4 A I think it was very poor. I think you also should
5 ask an expert, though, like Dr. Kelly or Dr. Tucker in the
6 case of chlorinated biphenyl, not me.

7 Q Okay. Is one part in a billion smaller than one
8 part in a million?

9 A Yes, by ten to the three.

10 Q Was the precision of analytical chemistry technology
11 in 1966, to your knowledge, capable of measuring parts per
12 billion?

13 A No.

14 Q PCB's that were appearing in environmental samples
15 as reported by people like Jensen, can you give us an idea
16 of the range in terms of parts per million or parts per
17 billion that were being reported?

18 A Well, I don't remember what was in Jensen's paper,
19 but it certainly wasn't parts per billion. It was probably
20 high, maybe thousands of parts per million. I don't know.

21 Q Okay. Now, was Jensen's work actually reported
22 in scientific journals, to your recollection?

23 A I don't really recall. The reports I read had
24 more to do with David Wood's report.

25 Q And he was a Monsanto employee who was reporting

1 from Europe on what he had learned?

2 A Yes.

3 Q Do you recall whether Jensen simply had a scienti-
4 fic theory that PCB's were present in the samples that he
5 was working with or that he had confirmed the presence of
6 these PCB's?

7 A Well, Monsanto was not convinced, and that's the
8 reason we spent a lot of time and money and effort to try
9 to convince ourselves that it really was true or was not.
10 That was our position in '67, '68, '69, really.

11 Q Okay. And in terms of scientific study, is it
12 a good practice to verify and reproduce the results of one
13 scientist in order to be able to establish the presence
14 of something like PCB's?

15 A Yes. It's common in analytical to share proce-
16 dures and to share standards and share samples.

17 Q Is there opportunity in analytical chemistry for
18 error as a result of laboratory contamination or sample
19 contamination?

20 A Yes.

21 Q Is that one of the reasons for the standardization
22 of procedures?

23 A That's correct.

24 Q And the American Society for Testing Materials,
25 is that a body that attempts to standardize procedures for

1 analytical chemistry, for example?

2 A They standardize procedures. I'm not sure if it's
3 confined to analytical samples, though.

4 Q It's for any one of a number of types of materials?

5 A All sorts of standards.

6 Q And some of those apply to analytical chemical
7 procedures?

8 A I don't know that ASTM is noted for its analytical
9 procedures. There may be some in there. They are certainly
10 procedures for testing, testing all sorts of things.

11 Q Is there a body that recommends standards for
12 testing procedures for analytical chemists to use?

13 A I'm not familiar with a body that does just that.

14 Q But there are recognized standards for analytical
15 chemists to follow?

16 A There may be, if they are published and they are
17 ever agreed to. The National Bureau of Standards certainly
18 would be one of the outstanding sources of this sort of
19 information.

20 Q The object of the exercise is for a chemist in
21 Country A using a similar sample as a chemist in Country B
22 to have a chance of verifying the same results as reported
23 by the first chemist, correct?

24 A That's correct.

25 Q Why didn't Monsanto simply accept Jensen's report

1 as being valid?

2 A Well, first thing, we couldn't find Jensen. I
3 don't know why we couldn't find him or why he wouldn't talk.
4 I think -- second, I think that all these things had to be
5 -- the analytical methods had to be set up and determined,
6 and we wanted to be in a position to verify the findings
7 in our own laboratory. Equipment was ordered. We spent a
8 great deal of effort trying to get results. I think also
9 that there is no such thing as an environmental standard
10 sample. If you are taking a sample out of a plant effluent,
11 you are going to get certain results. If you take them as
12 background in the Antarctic or the Arctic, that's something
13 else. So there are no -- as far as I know, there are no
14 such things as environmental standards, standard samples.
15 Certainly there weren't then.

16 Q Did you work with gas chromatography in your work?

17 A Not specifically, but the analytical people did.

18 Q Were you familiar with the capability of gas
19 chromatography equipment back in the middle 60's?

20 A Only in a general way. You have to -- you'd have
21 to ask a good analytical man for details.

22 Q Would you say that the ability of gas chroma-
23 tography, or the advances in gas chromatography are part of
24 what made it possible to measure parts per million and parts
25 per billion of certain materials, including PCB's?

1 A Well, I think principally it's part of it, but
2 the other thing was methods of isolation of the sample
3 extractions, and that's -- that's usually a non-standard
4 procedure.

5 Q What do you mean by that, sir?

6 A Well, how you perform the extractions and what
7 solvents you use, and that's -- that's critical in deter-
8 mining how low you can go and what equipment you use and
9 under what conditions of light and in a laboratory and
10 whether there is stuff in the air or not. All that's technique.

11 Q A rather difficult technique, just to be simple?

12 A Yes. Yes, it's a difficult technique.

13 Q Why was Monsanto surprised to find, after their
14 own work, that PCB's were present in environmental samples?

15 A Well, I know why I was surprised. We were con-
16 fined with major applications, anyway. We were -- we felt
17 we were pretty well confined to hardware, industrial hard-
18 ware. I think we at that time probably expected to find
19 it in plant effluence, but I certainly did expect it to be
20 spread in large bodies of water, nor did I expect it to be
21 found in the air. It was, I thought, pretty high molecular
22 weight, pretty darn insoluble. I thought it would stay
23 put.

24 Q How useful to industry did PCB's prove to be up
25 until 1973, for example?

1 A Well, the industry demanded that -- that we con-
2 tinue making araclor, and it was particularly true of the
3 dielectric industry; felt they could not replace it.

4 Q What was so special about the properties of PCB's
5 that made them useful in industry? Let's talk about the
6 dielectric capacitors and transformers.

7 A At first they were stable in terms of normal
8 operations, normal industrial operations. They were stable
9 electrically. In terms of capacitors, they had the correct
10 dielectric constant and correct dielectric strength so that
11 the capacitor could be made small or could be made effi-
12 ciently, it could be made without failure, with few failures.
13 In terms of transformers, same thing was true, except that
14 in here they would not generate hydrogen in terms of partial
15 breakdowns and they were good impregnants.

16 Q Was there anything unique about the flammability
17 characteristics of PCB's that made them suitable for capa-
18 citors and transformer dielectrics?

19 A Yes. They were the most fire-resistant compound
20 that were useful in that application. I think, in fact,
21 they were the only ones that were useful.

22 Q Mineral oil is also a transformer dielectric, isn't
23 it?

24 A Yes.

25 Q Do you have any experience with it?

1 A None.

2 Q You say the industry insisted that Monsanto con-
3 tinue to produce the araclors for dielectrics, for trans-
4 formers and capacitors. What do you mean by that?

5 A Well, I wasn't involved in direct negotiations,
6 but I think the electrical industry asked Monsanto to
7 continue, and I think Monsanto made demands on the electrical
8 industry as to how they would use it, how they would police
9 it and how they would take care of the recycled product and
10 so forth.

11 Q The purpose was to prevent the escape of the
12 fluid into the environment any further, is that accurate?

13 A That was the purpose.

14 Q Is it accurate also to say that the primary con-
15 cern of Monsanto was the presence in the environment?

16 A That's correct.

17 Q And to prevent further escape of more fluid into
18 the environment?

19 A Yes. We didn't want any build-up, any further
20 build-up in the enviornment.

21 Q Did that explain Monsanto's decision to terminate
22 production and sales of all PCB fluids to anyone except
23 those in the capacitor and transformer business?

24 A I think it eventually got to that stage. We tried
25 to restrict sales where the customer couldn't prove that he

1 could contain the fluid, be careful of it.

2 Q Once a transformer has been manufactured, delivered,
3 and installed, is there any reason to believe that properly
4 maintained and properly cared for, that that transformer
5 presents an opportunity for the escape of fluid into the
6 environment?

7 A I'm not an expert on transformer applications.
8 On the other hand, it was my personal opinion that they
9 should not escape.

10 Q Did you participate at all in the decision by the
11 folks in charge at Monsanto to continue the sale of PCB fluids
12 to transformer manufactures?

13 A I was not directly involved in that decision.

14 Q Okay. You told us earlier that the acute toxicity
15 of PCB's was known. What did you mean by that?

16 A Well, Monsanto had conducted studies in animals
17 and so forth by normal industrial standards at that time
18 and knew what the known effects were in that set of studies.

19 Q And this would be with respect to an industrial
20 worker, for example?

21 A Well, not so much that, but they would be test
22 animals, rats, and I don't know what else they normally
23 used in their screening methods. But two things: One was
24 that Monsanto had the history of having manufactured
25 araclor for some time, and also they had laboratory tests

1 done on the compound or compounds themselves.

2 Q Industrial Biotest is essentially a laboratory that
3 will conduct toxicity studies for -- on a fee for services
4 basis, correct?

5 A Right.

6 Q And at that point in time they were -- they would
7 do tests for Monsanto on PCB's and for anybody else on any
8 other substance that was requested and for which an agree-
9 ment was reached?

10 A Right.

11 Q They were essentially a testing laboratory for
12 toxicity, correct?

13 A Right.

14 Q And by using standard toxicological procedures they
15 could then report on the effects of the substance known or
16 the substance being tested?

17 A Well, reasonably standard methods.

18 Q Reasonably standard methods, yes, sir. And basic-
19 ally the way they did their -- one of the ways they did
20 this was to actually feed the material to the test specie,
21 test animal, correct?

22 A That's correct.

23 Q And it was fed at a dose rate intended, at least
24 at one level, to produce an effect, correct?

25 A Yes, that's right.

1 Q And once that effect was produced in a test
2 animal, it could be analyzed and the results reported?

3 A Right.

4 Q But the effect in an animal is not necessarily
5 equatable with the effect in a human, is it?

6 A Not in every case, no.

7 Q But it's the best that science can do in attempts to
8 measure toxicity?

9 A It's one measure of toxicity, yes.

10 Q Okay. Now, Monsanto produced the araclors con-
11 taining PCB's since about 1935, is that accurate?

12 A Yes. I was not involved in that, but that's
13 about it.

14 Q Yes, sir. And is it also accurate to say that
15 over the 35 or 36-year-period, from 1935 to 1966, 1973,
16 that Monsanto's experience with the toxicity of araclors
17 to industrial workers, their own, was a good one in terms
18 of acute illnesses of industrial workers?

19 A Well, as I repeat, I think this should be a
20 question to Dr. Kelly. But in my knowledge, there were no
21 problems in the araclor manufacture, no human problems.

22 MR. BURKE: Can I have all those exhibits that
23 you were using, please, Mr. Hamilton?

24 MR. HAMILTON: Here's some of them, if not most
25 of them.

1 MR. DERRYBERRY: I got some numbers here.

2 MR. BURKE: I got some numbers, too.

3 MR. DERRYBERRY: My interest is to get the
4 witness --

5 MR. BAUMER: Let him handle his own case. You
6 are not in this case.

7 MR. DERRYBERRY: Well, I represent the witness.

8 MR. BAUMER: That's right. In a trial you wouldn't
9 be able to say a word.

10 MR. DERRYBERRY: That's right.

11 MR. BAUMER: That's the same thing that happens
12 in this deposition, because you are taking it for trial pur-
13 poses.

14 Q (By Mr. Burke) Going back to Exhibit 17, Dr.
15 Richard, that's essentially an internal memorandum of
16 Monsanto Company, correct?

17 A Yes.

18 Q And isn't it accurate that Monsanto's policy is
19 not to distribute such memos outside the company?

20 A That's true.

21 Q And in the ordinary course of business, that
22 memorandum Exhibit 17 would not have been sent to anybody
23 from General Electric, would it?

24 A This memo would not have been sent to General
25 Electric, I wouldn't think.

1 Q And essentially that memo discusses Monsanto's
2 undertaking with Industrial Biotech to do some studies on
3 toxicity of PCB's using animal models?

4 A Right.

5 Q It really doesn't have anything to do with trans-
6 former dielectric fluids and their suitability in use of
7 transformers, sir, does it?

8 A No.

9 Q Now, you were telling us earlier about a body that
10 set the levels for industrial exposure to various chemicals
11 in the workplace but you couldn't remember the name. Does
12 ACGIH, does that ring a bell, Doctor? The American Conference
13 of Governmental and Industrial Hygienists?

14 A I'm not sure of the word "governmental," but cer-
15 tainly with the industrial -- I don't know what to call them.
16 Industrial -- I

17 Q Hygienists?

18 A -- hygienists. I don't think the government was
19 involved, at least not early on.

20 Q Right. Well, I think the ACGIH is an unofficial
21 group composed of those folks who recommend these TLV's.
22 Does that ring a bell with you in terms of process?

23 A That's the extent of it, yes.

24 Q And the process by which they make these recom-
25 mendations for exposure levels is reduced to what's called

1 a TLV, threshold limit value?

2 A That's one measure of air standards.

3 Q Yes, sir. And not only for PCB fluids, for example,
4 out for all other types of industrial chemicals used in the
5 workplace?

6 A Not all others, but some others.

7 Q Yes, sir.

8 A Numbers of others.

9 Q And the idea of threshold limit value, thresh-
10 hold limit value or TLV, is the amount of exposure that
11 industrial workers can experience eight hours a day, five
12 days a week, forty weeks a year -- eight hours a day, five
13 days a week, forty hours per week for his working lifetime
14 without experiencing an ill-effect, is that your understand-
15 ing of how that works?

16 A That's about correct, yes, my understanding.

17 Q And simply because there is a TLV or there is a
18 limit on that exposure does not mean that the material is
19 -- that any exposure to the material is going to be harmful
20 to the worker, correct?

21 A It's a medical question. The exposures are set
22 with the idea of making the workers safe.

23 MR. BURKE: Okay. You want to get Exhibit 27 out
24 again, Larry?

25 MR. HAMILTON: It should be there.

1 MR. BURKE: Well, it's not.

2 MR. BAUMER: The box is right there.

3 MR. HAMILTON: I didn't put any back. It's right
4 here. (Handing document.)

5 Q (By Mr. Burke) Looking at Exhibit 27, Dr. Richard,
6 again this is an internal memorandum of the Monsanto Company?

7 A Yes.

8 Q Which, in the ordinary course of Monsanto Company's
9 business, would not have been distributed outside the company?

10 A That's correct.

11 Q And in the ordinary course there's no way that
12 that would have been sent to anybody at General Electric?

13 MR. HAMILTON: I don't know how he can answer
14 that.

15 A I never -- "ordinary course," I'm not sure what
16 "ordinary course" is.

17 Q (By Mr. Burke) Would you expect in your work with
18 Monsanto at this period of time, 1968, for a memorandum like
19 Exhibit 27 to have been forwarded to anybody at General
20 Electric?

21 A I would not have forwarded it to General Electric.

22 Q And it was addressed to you?

23 A Uh-huh. Right.

24 Q And again that discusses the work that Monsanto
25 was going to be doing with Industrial Biotest?

1 A That's correct.

2 Q And does not address in any way the suitability
3 of araclors for dielectric fluids in transformers, does it?

4 A It doesn't address that issue.

5 Q Exhibit 37 is another interoffice memo of the
6 Monsanto Company, correct?

7 A Uh-huh. Right.

8 Q And it concerns an inquiry from the Federal Food
9 and Drug Administration?

10 A Right.

11 Q Sent by Mr. Davis to you?

12 A The other way around.

13 Q Sent to Mr. Davis by you?

14 A Right.

15 Q Again is that something you would have sent to
16 General Electric?

17 A No.

18 Q The Food and Drug Administration has responsibility
19 for the purity of food and drugs, correct?

20 A Correct.

21 Q Or they did at this time?

22 A Yes.

23 Q Are you aware of any ability of the -- or regula-
24 tory authority of the FDA in 1968 to regulate what kind of
25 transformers a building owner could put in his building?

1 A None.

2 Q Exhibit 39 is simply forwarding certain samples of
3 araclors to somebody at the United States Department of
4 Agriculture, correct?

5 A That's correct.

6 Q For their analytical chemical work?

7 A Right.

8 Q A worthwhile scientific undertaking?

9 A Yes.

10 Q Which Exhibit 39 really has nothing to do with
11 the use of transformers using PCB fluids, Doctor, does it?

12 A No. None.

13 Q Exhibit 40 is requesting you to send some samples
14 to the U.S. Commercial Fisheries of araclors, correct?

15 A Uh-huh.

16 Q And again is that a worthwhile scientific
17 undertaking, to confirm the presence or absence of araclors
18 in environmental samples?

19 A It is.

20 Q Really has nothing to do, Doctor, with the use
21 of PCB dielectric fluids in transformers in commercial
22 buildings, does it?

23 A No.

24 Q Exhibit 80 is a sales memo to -- which is attached
25 to a Wall Street Journal article, correct?

1 A Right.

2 Q The FDA at that time was attempting to impose
3 limits through its regulatory authority on the level of PCB
4 content in foods?

5 A Correct.

6 Q And before this time was not the paper packaging
7 industry using PCB fluids in paper packaging for foods?

8 A I don't know whether it was used in any packaging.
9 It was used in carbonless carbon paper, in paper.

10 Q Are you aware --

11 A I don't think -- I don't think -- well, go ahead.
12 I'm not sure on packaging situations.

13 Q Are you aware of use of PCB fluids in the manu-
14 facture of paper packaging and the subsequent introduction
15 of PCB materials into the paper packaging by that route?

16 A I think the answer is no, I'm not familiar with
17 that.

18 Q Okay. Apparently Mr. Paton was of the opinion
19 that the FDA wanted to eliminate the use of PCB, except the
20 dielectric fluids. Is that accurate, in Paragraph 1 of
21 Exhibit No. 80?

22 A "All applications except dielectrics," that's what
23 he says.

24 Q Would that be consistent with your understanding
25 for the continued use of PCB fluids in dielectrics at or

1 about this time?

2 A Yes. I think the dielectrics were the most impor-
3 tant and the easiest to make sure they weren't put into the
4 environment.

5 Q You told us earlier about the government inter-
6 agency task force on -- or task force on PCB's. Did you
7 participate in the work of that task force at all?

8 A We reported to that task force, but I was not
9 present. Some of the work that was done the Research Depart-
10 ment was used, but I don't think Monsanto participated as
11 such. I think we reported to it our findings.

12 Q Okay. Are you familiar with the recommendation
13 of that task force in March of 1972 that PCB's, that they
14 recommended continued to be permitted for use as dielectric
15 fluids in transformers?

16 A I assume that's correct.

17 Q Did you understand the effort of the FDA to be too
18 much like Monsanto's effort, to reduce as much as possible
19 the release of PCB's into the environment?

20 A I don't think the FDA participated. I think they
21 set the regulations to protect the food for human consumption.
22 I don't think they did anything to restrict in a physical
23 way anyway.

24 Q Essentially that was on the community that was
25 being regulated to comply with those regulations?

1 A Sure.

2 Q And again those regulations, as far as you know,
3 when they were proposed in '72 and adopted, I believe now,
4 late '73, really had nothing to do with the use of a trans-
5 former containing the PCB fluid in a commercial building,
6 did it?

7 A No, it did not.

8 Q The efforts that Monsanto undertook in 1969 and
9 '70 forward were essentially voluntary, correct?

10 A Correct.

11 Q No governmental agency at that time had the
12 ability or the authority to regulate Monsanto's sale of
13 PCB's, is that correct?

14 A Correct.

15 Q And Monsanto spent a good deal of its own time and
16 money in an attempt to ascertain the nature of the presance
17 of PCB's in the environment?

18 A We supplied analytical. We did some ourselves and
19 we tried to follow the literatura and reports, visited
20 laboratories.

21 Q And then voluntarily restricted sales except to
22 what they considered to be a closed system use?

23 A That's correct.

24 Q And again that was without any governmental inter-
25 vention or regulation?

1 A True.

2 Q In your dealings, as limited as they were, with
3 representatives of General Electric, did you find that they
4 were supportive of Monsanto's policies?

5 A Yes.

6 Q Exhibit 34, which is a Monsanto interoffice memo,
7 is that -- is that correct?

8 A That's right.

9 Q Was that sent to you, sir?

10 A No. I wrote it.

11 Q It was from you?

12 A Uh-huh.

13 Q As an interoffice memo, would you have forwarded
14 that to anybody from General Electric?

15 A No.

16 Q And again that was a discussion in your mind of
17 the review of the current status of araclors in the environ-
18 ment and their continued production, they were suggestions
19 and recommendations?

20 A They were suggestions and recommendations as the
21 course that Monsanto might pursue with regard to manufacture
22 of araclor.

23 Q Did you feel in September of 1969 that the con-
24 tinued production and sale of araclors or Askarel or PCB
25 fluids for transformers, for use in transformers was a

1 reasonable thing to do at that time?

2 A Yes, I thought it was reasonable.

3 Q Were you aware of any other liquid dielectrics
4 non-flammable that was available in 1969?

5 A There was none.

6 Q Isn't it true that as of the end of 1973 it was
7 also the case?

8 A I think that's right. FX6 was around as a gas
9 under pressure, but that's the only --

10 Q In the 1969-1970 periods where you indicated in
11 Exhibit 34 that there may be some animals, fish or insects
12 that may be harmed as a result of the introduction of PCB's
13 into the environment, did you feel at that time that the
14 presence of PCB's in the environment justified the cessation
15 of the manufacture of PCB fluids for transformers?

16 A I did not think that transformers would contaminate
17 the environment.

18 Q You told us earlier that Monsanto or your research
19 facility within Monsanto was unable to verify the thin egg-
20 shells in birds reported by Risebrough?

21 A I said we were unable to, and I think it had to do
22 with the chicken studies at Industrial Biotest, not in our
23 laboratory.

24 Q Okay. You asked the Industrial Biotest folks to
25 see if they can replicate or duplicate Dr. Risebrough's

1 findings as part of the test process?

2 A Well, that's one reason we picked chickens, at
3 least a bird, a domestic bird.

4 Q And the thin eggshells could not be duplicated?

5 A I think that's correct. That's what my memory
6 serves.

7 Q In the course of scientific research and study,
8 does the inability to duplicate a result raise some question
9 or at least call for continued research in order to verify
10 that finding?

11 A The answer is yes. Conditions from laboratory
12 animals to wild birds and so forth would vary, but some of
13 the accusations were, I think, far afield.

14 Q And these accusations were by people claiming
15 certain effects on wildlife from PCB's?

16 A Right. That's correct.

17 Q Now, Exhibit 50 is the Askarel transformer guide
18 which, I understand, that you played no part in in terms
19 of its preparation or distribution, correct?

20 A Right.

21 Q Given your experience with PCB's and your under-
22 standing of -- of their human health effects, do you have
23 any disagreement with the material beginning at Paragraph B
24 on Page 4 in terms of the personnel precautions for use
25 while working with the transformer?

1 MR. HAMILTON: I object. I don't believe this
2 witness is qualified to give that opinion.

3 MR. BURKE: He can tell me if he's not.

4 A Yes, I think this is a medical question and I
5 think I should leave it at that.

6 Q (By Mr. Burke) Are you aware of substantially
7 more stringent precautions for other common industrial
8 chemicals used in the workplace over and above what's set
9 forth for those folks using PCB's in Exhibit 50?

10 A Again it's a hygiene -- industrial hygiene ques-
11 tion.

12 Q Okay. And as I understand your testimony, you
13 did not participate in the American National Standards
14 Institute C-107 Committee who were attempting to set a
15 standard for the disposal of Askarel materials?

16 A Yes. I was not a Monsanto representative nor did
17 I attend any of their --

18 Q Mr. Papageorge, I understand, was chairman of
19 that committee?

20 A Could have been.

21 Q The work of the C-107 Committee and the work of
22 the American National Standards Institute in general is a
23 voluntary effort by industry to set standards for -- for
24 their conduct in the maintenance of certain operations that
25 they do, correct?

1 A Correct.

2 Q And if the purpose of the C-107 Committee was to
3 set standard guidelines for the handling and disposal of
4 capacitor and transformer grade Askarels so as to limit or
5 prevent further release into the environment, that would
6 be consistent with Monsanto's goal and policies?

7 A Exactly.

8 Q It would be a worthwhile effort, correct?

9 A Correct.

10 Q And then back in the period of time when these
11 folks were doing this, January, 1973, there was no Federal
12 aid or state agency, for that matter, that could regulate
13 the disposal of these materials, isn't that true?

14 A That's true.

15 Q As a scientist, Dr. Richard, do you expect the
16 work of the C-107 ANSI Committee as being a worthwhile
17 scientific and industrial endeavor?

18 A I have no evidence to the contrary.

19 Q Back in 1973, if industry had not gotten together
20 with the ANSI folks or under the auspices of the ANSI
21 organization, there would have been nobody to prescribe
22 a standard procedure for the handling and disposal of
23 Askarel fluids, would there?

24 MR. HAMILTON: I object. I don't believe he can
25 answer that question.

1 Q (By Mr. Burke) I forget your testimony about
2 Exhibit 275, Doctor. You did not recall the letter until
3 you were shown it today or --

4 A I still don't really recall this.

5 Q Okay.

6 A I don't think I had much to do with the letter.
7 I received a copy of it, but I didn't have anything to do
8 with the contents of it.

9 Q Was this an attempt by Mr. Wood to keep you informed --

10 A That's right.

11 Q -- as part of the intercorporate communication
12 system?

13 A Right.

14 Q Okay. And he's reporting essentially on his trip
15 to G.E. transformer laboratory in August of 1975 at
16 Pittsfield, Massachusetts, correct?

17 A Yes.

18 Q And as of August, 1975, were you aware of any
19 State or Federal regulation that prohibited the owner of
20 a commercial building from owning and maintaining a PCB fluid
21 transformer?

22 A There were none.

23 Q As of the end of 1973, Dr. Richard, did you see
24 any scientific or technical reason why Monsanto should not
25 continue to manufacture and sell PCB fluids for use in

1 transformers?

2 A I saw none.

3 Q Thank you, sir. That's all I have.

4 MR. HAMILTON: I've got some more questions.

5 REDIRECT EXAMINATION

6 QUESTIONS BY MR. HAMILTON:

7 Q You testified earlier as to the relative amounts
8 of one part per million of a substance. Are there sub-
9 stances where one part per million can be toxic?

10 A Yes; some.

11 Q When did Monsanto verify that Jensen's finding of
12 PCB's in the environment was correct?

13 A I don't think there's any one date. I think it's --

14 Q Approximate year.

15 A -- just a question of gradual amounting evidence.
16 '69, '70, '71, throughout that time period.

17 Q Is it good scientific practice if a study concludes
18 that a chemical is dangerous to take safeguards even while
19 additional testing is being done to verify that conclusion?

20 MR. BURKE: I object to the form of the question.
21 It's vague and speculative. Go ahead.

22 Q (By Mr. Hamilton) Do you understand the question?

23 A You want to define "dangerous"?

24 Q Well, toxic.

25 A You have to define "exposure." It's -- it's

1 prudent to make sure that the exposure to the chemical in
2 question is low enough or infrequent enough that you don't
3 get a toxic effect.

4 Q Okay. Would you recommend that industry ignore
5 findings of toxicity until additional tests can confirm
6 such a finding?

7 A If your evidence is such that the chemical in
8 question is not harmful at the exposure, then I think you
9 can continue the practice. If the evidence is in the other
10 way, that it is harmful at the exposure levels you are
11 talking about, then obviously you should take corrective
12 action.

13 Q Did you testify earlier that it was your under-
14 standing that Monsanto proposed ceasing the manufacturing
15 and selling of PCB's as dielectrics before any government
16 agency told it to?

17 A I never recommended that we cease the araclor
18 use in dielectrics.

19 Q Do you know if Monsanto ever proposed ceasing use
20 before the government told Monsanto to do so?

21 A I couldn't -- couldn't answer after '75. I don't
22 know.

23 Q Do you know if before then if the industry ever
24 asked Monsanto not to cease producing it?

25 A To my knowledge, we did not recommend ceasing

1 production of araclor for dielectric uses.

2 Q Did Monsanto require customers to sign an indemni-
3 fication agreement as a condition to continuing to sell to
4 that customer?

5 A They did. I don't know what the dates were.

6 Q Do you know why Monsanto required an indemnifica-
7 tion agreement to sell to a customer?

8 A I think they wanted to make sure it was handled
9 properly, the product was handled properly.

10 Q Was it -- do you know if it was also to insulate
11 Monsanto from liability?

12 A Could have been. You'd have to ask the lawyers.

13 Q Do you know if Monsanto required the company signing
14 the indemnification to supply them with the financial state-
15 ment to ascertain their relative net worth?

16 A I had no part in the contract negotiations at that
17 point.

18 Q Is that true that under TOSCA, the EPA eventually
19 prohibited the manufacture and sale of PCB's as dielectrics
20 for transformers?

21 A I don't know. TOSCA was later than '75.

22 Q PCB's aren't manufactured in the U.S. any longer,
23 are they?

24 A I think the answer -- yes, the answer is no.

25 Q But you don't know if this was voluntary or

1 government imposed?

2 A I don't know which way it went.

3 Q You testified that in normal use PCB transformers
4 should not permit PCB's into the environment, is that correct?

5 A Well, I thought that the exposure and the risk
6 would be very limited. It doesn't say that they would never
7 permit, but at least the information that I had and predic-
8 tions that I would personally make, I think that would be
9 very infrequent and would not harm the environment.

10 Q Okay. Did you ever take it upon yourself to study
11 or read reports as to failure rates of transformers?

12 A Benignus, Paul Benignus kept better track than I
13 did, but they were fairly infrequent.

14 Q Are you familiar with any accidents or incidents
15 where PCB's have escaped from transformers?

16 A I'm sure they had, but I'm not familiar with any
17 particular one.

18 Q Are you familiar with the or have you heard of
19 the byproducts of combustion that can occur when PCB's are
20 heated in the presence of oxygen to certain temperatures
21 for certain durations of time?

22 A I had no knowledge up through '75 of that. I have
23 indirect knowledge now of that situation.

24 Q Have you heard --

25 A Yes, heard rumors.

1 Q -- of manufacturers or whatever of the, I guess,
2 result of furans or dioxins from PCB's? Is that what you
3 heard?

4 MR. BURKE: Objection; leading.

5 Q (By Mr. Hamilton) Have you heard -- let me reask
6 it since he objected. What byproducts have you heard
7 result?

8 A In terms of recent history?

9 Q Yes.

10 A I guess the only thing I've heard is in connec-
11 tion with this trial.

12 Q What is that -- what have you heard?

13 A I heard there was a case that dibenzofurans, I
14 don't know whether dioxins or not, chlorinated dibenzofurans
15 were present after a fire in some building that had an
16 Asharel transformer.

17 Q That would have been in Binghamton, New York, do
18 you know?

19 A That's the name of the town, yes.

20 Q Are you aware who manufactured those transformers?

21 A No, I don't know who manufactured the transformers.

22 Q Do you have any knowledge as to the relative
23 toxicity of furans or dioxins versus PCB's?

24 A Relative toxicity has been reported in test animals
25 to be considerably more toxic.

1 Q Okay. Did you know that in 1973 when you ceased
2 being involved with PCB's?

3 A Did I know what?

4 Q That furans were a possible byproduct of combus-
5 tion and that they were more toxic than PCB's?

6 A We didn't consider it because under the normal
7 circumstances, and I'd say even when a transformer, if it --
8 if it got too hot, the chances of the araclor or the Askarel
9 oxidizing were very limited. It's only in the secondary
10 fire, as far as I could tell, there would be enough oxygen
11 around to make any significant amount of dioxins or dibenzo,
12 chlorinated dibenzofurans, so up through '75 I was not
13 worried about transformer applications.

14 Q Were you aware that some transformers had a
15 ceramic bushing underneath the fluid line?

16 A I've seen them manufacture transformers, but I
17 don't know all of the details of the exact manufacture.

18 Q Were you aware of there being any work or studies
19 on humans that have concluded that there is some adverse
20 health effect of PCB's?

21 A Studies I am, yes.

22 Q Studies of exposed populations?

23 A Well, I assume they studied General Electric
24 population. I think we probably study the Kremerick
25 population, W. G. Kremerick population. Gosh. I don't know.

1 There's literature which may have contained a number of them.
2 It was identified in many ways.

3 Q Did you follow that literature?

4 A Yes, I tried to. I think that the interpretation
5 I think again would be medical interpretation, was found
6 in mother's milk and reported and that, and we never veri-
7 fied that situation.

8 Q Are you aware of any effect found in any of the
9 studies on livers?

10 A On human livers?

11 Q Yes.

12 A It's a medical question.

13 Q Okay. How about as to carcinogenicity on humans?

14 A It's been reported, but I don't think I've seen
15 much in the way of evidence.

16 Q Okay.

17 A Certainly not through '75.

18 Q How about respiratory tract problems?

19 A You've got to talk to the medical people about
20 specific medical stuff, not me.

21 Q Okay. In the absence of your going and reading
22 that information of those studies, are you able to render
23 an opinion as to the health, human health effects of PCB's?

24 A I don't know the human health measures or the
25 human health effects of PCB's.

1 Q Mr. Burke asked you about various internal
2 Monsanto memorandum and you testified that you did not
3 believe you would have sent those memorandum to General
4 Electric, is that true?

5 A That's true.

6 Q Do you know if other people in Monsanto may have
7 either sent that memoranda or the information in those
8 memoranda to General Electric?

9 A I have no direct knowledge. You'd have to ask --
10 or I think Marketing people would be the most knowledgeable
11 people in this area. I don't know what was sent in that
12 regard.

13 Q Do you know if there was -- would the policies in
14 Monsanto have been to keep knowledge from General Electric
15 and its customers or to share it?

16 A I think when it became factual knowledge I think
17 probably shared, but when it became -- when it was specu-
18 lative knowledge I think we probably would not have shared
19 that much.

20 Q Do you know if the Marketing people had ongoing
21 discussions or meetings with General Electric during the
22 time period up to 1975?

23 A I'm sure that Benignus called on General Electric.

24 Q Do you believe that, assuming PCB's to be toxic,
25 that you would nevertheless recommend the use of PCB's in

1 transformers?

2 MR. BURKE: Objection. It's vague and specula-
3 tive. Go ahead, sir.

4 A Well, I -- I reminded you that it's a question
5 of exposure and the effect of concentrations, and if the
6 effect levels -- I mean if the concentrations are below
7 effect levels, I think it's safe to use.

8 Q (By Mr. Hamilton) Do you know enough about con-
9 centrations and exposures and effect levels to testify as
10 to that?

11 A I couldn't testify, but it was my opinion at that
12 time that parts per million which were found in environ-
13 mental samples were not being detrimental to human life,
14 because the FDA standards were, in food where people were
15 eating the stuff, were in parts per million levels, so the
16 FDA was certainly a guideline as to what kind of levels --
17 no-effect levels they were experiencing in food where people
18 eat the stuff. Now, I don't expect them to eat Askarel.

19 Q Do you know what levels, if any, have been set by
20 the EPA as to dibenzofurans or dioxins in food?

21 A I don't know the levels, but I assume it's low.

22 Q Does the generation of those materials from PCB's
23 have any effect on your opinion as to whether the continued
24 use of PCB's in transformers is a good idea?

25 A I think the chances of widespread or contamination

1 of food from dibenzo, chlorinated dibenzofurans from Askarel
2 transformer problems are very remote.

3 Q Are you aware of the recent Federal regulations
4 cast by the EPA concerning the continued ownership of PCB
5 transformers inside a building?

6 A I've had nothing to do with araclor since really
7 '75.

8 Q Okay. You are unaware of those regulations?

9 A I don't know what the regulations say.

10 Q Are you aware that -- are you aware whether General
11 Electric developed the use of PCB's as dielectric fluid?

12 A Would you repeat that, please?

13 Q Are you aware of whether General Electric developed
14 the use of PCB's as dielectric fluids in transformers or
15 capacitors?

16 A Yes, I think they -- they did develop the use.

17 Q Are you --

18 A Application.

19 Q Are you aware of whether General Electric received
20 a royalty for permitting Monsanto to manufacture PCB's as
21 dielectric fluids?

22 A I'm not familiar with the details, but I think
23 they may have for -- might have for a while.

24 Q Is it your recollection that in the 1972 time
25 period industry and government representatives were unani-

1 mous in believing that PCB's should continue to be used as
2 dielectric fluids?

3 A Were they unanimous?

4 Q Right.

5 A I don't know.

6 Q Do you know if there were some who were opposed
7 to even those uses?

8 A I couldn't tell you. I'm not familiar with that.

9 Q In 1968, say, to the 1972 time period, did Monsanto
10 know how far various governmental regulatory agencies were
11 going to go in regulating PCB's?

12 A No.

13 Q Do you know if it was Monsanto's policy to ignore
14 the government and possible regulations until such time as
15 they were promulgated?

16 A I think it was a policy to stay ahead of that
17 situation, to not be forced by regulations. I think we
18 talked with government people, tried to visit laboratories.
19 I think we tried to do a -- a job with some foresight, but
20 I don't think we had direct knowledge of any standards that
21 were to be promulgated.

22 Q Okay. Did Monsanto recommend to its customer
23 that it ignore the government until regulations were passed?

24 A I don't know that they did that.

25 Q Well, do you know if Monsanto communicated with

1 customers concerning proposed regulations?

2 A You got to ask that question to the Marketing
3 Department. I don't know.

4 Q You never had such discussions with anyone at
5 G.E.?

6 A I never discussed that with G.E.

7 Q Are you familiar with the amount of research and
8 development required of General Electric to develop the use
9 of silicone in transformers as a dielectric?

10 A No, I have no knowledge.

11 Q Do you know if there was anything that precluded
12 General Electric from developing silicone fluids for use in
13 transformers prior to 1975 or so?

14 A No. I guess they could have, I suppose.

15 MR. DERRYBERRY: Listen to his question.

16 MR. HAMILTON: Okay. That's all I have.

17 RECROSS EXAMINATION

18 QUESTIONS BY MR. BURKE:

19 Q Dr. Richard, you are not a dielectric chemist,
20 are you?

21 A No. And I'm not an electrical engineer.

22 Q So the mechanical obstacles, if any, to the research
23 and development of alternative dielectric fluids, is it
24 accurate to say, are as much of a mystery to you as they are
25 to me?

1 MR. HAMILTON: I object to that question. I don't
2 think Mr. --

3 A I have no knowledge of all the testing and so
4 forth that G.E. would have to do in developing that --

5 MR. HAMILTON: Okay.

6 A -- for transformer dielectric use. Certainly
7 they had years of testing to do.

8 Q (By Mr. Burke) Do you know to what extent G.E.
9 had made efforts before 1975 to produce alternative dielec-
10 tric fluids?

11 A I suppose they must have gone on for --

12 MR. DERRYBERRY: Listen to his question, please.

13 MR. BAUMER: Wait a minute, Counsel. You can't
14 say anything in this deposition, please.

15 MR. DERRYBERRY: We can go off the record for --

16 MR. BAUMER: No, we're not going off the record.

17 MR. DERRYBERRY: Then stay on the record. I
18 represent this witness.

19 MR. BAUMER: But you can't tell him how to answer
20 the question.

21 MR. DERRYBERRY: I can tell him to listen to a
22 question.

23 MR. BAUMER: No, you can't. If he wants to ask
24 you a question, then we'll go off the record and he can ask
25 you a question, but you cannot interject yourself into this

1 record.

2 MR. DERRYBERRY: I'm not interjecting.

3 MR. BAUMER: You are, and you can't do it at trial
4 and you can't do it at this deposition.

5 MR. DERRYBERRY: I assume this is a discovery
6 deposition --

7 MR. BAUMER: It's not a discovery deposition.

8 MR. DERRYBERRY: -- as well as a trial deposition?

9 MR. BAUMER: It's a trial deposition.

10 MR. DERRYBERRY: In any event, I am going to advise
11 this witness whenever I think he needs reminding that he
12 should listen to a question and answer the question.

13 MR. BAUMER: You can advise him anytime you so
14 choose off the record and not during the course -- and not
15 during the course of a conversation, of a question.

16 MR. DERRYBERRY: All right. We'll be happy to
17 go off the record at any time and get --

18 MR. BAUMER: I don't care when you want to go
19 off the record if he wants to talk to you, not if you want
20 to talk to him.

21 MR. DERRYBERRY: I am not going to be bound by
22 your assessment, sir.

23 MR. BAUMER: You are not going to be invited to
24 this deposition. You are not entitled to be here.

25 MR. DERRYBERRY: Are you serious?

1 MR. BAUMER: I'm serious.

2 MR. DERRYBERRY: We'll see how far that gets you.

3 Just proceed.

4 MR. BURKE: Would you read the question back,
5 please?

6 (WHEREUPON, THE REPORTER READ FROM THE RECORD AS
7 DIRECTED.)

8 A The answer is "no."

9 MR. BURKE: Thank you, sir. That's all I have.

10 MR. HAMILTON: No questions.

11 You have the right to read your deposition after
12 it's transcribed or you can waive that right.

13 A I want to read it.

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Signature of witness.

Subscribed and sworn to before me on this _____ day
of _____, A.D., 1986.

My commission will expire _____

Notary Public

1 STATE OF MISSOURI)
2) SS
3 COUNTY OF ST. LOUIS)

4 I, Ratha R. DeMartino, RPR, CSR (IL) and Notary Public
5 duly commissioned and qualified in and for the County of
6 St. Louis, which adjoins the City of St. Louis, State of
7 Missouri, do hereby certify that pursuant to notice there
8 came before me on the 8th day of April, A.D., 1986, between
9 the hours of eight o'clock in the forenoon and six o'clock
10 in the afternoon, at the law offices of Messrs. Peper,
11 Martin, Jensen, Maichel & Hatledge, in the City of St.
12 Louis, State of Missouri, the following named person,
13 WILLIAM RICHARD, JR., who was by me duly sworn to testify
14 to the truth, and nothing but the truth of his knowledge
15 touching and concerning the matters in controversy in this
16 cause; that he was thereupon carefully examined upon his
17 oath and his examination reduced to writing under my super-
18 vision; that the deposition is a true record of the testi-
19 mony given by the witness; and that the deposition was
20 signed by the witness.

21 I FURTHER CERTIFY THAT I am neither attorney nor
22 counsel for, nor related to, nor employed by any of the
23 parties to the action in which this deposition was taken,
24 and further, that I am not a relative or employee of any
25 attorney or counsel employed by the parties hereto, or finan-
cially interested in this action.

1 IN WITNESS WHEREOF, I have hereunto set my hand and
2 affixed my notarial seal on this _____ day of May, A.D.,
3 1986.

4 My commission will expire January 20th, 1989.

5
6 _____
7 Notary Public
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