

1 THE COURT: Good afternoon Ladies and
2 Gentlemen, Counsel.
3 MR. MURRAY: Before we begin may we approach
4 the bench for a second?
5 THE COURT: Yes.
6 [At this time a bench discussion was held.]
7 MR. MURRAY: Plaintiffs calls Dr. Emmet
8 Kelly.
9 THE COURT: Would you please be sworn by the
10 clerk?
11 DR. ROBERT EMMET KELLY,
12 having been first duly sworn, testifies as follows:
13 THE COURT: Pull that microphone up and pull
14 up the chair. Mr. Murray, you may proceed.
15 Q Good afternoon, Dr. Kelly.
16 A Good afternoon, sir.
17 Q Dr. Kelly, if you at anytime during the
18 examination have any problem hearing me or understanding
19 my questions, please tell me, okay?
20 A Yes.
21 Q Dr. Kelly, would you tell the jury what your
22 educational background is, sir?
23 A Yes. I was graduated from St. Louis
24 University and Medical School in 1932. I spent three
25 years in the City Hospital, and I spent the last ?-

1 well, that was the last of my educational background
2 with the exception of courses that I took post-graduate
3 two weeks or a month or something like that during the
4 course of my career.

5 Q And who did you go to work for after
6 completing your education?

7 A I was engaged by Monsanto Company in January
8 of '36. I was a part-time physician there and remained
9 in that position until I went in the service in 1942. I
10 returned in 1946 and became the full-time medical
11 director.

12 Q All right, sir. And what were your duties as
13 medical director of Monsanto?

14 A It was to ensure that the workplace was safe,
15 that the employees were given physical examinations,
16 that their health was checked at periodic intervals, and
17 I was the supervisor by various plants outside of St.
18 Louis.

19 Q I'm sorry. I didn't ??

20 A By the various plants outside of St. Louis.

21 Q Supervised the what?

22 A The medical installations and the various
23 plants.

24 Q Various plants around the company had
25 physicians or part-time doctors to examine, and that was

1 part of your duties to supervise those doctors?

2 A That is correct.

3 Q And how long did you remain medical director
4 of Monsanto?

5 A Until 1934, November of 1934, when I retired
6 at the age of sixty-five.

7 Q You said 1934?

8 A '74. I'm sorry.

9 Q As part of your duties as medical director of
10 Monsanto, did you have any responsibilities with regard
11 to the development of toxicological information on
12 Monsanto products?

13 A Yes, I did.

14 Q Tell the jury about that, please.

15 A Well, the medical function of finding out
16 about what the toxic properties of their raw materials
17 and their finished products were. You did that in
18 various ways. If the product had been manufactured by
19 other companies, you checked with their medical director
20 and found out what was happening. This is background?

21 Q Yes, sir.

22 A It's all right?

23 Q Sure.

24 A Secondly, you would examine the literature,
25 but most of the time there was nothing much in the

1 literature. Third, as a third part, you would do, carry
2 out or have carried out for you an (inaudible)
3 experimentation to find out what the toxic properties
4 were.

5 Q In addition to finding out what that
6 information was, was it also part of your responsibility
7 to disseminate that information to employees of Monsanto
8 and to customers of Monsanto?

9 A Yes. All inquiries concerning toxic or
10 health hazards were referred to the medical department,
11 and information came out from there. Obviously, also
12 the information would go to our various plants from the
13 medical department.

14 Q And for a long time you were the medical
15 department; were you not?

16 A Well, for about ?? yes, for a few years.
17 Then we engaged an industrial hygienist. Following
18 that, we started engaging toxicologists.

19 Q Would it be true, Doctor, that during your
20 entire tenure with Monsanto, you would review and okay
21 the warnings and toxicological information that went out
22 to customers with regard to Monsanto products?

23 A Yes. It was company policy that any such
24 information would be submitted by the medical
25 department.

1 Q Now, in connection with making yourself aware
2 of the toxicological information of the products, would
3 you review the literature with regard to those products?
4 A Would I review the literature?
5 Q Scientific literature, yes.
6 A Yes, in the English language.
7 Q And you mentioned, I think earlier, that you
8 also do animal testing?
9 A That's right. We did not do that in our own
10 ?? in?house, but we engaged various academic and
11 commercial amateurs to do it.
12 Q Monsanto did not have a lab in?house to do
13 that type of work, correct?
14 A No, they did not.
15 Q So you would engage outside laboratories to
16 do it for you?
17 A That's correct.
18 Q Tell the jury, if you would, and let's talk
19 specifically, Dr. Kelly, about PCBs, okay?
20 A Yes, sir.
21 Q In Monsanto the PCB products were called
22 Aroclors, correct?
23 A That's correct, but all Aroclors were not
24 PCBs.
25 Q But all PCBs were Aroclors?

1 A That's correct.

2 Q And those Aroclors were marketed under
3 various, different names, correct?

4 A Well, yes. I have to correct myself some.
5 When we sold PCBs as hydraulic fluids, they were not
6 called Aroclors.

7 Q What were they called?

8 A (Diphenyls, terminols) that had some
9 laboratory designations OS something, MCS something.

10 Q Speaking now specifically with regard to
11 PCBs, can you tell the jury what type of animal toxicity
12 tests were run?

13 A Well, it will depend on the time frame you're
14 talking about. The first animal testing was done by Dr.
15 Drinker at Harvard. That was in 1937 or '38. He did
16 skin application. He did oral feeding, and he did
17 inhalation studies. We did a number of acute testing on
18 animals at the St. Louis laboratories. Then in 1954 we
19 did a prolonged inhalation study of the PCBs. We
20 carried out in 19 ?? late 60s we carried out long term
21 two year testing on dogs and rats at the industrial
22 laboratory.

23 Q Let's talk about those first studies by Dr.
24 Drinker. What were those designed to find out?

25 A Well, they were to find out the toxicity of

1 Halowax. I've got to explain a little something.

2 Q Sure.

3 A There was a company which manufactured
4 Halowax. They use chlorinated naphthalene in almost all
5 of their products, and they used 10 percent of what he
6 called chlorinated diphenyl. It was not chlorinated
7 diphenyl. It was chlorinated diphenyl benzene, which
8 was a horse of a different color, so they were having
9 problems with the Halowax and with the employees and
10 customers.

11 The Halowax was used to impregnate wire. I
12 don't know if you're old enough to remember, but when
13 wire was used, they had an insulation on the top of it
14 that was brownish, and if you pulled on it, it stained
15 you. That was before the use of rubber.

16 They had skin troubles with their customers.
17 They had some fatalities with their customers, and they
18 called up and said, "Look, we're going to test this
19 Halowax. You sell us one of the ingredients. Will you
20 chip in some money on this?" We said yes. So they ran
21 inhalation studies. Drinker ran inhalation studies.
22 Drinker was at Harvard. He was in the School the Public
23 Health. He ran studies on it for prolonged periods,
24 five months, around that five, six months. He did skin
25 absorption. He did inhalation studies, and he did oral

1 feeding, and they were supposed to find out what the
2 toxicity of the Halowax was.

3 Q As I understand your testimony, Dr. Kelly,
4 Dr. Drinker was doing tests on somebody else's product
5 that contained one of your products?

6 A He was engaged by Halowax. He did work on
7 the Halowax compound. They had a considerable number of
8 them. One of the Halowaxes had 10 percent of a Monsanto
9 product, chlorinated diphenyl benzene. He mistakenly
10 called that chlorinated diphenyl, and he tested that
11 also along with a mirage of Halowax compounds.

12 Q Did Dr. Bringer ever run any tests for you
13 with regard to PCBs?

14 A Yes.

15 Q Let me show you a document which has been
16 previously marked as Plaintiff's Exhibit No. 35. Your
17 Honor, I have a group exhibit for you as well. Is that
18 the studies that Dr. Drinker ran for you on PCBs?

19 A This is a study that he ran on the Halowax
20 compound, as well as the chlorinated diphenyl benzene.
21 Later on he did a study. I don't know if you have that
22 report. That was in 1939 when he ran one for the
23 material we sent him.

24 THE COURT: Mr. Murray, I don't believe I
25 have 39 in this packet.

1 MR. MURRAY: That was 39.

2 THE WITNESS: 38. Mr. Murray, this is 38.

3 Q (By Mr. Murray) Even though he says
4 chlorinated diphenyls in this report, the substance he
5 was actually testing was Halowax?

6 A Well, it was chlorinated diphenyl benzene.
7 He was testing that, but he was also testing some
8 Halowaxes.

9 Q Does he make any reference in this document
10 to Halowax?

11 A May I see it again?

12 MR. MURRAY: Your Honor, it is 35.

13 A No, sir, he did not mention Halowax in there,
14 but he has other articles at the same time where he
15 talked about chlorinated naphthalene, which is Halowax.

16 Q After Drinker, what was the next toxicity
17 test that you ran?

18 A Beg your pardon?

19 Q After Dr. Drinker's tests, what was the next
20 toxicity test that you ran?

21 A Well, we ran one on honest to goodness
22 chlorinated diphenyl. After we got this test back and
23 said where did you get the chlorinated diphenyl? And he
24 said, "I got it from Halowax." So I said, "Well, it's
25 surprised us that the toxicity came back the way you

1 said, so I'll send you some honest to goodness
2 chlorinated diphenyl." So I had our production
3 department send us some, and he duplicated testing with
4 chlorinated diphenyl, and he found it was much less
5 toxic.

6 Q Let me show you what's been marked, Dr.
7 Kelly, as Monsanto Exhibit 231.

8 A Yes, sir.

9 Q Is that the subsequent test that you're
10 talking about?

11 A Yes, sir. This is ?? do you want me to
12 read?

13 Q No, sir. I would like to see ?? can you show
14 me in that document Dr., Kelly, where he did any
15 additional testing?

16 A Yes. It's the paragraph on page 158 that
17 says "The sixth compound had been listed previously as
18 chlorinated diphenyl. It contains 65 percent of
19 chlorine and was very destructive to the liver. Later
20 experiments with compound 13, which contained 68 percent
21 of chlorine, which was also labeled chlorinated
22 diphenyl, were a surprise to us (on) the second compound
23 was almost nontoxic. On inquiry, it was found that
24 substance 6" ?? now, I don't want to confuse you with
25 numbers. That's the first one he ran; was really a

1 mixture of chlorinated diphenyl and chlorinated diphenyl
2 benzene. That number 13 was actually chlorinated
3 diphenyl.

4 Q So as I understand that, he's saying there,
5 the first substance that you talked about, substance 6,
6 was a combination, was an chlorinated diphenyl and
7 chlorinated diphenyl benzene?

8 A That's correct.

9 Q But there were PCBs in that substance?

10 A I'm sorry.

11 Q There were some PCBs in that substance?

12 A And probably 40 or 50 percent were PCBs, and
13 the other half was chlorinated diphenyl benzene.

14 Q Okay. And then he ran other studies on what
15 was called Aroclor 1268?

16 A Yes.

17 Q Which is only PCBs?

18 A The studies he ran for 1268 was pure PCBs.
19 That's what he found was almost nontoxic.

20 Q Now, my guess is, because I'm getting
21 confused about this, the jury is going to get a little
22 bit confused, too. Let me ask you this, Dr. Kelly.
23 There are numbers, are there not, that Monsanto uses to
24 delineate one PCB from another?

25 A That's correct.

1 Q Can you tell the jury about those numbers?

2 A Well, there are three sets of numbers. The
3 1,200 series, which is 1242, 1254, 1248 and 1260. Those
4 are PCBs that are chlorinated to that particular
5 percentage. 1260 has 60 percent chlorine, and 1242 has
6 42 percent chlorine. That's what's that ?? there are
7 compounds called 4465. That's a mixture of one of the
8 PCBs plus chlorinated diphenyl benzene, which, as I
9 said, has another benzene radical on it, and it's a
10 horse of a different color. It's a different compound.

11 There is also the 5400 series, which is 5460,
12 which is pure chlorinated diphenyl benzene, so you mix
13 5460 with 1242 or 1254, and he come out chlorinated ??
14 that come out with 4465.

15 Q You don't know which number was mixed with
16 the 5400 series to make the 4465?

17 A I would be guessing. I don't know now. That
18 was forty years ago.

19 Q Can we tell anything from the numbers, 4465,
20 which one it was?

21 A With the exception it was chlorinated to 65
22 percent, so it didn't have any ?? it probably was a
23 lower chlorinated like 42 or 54. I'm not sure, though,
24 which one.

25 Q After Dr. Drinker did his testing, what was

1 the next test that you ran?

2 A During that time subsequent to Drinker, we
3 did some acute testing. That's various mixtures,
4 various PCBs and various mixtures of PCBs, those one or
5 two big tests to give us the relative toxicity of the
6 material. The next major testing was in 1954.

7 Q Let me just back up to that other test you
8 were talking about. Those were the LD₅₀s?

9 A That's correct.

10 Q Explain to the jury what LD₅₀s are?

11 A Toxicity, when you want to get a benchmark
12 for the material that you can compare one to the other
13 roughly, you do what is called a LD₅₀. That means you
14 give a material to enough rats, a sizable number, 40 or
15 50 rats, and in various increments, and find out which
16 level kills half the rats. LD is lethal dose for 50
17 percent of the rats, and that gives you a rough
18 comparison of what is the toxicity and what is the
19 compound.

20 Q And that's a standard test in the industry;
21 is it not?

22 A Yes, it is.

23 Q And that's used on all or say all chemicals
24 where you weren't interested in the toxicity of it, you
25 run an LD₅₀ to find you where it falls in the

1 continuum; is that correct?

2 A That's correct.

3 Q With the highest being the most toxic
4 substance, and the lowest being nontoxic?

5 A Let's not get us confused with the numbers.
6 If you have a high LD₅₀, that means you have less
7 toxicity because it takes more to kill them.

8 Q We're going to get to that, but the point is
9 that these LD₅₀s is used to see how toxic a chemical is
10 in comparison to other chemicals?

11 A That's correct.

12 Q And the more substance it takes to kill half
13 the rats, the less toxic it is?

14 A That's correct.

15 Q Where does PCBs fall in regard to relative
16 toxicity?

17 A Someplace in the lower middle. It's a mild
18 ?? it's a moderate toxic compound. For an industrial
19 check ?? that's not chemical. That's not particularly
20 toxic.

21 Q LD₅₀s, Dr. Kelly, are designed to measure
22 acute toxicity, correct?

23 A That's correct.

24 Q And let's talk a little bit about acute
25 versus chronic. What does acute toxicity mean?

1 A What does acute toxicity mean?

2 Q Yes, sir.

3 A It means a harmful effect that you will get
4 on a subject animal by giving one dose or a dose over
5 one or two days. In other words, you give a big amount
6 of material. Chronic toxicity means you take a small
7 amount of material and give it every day for a certain
8 number of months or years.

9 Q Okay. So when in one case you're looking at
10 how harmful is this chemical if you're exposed to a
11 large amount of it at one time?

12 A That's correct.

13 Q And the other one, you're looking at how
14 harmful it is if you're exposed to a little bit over a
15 long period?

16 A That's correct.

17 Q And it's known in toxicology, is it not,
18 Doctor, that the effects, the acute versus chronic, can
19 differ?

20 A Well, yeah, that's true.

21 Q In addition, while we are talking about
22 animal studies, is there such a thing, Doctor, as
23 species differentiation?

24 A Yes, there is.

25 Q Can you tell the jury what that is?

1 A Well, it means that some animals react
2 differently to compounds, to the same compound if you're
3 giving it. But toxicologist have generally standardized
4 their testing by using dogs for long term testing.
5 That's very unusual that you use dogs, because you may
6 have to do that five or six years, to feed to dog to get
7 a result. Rats are almost commonly used, by far the
8 most commonly used. Rabbits are used because if you
9 were testing to see if it is absorbed through the skin,
10 you've got a better skin and a large amount of skin on a
11 rabbit than a rat. It's hard to get a decent amount of
12 material on a rat.

13 Q The point being that rabbits might react
14 differently than rats to the same chemical and the same
15 dose?

16 A Yes.

17 Q And also it's known in toxicological circles
18 that even animals in the same species might react
19 differently to the same dose, correct?

20 A You will have to explain that a little more.

21 Q Let's talk about LD₅₀s then. You're giving
22 a group of animals the same dose of the chemicals, but
23 only 50 percent of them die.

24 A Right.

25 Q And that's because some animals react

1 differently to the same chemical?
2 A That's correct.
3 Q Even within the same species?
4 A Even with the same group of animals. When
5 you used species, that threw me off.
6 Q Within the same group of animals, some
7 animals right react more violently to a chemical than
8 others?
9 A Yes.
10 Q And that's also true of humans; is it not?
11 A Yes, sir.
12 Q So (you) ran the LD₅₀. That was done in the
13 early fifties, correct?
14 A In the middle fifties, yes, sir. '54.
15 Q The LD₅₀s?
16 A The LD₅₀s were all the way from almost the
17 forties. We started ?? did you say when we started
18 running LD₅₀s?
19 Q When did you get the results of the studies?
20 A Oh, gosh. I think we got them in the
21 forties.
22 Q And the next group of the tests that you ran
23 were the '54 tests that you were talking about earlier?
24 A That's correct.
25 Q Tell the jury about those tests and what

1 prompted you to run them.

2 A We had decided that we were going to use PCBs
3 in a different set of circumstances than they were
4 previously used for. Previously they were dielectrics.
5 That means they were used in transformers and
6 capacitors. We were going to go to hydraulic fluid,
7 which were (extruding) hot metal parts, and with the
8 extruded part you will get some leakage of PCBs, and
9 that would be hot, and it would drop on hot metal.

10 We wanted to know what would happen to a
11 worker who was exposed to this for any particular
12 concentration and period of time, so we ran a simulated
13 experience that we would have with a hydraulic or in a
14 heat transfer agent or a hydraulic fluid application.

15 Q Were those acute tests or chronic?

16 A No, I think they would be called chronic
17 because the inhalation, you do six months. In those
18 days that was considered chronic.

19 Q Those were what ultimately became known as
20 the Treon Studies?

21 A Yes, at the University of Cincinnati.

22 Q And they were inhalation studies designed to
23 determine the long term effects of breathing PCBs
24 vapors?

25 A That's correct.

1 Q How long did those studies run?
2 A How long did they last?
3 Q Yes.
4 A I think six months, at least.
5 Q Would six months today, Dr. Kelly, be
6 considered more of an acute or a subchronic test?
7 A I think you could consider them chronic, and
8 I believe even today I don't recall seeing any reports
9 of it, inhalation studies over six months period
10 duration.
11 Q You don't recall seeing any inhalation
12 studies over a six month period?
13 A That's correct.
14 Q Why did Monsanto pick six months?
15 A Why what?
16 Q Why did you pick six months to run your
17 study?
18 A We listened to the man who started
19 experiments, Dr. Treon, who is the toxicologist at
20 (Kennerly) Laboratories in Cincinnati.
21 Q He is the one that told you this is the
22 length of time we ought do it for?
23 A That's correct.
24 Q There were also some shorter studies done at
25 the same time, correct?

1 A Yes, sir.
2 Q How long were those?
3 A I don't recall.
4 Q Show you doctor ??
5 THE COURT: Would you be kind enough to show
6 the ??
7 Q (By Mr. Murray) This is a document marked as
8 Monsanto Exhibit 235. Is that the published report of
9 the Treon Studies that were done for Monsanto?
10 A Yes, it is.
11 Q Now, just so the jury doesn't misunderstand,
12 the actual reports from the studies contained all of the
13 data and they were kind of thick, right? The reports
14 that Monsanto received as a result of those studies were
15 thick reports, correct?
16 A It wasn't so thick. This is pretty much what
17 he said in the report. I mean this is the summary of
18 the data.
19 Q I understand that's. The only point I'm
20 trying to make, that document that you have is more of a
21 summary of all of the tests that were done, correct?
22 A Well, yes, but it's a pretty good description
23 of the test.
24 Q I'm not disagreeing with that, Doctor. The
25 only point I'm trying to make, and I'm not trying to

1 hide anything from you. These were the actual reports
2 that were given to Monsanto, correct?

3 A Yes, sir.

4 Q And again, this is Monsanto Exhibits 233 and
5 234.

6 A Yes. This has more tables in it, yes.

7 Q And that's the only point I'm trying to make,
8 Doctor. I don't want to mislead anybody. The document
9 that I originally gave you is a summary of those two big
10 thick documents, correct?

11 A I guess so, yes, sir.

12 Q And it was published in the scientific
13 literature; was it not?

14 A Yes, sir.

15 Q As a result of the studies that Dr. Treon
16 performed, he recommended certain levels in what are
17 called MACs, correct?

18 A Yes.

19 Q Tell the jury what MACs are.

20 A MACs is a term that was used as a Maximum
21 Allowable Concentration. That meant that you were not
22 supposed to exceed that concentration in the work
23 environment. That was supplanted by the term TLV, which
24 is Threshold Limit Value, which is the more modern
25 term. I don't know whether they were still using MACs

1 in 1964 or not, but threshold limit is a safe limit that
2 a worker could be in eight hours a day for his
3 lifetime.

4 Q And that was one of the reasons why that
5 study was commissioned, was it not, Doctor, to determine
6 what those maximum allowable concentrations should be?

7 A Or the threshold limit value. I don't know.

8 Q Let's use one term or the other. I don't
9 care.

10 A Let's use TLV. That's more appropriate.

11 Q Okay. So one of the reasons that that study
12 was commissioned was to determine what the TLV should
13 be?

14 A That's correct.

15 Q And Dr. Treon made some recommendations in
16 that regard; did he not?

17 A Yes, he did.

18 Q Tell the jury what they were.

19 A He recommended for the 1254 there would be
20 one milligram per cubic meter of air. For 1242 he
21 recommended that it would be, I think, two. He found
22 that 2.6 milligrams of the material for 1242 was not
23 toxic. He recommended something around, he said the
24 1242 should be two milligrams per liter, and the
25 Government Industrial Hygienist group or Government

1 Association of Government Industrial Hygienists ??
2 Q I'll get to that. Let me ask you. You said
3 2 milligrams per liter?
4 A Yes. That's correct.
5 Q You sure you're not meaning 2 milligrams per
6 cubic meter?
7 A Per cubic meter. No. He said ?? he
8 recommended (micrograms per liter), but that is the
9 same. There are a thousand liters in a cubic meter.
10 Q Okay. So it's roughly the same, in any
11 event, from micrograms per liter ?? I mean ?? yes,
12 milligrams per cubic meter?
13 A That's correct.
14 Q So the jury can understand the amounts that
15 we're talking about, a cubic meter is just that. It's
16 one meter up, down, on each side?
17 A Sideways, yes.
18 Q What is a milligram?
19 A Milligram is a thousandth of a gram.
20 Q You, as a doctor, Dr. Kelly, would know
21 basically what the ?? let's use an aspirin as an
22 example. You know how big an aspirin is with regard to
23 milligrams?
24 A What?
25 Q How big is an aspirin?

1 A It could be from one ?? usually in grains.
2 Five grain aspirin is the size of a tablet. There are
3 15 grains in a gram, so that would be 300 milligrams.

4 Q When aspirin is 300 milligrams, so the 2
5 milligrams that were recommended there is 1/150th of an
6 aspirin?

7 A That's correct, if we are talking about gases
8 other than solids.

9 Q I understand. I'm trying to get an idea of
10 what we're talking about. And that would be accurate?

11 A Well, yes, but you're confusing solids with
12 gases. In this cubic meter you've got a gas. You don't
13 have a solid in there. In other words, a cubic meter of
14 air is a gas.

15 Q I understand that. And a milligram, whether
16 it's a milligram of aspirin or a milligram of gas, it's
17 the same thing; isn't it?

18 MS. RUTTER: Objection, asked and answered.

19 THE COURT: The attorney has made an
20 objection. The objection will be overruled. Ask the
21 question again.

22 Q (By Mr. Murray) Maybe I'm confusing you,
23 Doctor. All I'm trying to understand is the volume
24 contained in a milligram. Whether it's a volume of gas
25 or a volume of a solid, it's the same; isn't it? A

1 milligram is a milligram?
2 A The volume is the same, yes.
3 Q Prior to Dr. Treon running his studies, there
4 appeared in the medical literature, did there not, an
5 article by a Dr. Meigs?
6 A Doctor who.
7 Q Meigs, M?E?I?G?S?
8 A Yes, sir. I don't know if that preceded the
9 ??
10 Q Roughly around the same time?
11 A Beg your pardon.
12 Q Roughly done around the same time?
13 A Yes.
14 Q I'll show you a document, Doctor, that I've
15 marked as Plaintiff's Exhibit No. 269. That is, I'll
16 represent to you, a compilation of memos and other
17 documents. At the back of that document I would ask you
18 to turn to that page. We will get to all of these, but
19 I want to make sure I've got the right thing here.
20 Beginning on the numbered page SCM048725, that's the
21 article by Dr. Meigs; is it not?
22 A Yes, sir, it is.
23 Q Dr. Meigs relates in that article that there
24 were some cases of chloracne resulting from exposures of
25 .1 milligram per cubic meter; does he not?

1 A He doesn't quite put it that way.

2 Q Tell the jury what he says it says.

3 A He says, "Four months ago we ran one test of
4 the air and found one-tenth of a milligram. So four
5 months later these people developed chloracne. I wrote
6 Meigs and said, "Look what's going on. We had people
7 working at two or three times one-tenth of a milligram
8 and get no chloracne." And he wrote back and said,
9 "Well, we don't really know what they were exposed to
10 outside of this one time." And he said, "I'm not
11 quarreling with the allowable concentration set by the
12 government industrial hygienists, but it's just I'm
13 reporting what I found." The trouble with Meigs'
14 article is ??

15 Q Doctor, I'll allow you to say whatever you
16 want to. I just want to clear up some preliminaries
17 first. Dr. Meigs, according to your testimony, went
18 into plant where they found these cases of chloracne and
19 measured the air for PCB content; is that right?

20 A No, that is not true.

21 Q What did he do?

22 A Meigs went to the plant. The people,
23 somebody from the Connecticut State Board of Health,
24 four months previously to this had measured the air and
25 found one-tenth of a milligram per cubic meter. If you

1 have a leak, you have a leak there out of some gas, some
2 of the joints, and you don't know how much is leaking
3 one day or the next.

4 Q I understand that, but I just want to get the
5 circumstances straight in my mind.

6 A Well, he didn't (inaudible).

7 Q Let me ask the question, please. Dr. Meigs
8 went in and diagnosed seven cases of chloracne, right?

9 A Well, yes.

10 Q I'll get to everything. He went in and
11 diagnosed seven cases of chloracne?

12 A Very mild chloracne.

13 Q Four months prior to that there was a
14 measurement taken of PCB content in the air?

15 A That's correct.

16 Q And it was even before that, was it not, that
17 the leak started?

18 A Presumably, yes.

19 Q And in fact, some of these workers were
20 exposed to the PCB content in the air for a period as
21 long as twelve months; isn't that right?

22 A That's correct.

23 Q So this measurement was taken somewhere
24 towards the end of their exposure, but they were still
25 being exposed at the time, right?

1 A But the answer is yes, but not towards the
2 end. It was four months prior to when Meigs saw his
3 first case.

4 Q Which was also prior to them fixing the leak,
5 right?

6 A Yes.

7 Q So these measurements were taken somewhere
8 during the time of exposure?

9 A Yes. But my point was, Mr. Murray, that I do
10 not see how that one measurement can define exposure
11 that these people had, because when you have leaks in a
12 chemical plant, it isn't a solid ?? like you have ups
13 and downs in the leaks.

14 Q And how do you know whether or not that
15 measurement was taken on an up or a down?

16 A No, either do I, but ??

17 Q So the point is that's the only measurement
18 we have, right?

19 A That's right, but that's a pretty (feral)
20 lead to base a conclusion on.

21 Q And that was one-twentieth the proposed MAC
22 that was proposed by Dr. Treon; is that correct?

23 A It was one-twentieth of the MAC proposed by
24 Treon, but it was the government had cut Treon
25 recommendation. The government group had cut the TLV to

1 one.
2 Q So it was one?tenth of what the government
3 had proposed?
4 A That's correct.
5 Q Now, just so we don't misunderstand, they
6 actually found the leaks and fixed them; did they not?
7 A Yes.
8 Q And when they did that, all that chloracne
9 went away?
10 A Yes, sir.
11 Q That article came out in 1954; did it not,
12 Dr. Kelly?
13 A Yes, sir.
14 Q Let me ask you, Dr. Kelly. After the Treon
15 Studies were done, did you become aware of some studies
16 that the Navy had done on Pydraul?
17 A Yes, sir.
18 Q Pydraul 150, right?
19 A I don't know which Pydraul.
20 Q Let me show you the document. I'll show you
21 a document marked as Plaintiff's Exhibit No. 149. Is
22 that a memo ??
23 MS. RUTTER: Your Honor, I would object to
24 the relevance of Pydraul issues discussed.
25 THE COURT: What is the exhibit?

1 MR. MURRAY: 149, Your Honor.

2 THE COURT: I think you gave me too many.
3 I've got them out of order. Counsel approach.

4 [At this time a bench discussion was held.]

5 Q (By Mr. Murray) Have you had a chance to look
6 at that document?

7 THE COURT: Excuse me. Let her get her
8 seat. All right. Proceed.

9 Q (By Mr. Murray) Have you had a chance to look
10 at that document?

11 A Yes, I have.

12 Q Is that the memo regarding a visit that you
13 had with the Navy?

14 A Yes, sir.

15 Q Regarding Pydraul 150?

16 A Yes, sir.

17 Q Tell the jury, if you know, Dr. Kelly, what
18 is Pydraul 150.

19 A It is a sub PCB (inaudible). I don't know
20 the rest of it. In fact, I think it has about less than
21 25 percent PCBs. I'm not sure.

22 Q The Navy was going to use that as a hydraulic
23 fluid, right?

24 A Presumably.

25 Q And that was what Pydraul 150 was marketed

1 as?

2 A Yes.

3 Q And the Navy ran some tests on the Pydraul
4 before it decided what to do, right?

5 A Yes, sir.

6 Q Tell the jury what the results of those tests
7 were as you relayed in that memo.

8 MS. RUTTER: Objection to relevance.

9 THE COURT: (Inaudible).

10 Q (By Mr. Murray) You may answer. They did two
11 tests. First they took the material and administered to
12 the skin of rabbits, and they don't say how long they
13 administered. They don't say how much they did. They
14 just said ?? for all I know, they may have dunk the
15 rabbits in it. They all died, so they treated them
16 pretty roughly. They did ?? the control they used was a
17 compound that they ?? I don't know what Cellulube 220
18 is, but it wasn't used in the submarines anyway, so I
19 don't know what happened to the control.

20 Then they had inhaled the material at
21 two-tenths of a part in the component. Well, that would
22 be, if the air was 25 percent of the mixture, that would
23 be half of ?? half a milligram of the material for 24
24 hours a day and 50 days. They don't say the number of
25 animals, except that they did it for 24 hours for 50

1 days. They had statistically definite liver damage. No
2 description of what the liver was, what the damage was.
3 So they said we don't think it ought to be used in the
4 submarines where you're recycling air all the time.

5 Q So actually the air that was circulating in
6 their inhalation tests were two parts per million of
7 Aroclors, correct? I'm sorry. Two-tenths of a part per
8 million?

9 A Yes, sir.

10 Q And I believe you said that that corresponds
11 to a half a milligram per cubic meter?

12 A Per cubic meter, yes, sir.

13 Q Is that a half, Doctor, or .05?

14 A I can't hear you.

15 Q Is that a half milligram or half a microgram?

16 A It's a half a milligram.

17 Q Two-tenths of a part per million?

18 A That isn't what he said. He said two-tenths
19 of the Aroclor components. Now, the Aroclor component
20 is 25 percent of the mixture. You are getting
21 two-tenths of that, which is 5.

22 Q Let me just ask you to read that second
23 paragraph so that the jury can ?? beginning with the
24 inhalation.

25 A Yes, sir. "The inhalation of 10 milligrams

1 of Pydraul 150 per cubic meter or approximately
2 two-tenths of a part of the Aroclor component per
3 million for 24 hours a day for 50 days caused,
4 statistically, definite liver damage. No matter how we
5 discussed the situation, it was impossible to change
6 their thinking that Pydraul 150 is just too toxic for
7 use in a submarine. It may be that such concentrations
8 would never be reached in the submarine, but the Navy
9 does not appear willing to even put the material in a
10 trial run to see if it will work."

11 Q The Navy didn't even want to paint one
12 submarine or use that stuff in one submarine?

13 A That's what it said, yes. Of course a
14 submarine is a little different than the (millions of
15 pounds it's used other places.)

16 Q I understand that. And this occurred in
17 1957, correct, doctor?

18 A Yes, sir.

19 Q So within a three year period, 1954 to 1957,
20 you were confronted with three different situations,
21 with three different levels of Aroclors in the air all
22 of which were causing damage to the test subjects,
23 correct?

24 A To the experiments, yes.

25 Q One caused damage to humans at .1 milligram

1 per cubic meter. Dr. Treon's study caused damage to
2 rats at 1.5 milligrams per cubic meter, and this Navy
3 study caused liver damage to the rats at .5 milligrams
4 per cubic meter. Is that a fair statement of those
5 three test?

6 A No, I don't think it is, because let's take
7 the Navy study. The Navy study did not say anything
8 about what pathology was, what troubles the animals
9 had. It did not say ?? have any controls in the
10 experiment. It was certainly a non?test as far as any
11 standard toxicological testing was concerned.

12 Q Let me ask you about that. You state in here
13 that the tests caused statistically definite liver
14 damage?

15 A I'm sorry. It did cause liver damage, yes.

16 Q Do you have any reason to believe, Doctor,
17 that when the Navy runs inhalation tests, that it
18 doesn't follow standard toxicological procedures?

19 A Yes, I do.

20 Q Why is that?

21 A Because I've seen a number of the tests that
22 the Navy has carried out that are not standard tests.

23 Q When did you see that?

24 A In the course of my work with Monsanto.

25 Q I'll ask you to be a little more specific,

1 Doctor. When did you see the Navy run toxicological
2 tests that weren't according to toxicological standards?
3 A Well, there's one right here. In their skin
4 testing they didn't do it.
5 Q They didn't do what?
6 A Didn't follow the standard procedure. They
7 have no doses down there at all.
8 Q Well, they might not have told you the dose,
9 Doctor, but do you have any ?? did you read a report on
10 these tests?
11 A Did I what?
12 Q Did you read a report on these tests?
13 A No, I did not.
14 Q You were having a conversation with somebody
15 from the Navy who were telling you about these tests,
16 right?
17 A I don't recall what they told me at all.
18 Q But you did go back and write a memo?
19 A Beg your pardon?
20 Q You did go back and right a memo on it?
21 A Certainly, I did, but I don't remember what
22 happened in 1953, forty years ago what the Navy told me.
23 Q I certainly don't expect you to, Doctor. I
24 don't expect you to. The only thing I'm saying is that
25 you have no reason to believe that these tests were not

1 run according to toxicological standards?

2 A Well, yes, I do, because the material that
3 the information is on there, which is all I have, the
4 only recollection I have of this meeting. As far as the
5 skin test is concerned, it does not show any. It
6 doesn't show the number of animals. It doesn't show
7 what the dose was.

8 Q Just because the memo that you wrote
9 regarding your conversation with Navy persons doesn't
10 say it, it doesn't mean it wasn't done; does it?

11 A No, it doesn't mean it wasn't done, but it
12 says I don't know whether I had any information about
13 that at all.

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

15 A What?

16 Q You don't know one way or the other whether
17 you had that information?

18 A No, I certainly don't have the information,
19 because it isn't there.

20 Q Let me ask you about the skin test. They
21 used a control; didn't they?

22 A Yes, sir.

23 Q They tested some rabbits with Pydraul 150 and
24 some rabbits with Cellulube 220, right?

25 A Yes, sir.

1 Q And the ones with Pydraul died, and the ones
2 that had Cellulube on them didn't die?

3 A That's right.

4 Q Do you have any reason to believe that they
5 weren't using a like amount on the rabbit?

6 A I have no reason to believe or disbelieve.

7 Q And the standard toxicological procedure,
8 when you run a skin patch test like that, you use a set
9 of controls?

10 A Yes, sir.

11 Q Now, you mentioned in here that the amount
12 was ?? the amount administered was not given?

13 A That's correct.

14 Q Did you ask for it?

15 A I don't know if I asked for it or not. I
16 should recall it now whether I asked for it?

17 Q Is there any reason that you have to believe
18 that when the Navy developed the protocol for these
19 tests, that they didn't use standard toxicological
20 procedures?

21 A I have no reason to believe that the Navy was
22 experts in toxicological matters.

23 Q Just so we'll get it straight on the record,
24 Doctor, you weren't an expert in toxicological tests
25 either; were you?

1 A What?

2 Q You were not an expert in toxicological
3 testing either; were you?

4 A At what time? By 1974, I certainly was.

5 Q I'm not asking in '74. Back in the fifties
6 you asked Dr. Treon to tell you how long to do this
7 stuff and what the dosage should be; didn't you?

8 A I think you're oversimplifying it. Treon was
9 an experienced toxicologist. We discussed what the
10 problem was. We discussed what the matter of the
11 testing was going to be, and then he was the one that
12 did the testing, and he carried out the limits. So that
13 does not mean that I was completely ignorant of what was
14 happening in the toxicological experiments.

15 Q Please, Dr. Kelly, don't misunderstand me.
16 I'm not saying you were ignorant of what was happening.
17 The point is that you consulted an expert to tell you
18 what the protocol should be on your toxicological test;
19 didn't you?

20 A No. This was the man that was going to do
21 the testing. You don't go to a head of a toxicological
22 laboratory and say, "Here is the way I want to do it."
23 You go there and say, "Here's our problem. What we want
24 to do is find out the toxicity of the material. What do
25 you think about it?" Then you discuss it, and they

1 come out with a protocol.

2 Q Exactly. And do you have any reason to
3 believe, Dr. Kelly, that the Navy didn't do that when
4 they were doing their tests?

5 A Well, as I said, I do not recall seeing any
6 Navy reports that would be examined by toxicologists
7 apart from the Navy people. I do not know. They came
8 out with ?? they were not set up to run toxicological
9 experiments.

10 Q I don't think they probably were either,
11 Doctor, and isn't that all the more reason that they
12 would go to an expert to have their test done?

13 A I'm sorry. What did you say?

14 Q Isn't that all the more reason why they would
15 go to an expert to have their toxicological test run,
16 who would then advise them on how to set it up and how
17 to do it and maybe do it for them?

18 A If they did that, they didn't say it.

19 Q I guess the point you're making is you didn't
20 see the written results of the tests?

21 A I'm sorry. I could not hear you.

22 Q I guess you're saying you didn't see the
23 written results of the test that were performed by the
24 Navy, but you did talk to somebody who told you about
25 them?

1 A I told you I don't even recall the details of
2 the conversation.

3 Q Okay. In any event, Doctor, at this time in
4 1957, you knew that at least the Navy was telling you
5 that they had run toxicological tests that showed an
6 effect level at .5 milligrams per cubic meter; is that
7 right?

8 A Repeat that, please.

9 Q In 1957 you were told by the Navy that they
10 had run tests on PCBs which showed an effect, in fact,
11 statistically definite liver damage at .5 cubic
12 milligrams per cubic meter?

13 A That's correct.

14 Q And that was half of what the recommended
15 MACs were at that time, TLVs were at that time?

16 A The TLV for 1254 were .5, also. The TLVs for
17 1242 was 1.

18 Q TLVs are supposed to be limits that show no
19 effect; aren't they?

20 A That's right.

21 Q These tests were showing effects at that
22 level; were they not?

23 A Yes, sir.

24 Q Did you do anything with regard to your
25 knowledge resulting from that Navy test and results from

1 the Meigs Study?

2 A Did I do anything?

3 Q Yes, sir. Did you go to the American
4 Congress of Industrial Hygienists and tell them, "Look
5 you set your MACs too low?? or too high"?

6 A First of all, Meigs, himself, said, "I am not
7 quarreling with the one milligram per cubic meter." You
8 have to set ??

9 Q I didn't ask you for an argument, Doctor. I
10 asked you if you had done it.

11 A No, I didn't do it, but I can tell you the
12 reason why I didn't do it.

13 Q Go ahead.

14 A We have one mild case of chloracne, a series
15 of chloracne at one installation, not an electrical
16 installation at all. A heat transfer agency. This is
17 in contradistinction to the millions and millions of
18 pounds of the material used as a heat transfer agent
19 with no ill effects. I didn't see any reason at all for
20 saying everybody was out of step but Meigs, especially
21 when Meigs says himself, "I'm not quarreling with the
22 one milligram level of this set."

23 Q But, Doctor, is it fair to say that you
24 treated the Meigs Study as an aberration.

25 A Beg your pardon?

1 Q Did you treat it as an aberration, as
2 something that would never happen again?

3 A Well, frankly, it didn't happen again.

4 Q Is that the way you treated it back then when
5 you found out about it?

6 A No. I analyzed it from the standpoint of
7 here is a man that says I found this. I'm not sure what
8 the level was when they give it to him, but it gave them
9 the problem, and I'm not quarreling with the 1.0
10 figure.

11 Q He didn't provide you with any information,
12 did he, Doctor, that the .1 measurement that was taken
13 was incorrect?

14 A No. I assume it was correct.

15 Q So that at that point the only information we
16 had or you had was that there were seven people who got
17 chloracne poisoning because of .1 milligrams of PCBs in
18 the air?

19 A No, because I could not be sure it was .1
20 milligrams in the air because that was not taken. That
21 was taken at one particular radical period of time, and
22 we had workers that were exposed to three and four times
23 that level with no PCBs.

24 Q How many workers that were involved were
25 exposed to that leak in the plant that Meigs was talking

1 about?
2 A The Meigs? Fourteen, I believe.
3 Q And seven of them got chloracne, right?
4 A Well, yes, but three of them didn't even know
5 they had it.
6 Q Let's talk about that a little bit.
7 Chloracne is just pimples, right?
8 A Is what?
9 Q Pimples.
10 A It's a little more than pimples. It's in a
11 special area. It may have pigmentation.
12 Q And it could be a very mild case, and you
13 might not even realize that you have it?
14 A That's correct.
15 Q And, in fact, it was actually six of the
16 people who had it didn't know they had it, right?
17 You're welcome to look at the study, if you want, but
18 there was one person who complained about it, and Dr.
19 Meigs went into the plant and found six other cases;
20 didn't he?
21 A That's correct.
22 Q So six out of the seven didn't even know they
23 had chloracne?
24 A That's correct.
25 Q Didn't even know that they had been poisoned?

1 A I don't think the term poisoned is correct.

2 Q Tell me about what chloracne is.

3 A Chloracne is a skin response to the
4 chlorinated compound, some chlorinated compound. It's
5 probably due to absorption of the material and is
6 characterized by an increase in the sweat gland,
7 increased mostly around the cheeks and in the face.
8 It's different from teenage acne by usually being more
9 severe, and it may be accompanied by pigmentation, a
10 black pigmentation which does not occur in teenage
11 acne.

12 Q Chloracne is an adverse reaction resulting
13 from an exposure to a chemical?

14 A That's correct.

15 Q What is the difference between that and
16 poison?

17 A Well, I think the (stigma) you're putting on
18 poison is that you're using a term that characterizes a
19 systemic illness; that usually when a person is
20 poisoned, he has big problems, and these people
21 certainly did not have big problems.

22 Q I understand that, Doctor, and please don't
23 think that I'm trying to blow this out of proportion.

24 A You (inaudible).

25 Q The fact is that any adverse reaction to a

1 chemical substance, whether it be taken by mouth or
2 absorbed through the skin, is a systemic poisoning; is
3 it not? Whether it be a mild poisoning or a severe
4 poisoning?

5 A Conceivably, you could say yes, but the
6 average person who hears the word poisoning believes
7 that that connotes a rather generalized systemic
8 effect.

9 Q Which is exactly the point I'm making.
10 Chloracne is a systemic effect; isn't it?

11 A Yes, it is.

12 Q It's not something that you get on the skin
13 and get an allergic reaction from it. It is actually a
14 chemical that is attacking the body in such a way that
15 it's causing chloracne?

16 A Well, working on some of the hormonal factors
17 that cause chloracne, yes.

18 Q There was actually liver damage found in the
19 Meigs Study; wasn't there?

20 A No, there was not.

21 Q I'm afraid you might have my copy that I'm be
22 looking for. I apologize, Doctor. I need to get it i
23 think I lost it. I don't know where it is. Doctor, I'm
24 going to direct your attention to page SCM048727 of
25 Plaintiff's Exhibit No. 269. I'm going to ask you to

1 read this, from the word "the seven employees", and
2 continue for the rest of that paragraph.

3 A "The seven employees in whom chloracne had
4 developed had liver function tests performed. Tests
5 included direct and total bilirubin determinations and
6 24 and 48 hour cephalin flocculation, thymol turbidity,
7 and alkaline phosphate use determinations. Six of the
8 subjects had completely normal test results. One
9 employee had borderline cephalin flocculation and thymol
10 turbidity. Thirteen months later repeated liver
11 function tests showed an unchanged cephalin flocculation
12 and improved thymol turbidity. Results of complete
13 blood cell counts and urinalysis were normal in all
14 instances. All had normal blood pressures with no other
15 clinical evidence of any chlorinated diphenyl toxicity."

16 Q Are those liver tests elevated in that one
17 worker who had the chloracne, Doctor?

18 A Beg your pardon?

19 Q Are those liver function tests elevated in
20 the one worker who had the chloracne?

21 A It was borderline.

22 Q Borderline elevated?

23 A What?

24 Q I don't want to argue over semantics, but
25 wasn't it elevated?

1 A I don't know how it was. They said
2 borderline. If you take seven people on the jury and
3 run cephalin flocculations on them, you're liable to get
4 one borderline, but with all of the other liver
5 functions tests normal, I don't think anybody paid any
6 attention to it.

7 Q And they ran it again, too; didn't they?

8 A I'm sorry?

9 Q They ran the same test again, didn't they, on
10 that worker?

11 A Yes. It was just the same, but cephalin
12 flocculation test is a test that's used no more. It is
13 subplanted, but there is no ??

14 Q In 1954 it was used to determine liver
15 function; wasn't it?

16 A Yes, but a borderline elevation doesn't show
17 a diseased liver. In fact, two drinks of beer before he
18 (took it) could have changed the cephalin flocculation.

19 Q The Treon studies that were done, Dr. Kelly,
20 did they cause any concern in your Monsanto plant in
21 Europe?

22 A I don't know. They may have.

23 Q In fact, they were very concerned about their
24 paints; were they not?

25 A Yes. They should have been.

1 Q Have you ever heard of using a ten-fold
2 safety factor in establishing TLVs?

3 A I've heard of it. I don't know who uses it.

4 Q Wasn't that the norm?

5 A Beg your pardon?

6 Q Wasn't that the norm?

7 A No, it wasn't, because if you take the
8 American Government Industrial Hygienists, they did not
9 take the ten-fold factor.

10 Q With regard to PCBs?

11 A Yes.

12 Q I'm talking about the norm. Isn't it the
13 norm, when establishing TLVs, that you take the highest
14 no effect level and reduce it by ten-fold?

15 A No, sir, I don't believe that's the norm.

16 Q I'm going to show you a document which has
17 been marked as Plaintiff's Exhibit 146 and ask you if
18 you can identify that for me, sir?

19 A This is a letter by memorandum from J. W.
20 Barrett, who is in our English company, to (Mason), who
21 is head of research in St. Louis. These are two
22 research people with a carbon copy for Dr. Newman, who
23 was the plant's medical director.

24 Q And in this letter Mr. Barrett states that
25 here, I guess meaning in Europe?

1 A That's correct.

2 Q There is a convention that a factor of 10 is
3 used in (inaudible) for the animal toxicity to human
4 toxicity.

5 MS. RUTTER: Objection to the relevance of
6 what's common in Europe.

7 THE COURT: It will be overruled.

8 Q (By Mr. Murray) In other words, there would
9 be an interpretation that Aroclor 1254 should not be
10 used where a quantity, where atmospheres containing a
11 quantity something less than .15 milligram per cubic
12 meter results. Is that what he said in that letter?

13 A That's what he says, but the people in the
14 United States have ?? this is his opinion, and I don't
15 believe that he is an expert.

16 Q Would you consider Emmet Wheeler an expert?

17 A Beg your pardon?

18 Q Would you consider Emmet Wheeler to be an
19 expert in that?

20 A Not necessarily. I consider the government
21 industrial hygienist group an expert, and they don't use
22 a factor of ten.

23 Q Let me ask you who Emmet Wheeler is.

24 A I'm sorry. I can't hear you.

25 Q Let me ask you who Emmet Wheeler is?

1 A Was. He is dead.
2 Q Let me ask you who he was.
3 A He was the director of the administration for
4 toxic ?? for the paramedical aspects of the medical
5 department, the toxicologists of the industrial
6 hygienists reported to him.
7 Q He was the head industrial hygienist at
8 Monsanto; was he not?
9 A That's correct.
10 Q That's what I thought.
11 MS. RUTTER: Just for the record, his name is
12 Elmer.
13 MR. MURRAY: You're right. I'm sorry. It's
14 Elmer Wheeler.
15 Q (By Mr. Murray) Let me show you a document
16 that got mark as Exhibit 271. Is that a letter from
17 Elmer Wheeler, your head industrial hygienist?
18 A Yes.
19 Q Who is that written to?
20 A Harold Newman, who is a physician in
21 England.
22 Q A Monsanto physician in England, right?
23 A That's correct.
24 Q He was the medical director of the Monsanto
25 facility in England; was he not?

1 A Yes, sir.
2 Q And in this letter Mr. Wheeler is talking
3 about the MACs that were referenced in the letter from
4 Mr. Barrett, right?
5 A I don't know. I haven't read it. You took
6 it away from me.
7 Q I'm sorry. I apologize for that. You can
8 keep that copy.
9 A Now, is there a question?
10 Q In that letter Mr. Wheeler ?? is it Mr. or
11 Dr. Wheeler?
12 A Mr. Wheeler.
13 Q He wasn't a Ph.D.?
14 A No.
15 Q Mr. Wheeler is referencing a letter that we
16 had just talked about where they talked about a ten?fold
17 factor, right?
18 A Wait till I see it. Yes, sir.
19 Q I'm going to have to borrow this copy.
20 A Beg your pardon?
21 Q I'm going to have to borrow this copy.
22 Sorry. I'm going to ask you to read the last paragraph
23 on page one.
24 A I hope that MCL, that's England.
25 Q Monsanto England, right?

1 A Monsanto England. "Will not interpret
2 Treon's results in such a fashion that MAC values lower
3 than those indicated above are ever mentioned in public
4 in Great Britain."

5 Q Stop right there, Doctor. What was indicated
6 above?

7 A Where it says that Treon believed, proposes
8 that 2.0 milligrams per cubic meter for 1254 to be used
9 ?? 1242, rather, and one or 1.0 for 1254.

10 Q Okay. Go ahead and continue reading.

11 A "In Dr. Hardy's memo to you dated September 6,
12 1955, he pointed out that perhaps the MAC for Aroclor
13 1254 should be 0.15 milligrams per cubic meter.
14 Although it is common to use a safety factor of 10 in
15 transposing safe levels for animals to safe levels for
16 humans, we do not feel that such a safety factor is
17 necessary with the Aroclors. If the Aroclors were new
18 products with limited use and handling experience, if
19 there had been recent cases of illness in workers
20 exposed to these materials, or if Treon's work had been
21 less extensive, then we would agree that the exposure
22 which caused no effects in animals might be too high for
23 humans. This is not the case, however.

24 Q Let me stop you there. So what he is saying
25 in here is that the safety factor of 10 is normal?

1 A Is what?
2 Q Normal or common?
3 A He said common.
4 Q Safety factor of 10 in transposing animal
5 toxic studies to humans is common?
6 A It is common. It was common when there was
7 no human experience.
8 Q And he says that because of the human
9 experience with Aroclors, they feel safe in making the
10 levels what they were?
11 A Yes, sir.
12 Q He goes on to say, does he not, that if there
13 had been a report of cases of illnesses in workers
14 recently exposed to these materials, that that might not
15 be the case, right?
16 A Yes, sir. That is what he says.
17 Q This letter was written in October 1955; is
18 that correct?
19 A Yes, sir.
20 Q That was less than a year after the Meigs
21 Study where seven workers had chloracne; is that right?
22 A Yes, sir.
23 Q He mentions in there, Dr. Kelly, about the
24 past experience of Monsanto with these Aroclors?
25 A Beg your pardon?

1 Q He mentions in there about the past
2 experience of Monsanto with the Aroclors; is that right?

3 A Yes, sir.

4 Q And he says because of that experience,
5 without having any injury, we feel safe in having the
6 levels where they are?

7 A He says that particular factor has to be
8 taken into consideration along with the work on
9 animals. It's not only Monsanto, but Monsanto
10 customers, that with the exception of four or five
11 isolated instances, you're blowing this Meigs thing up
12 into a crises, which it certainly was not. That has to
13 be taken into account along with the results of the
14 animal experimentation.

15 Q Let's talk about the past experience of
16 Monsanto, because Monsanto talks about that frequently,
17 don't they, when discussing Aroclors?

18 A I'm sorry. You dropped off.

19 Q When Monsanto discusses the toxicity of
20 Aroclors, they refer to their past experience with it
21 and the fact there haven't been injuries with it?

22 A That's correct.

23 Q Let's talk about that. We know, do we not,
24 Doctor, that part of the toxicity of Aroclors is that
25 they can cause chloracne?

1 A Yes.

2 Q We also know that six out seven people who

3 had chloracne in the Meigs Study didn't even know they

4 had it; did they?

5 A That's correct.

6 Q The other target of Aroclors is the liver,

7 right?

8 A Yes, sir. And the people in the Meigs Study

9 had no problem with their livers.

10 Q We've gone over that already. Did Monsanto

11 run liver function studies on its employees?

12 A On occasion they did.

13 Q And what would be the occasion for that?

14 A They had liver function studies, but they

15 took over the operation of Swann. (We had) liver.

16 Q That was in 1935?

17 A Yes, sir. They also had it in 1973. We ran

18 a battery of liver tests on the employees and found

19 entirely normal liver function tests.

20 Q Doctor, in 1973 Monsanto had ceased all

21 production of the Aroclors with the exception of 1016,

22 right?

23 A I thought they still ?? I think they still

24 manufactured 1242 until 1977.

25 THE COURT: This is a good breaking point.

1 Doctor, we are going to be at recess until 4:15. You
2 will return to the witness stand at 4:15.

3 Ladies and Gentlemen, at this time we are
4 going to take our afternoon break. Justice requires
5 that you not make up your mind in this case until all
6 the evidence has been heard. You are not to discuss
7 this case among yourselves. Nor are you to permit
8 anyone to discuss this case with you.

9 (Ms. Orsborn was replaced by Ms. Olliges.)

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1 THE COURT: Ladies and gentlemen, I
2 appreciate your diligence so much in this case that at
3 six o'clock, even if the attorneys are in the middle of
4 a word, we're going to stop. I've already told them
5 that, and I do understand that some of you parked on
6 various lots and that you have to have your cars off the
7 lots at or about six o'clock. So we're going to stop at
8 six o'clock, and should I go ten seconds past 6:00, just
9 give me the signal it's time to go. Okay.

10 Mr. Murray, you may proceed.

11 MR. MURRAY: Thank you, Your Honor.

12 CONTINUED DIRECT EXAMINATION

13 Q. Dr. Kelly, isn't it true that the Monsanto
14 employees who worked with Aroclors didn't have any
15 significant exposure?

16 A. I didn't hear your last words. What did
17 you say?

18 Q. Isn't it true that the Monsanto employees
19 who worked with Aroclors didn't have any substantial
20 exposure?

21 A. I wouldn't say that.

22 Q. Well, isn't it true that the Monsanto
23 plants used PCBs and their component products in a
24 closed system?

25 A. Well, in a chemical plant, a closed system

1 involves a transfer of material by pumps and by filling,
2 so there is exposure at the pumps, there's exposure
3 during the filling of the drums, so, yes, they can have
4 exposure.

5 Q. I think the term I used was significant
6 exposure.

7 A. I'm sorry?

8 Q. I think the term I used, and you may not
9 have heard it, they didn't have any significant
10 exposure.

11 A. Well, I don't think the Meigs people had
12 significant exposure either.

13 Q. That's not what I asked, doctor. Is it
14 true that your employees did not have any significant
15 exposure to Aroclors in their work?

16 A. In their routine work they did not except
17 at the filling. That could be significant. I do not
18 know during breakdowns whether or not ?? I'm sure there
19 was more exposure than normal.

20 Q. Let me show you, doctor, an exhibit which
21 I've marked as Plaintiff's Exhibit 175. Is this a
22 letter from you to a Dr. William Heeks with the Sprague
23 Electric Company.

24 A. Yes, sir.

25 Q. That's in 1963; correct?

1 A. Yes, sir.

2 Q. I'll ask you to read the last paragraph,
3 let's say the second?to?last paragraph of that letter.

4 A. "In our plants where we manufacture
5 Aroclors, we do periodic physical examinations on our
6 workers at 12 to 24 month intervals. These are quite
7 comprehensive but do not involve any special laboratory
8 procedures such as liver function tests. We do not
9 consider that we have any significant working exposure.
10 However, we have never heard any reports from our
11 customers of such routine testing procedures."

12 Q. Aren't you saying in that letter,
13 Dr. Kelly, that you don't have ?? that your employees
14 don't have any significant working exposure but maybe
15 other people do, but even if they do, you haven't heard
16 any complaints?

17 A. I didn't say maybe other people do; did I?
18 May I see that?

19 Q. No, you didn't, but isn't that the gist of
20 what you're saying?

21 A. I don't think it is at all.

22 Q. Well, I apologize for misstating it then.
23 What is the purpose of your statement about ?? Let me
24 get it and make sure I'm getting it right. I'm going to
25 have to keep doing it because I keep losing my exhibits.

1 Why do you put the "However, we have never heard any
2 reports from our customers"?

3 A. Well, so what about "however"? We never
4 heard any reports from our customers, but that ?? I
5 don't say they don't have significant exposure.

6 Q. In any event, your employees didn't have
7 it?

8 A. Well, it depends what you mean by
9 significant and what I mean by significant.

10 Q. I'm ??

11 A. In the average ?? their work?a?day world,
12 work?a?day environment, they did not have significant
13 exposures, but in a chemical plant there are breakdowns
14 all the time. It occurs. That's all.

15 Q. Sure. The fact is, Monsanto plants, the
16 Aroclors and their components parts were all in a closed
17 system? Answer for me, please.

18 A. Yes, they were.

19 Q. And the Monsanto employees were provided
20 with a clean change of clothing every day by Monsanto;
21 correct?

22 A. Some plants they did. I do not believe
23 they did all the time.

24 Q. Monsanto employees were provided with
25 rubber boots; were they not?

1 A. I can't answer that.

2 Q. Okay. Would Mr. Papageorge be the better
3 person to talk about that?

4 A. I think so.

5 Q. He was a plant manager; wasn't he?

6 A. That's correct.

7 Q. Of a plant that manufactured Aroclors?

8 A. Beg your pardon?

9 Q. Of a plant that manufactured Aroclors?

10 A. That was one of the plants.

11 Q. Okay. I just want to clarify one thing on
12 the Treon studies, Dr. Kelly. Those actually weren't
13 six-month studies. They were four month; weren't they?

14 A. Which? Whose?

15 Q. The Treon studies. 120 days I believe is
16 the time limit on the longest exposures; correct?

17 A. Could be.

18 Q. Would four months be considered chronic
19 testing?

20 A. In those days it was, yes, sir.

21 Q. In that case it was, but in a normal case
22 it's not; is it?

23 A. What?

24 Q. A normal cases it's not; is it?

25 A. Well, I don't recall any reports of more

1 prolonged chronic testing by inhalation ??

2 Q. You don't?

3 A. ?? than four months.

4 Q. Are you familiar with a study by Adams,
5 Spencer and Row, et al, regarding the vapor toxicity of
6 trichloroethylene in 1951 that ran from a low of 200 and
7 ?? 212 days to 243 days?

8 A. May I see it?

9 Q. I don't have the article. I'm just asking
10 if you're familiar with it.

11 A. No, I'm not familiar with it.

12 Q. There were two?year chronic toxicity tests
13 being done in the early '50's; weren't there?

14 A. Yes, sir.

15 Q. And they were being done on industrial
16 chemicals; weren't they?

17 A. On what?

18 Q. Industrial chemicals.

19 A. I don't recall very many. In fact, I don't
20 recall any of them.

21 Q. Well, let me ask you about some of these.
22 Ever heard of a four?year study being run on monkeys by
23 Smith, Sunderland and Sigera (phonetic) on the
24 carcinogenic activity of petroleum in 1951?

25 A. A four?year study on monkeys for testing

1 for cancer?

2 Q. Yes, sir.

3 A. I don't recall that.

4 Q. And there was 1,069 ?? They were also doing
5 a 1,069?day study on rats, a 620?day study on guinea
6 pigs. You're not familiar with any of that?

7 A. On what is the compound?

8 Q. Petroleum.

9 A. I'm sorry?

10 Q. Petroleum.

11 A. No, sir, I'm not familiar with it.

12 Q. Familiar with a 1918 study by Yamigawa
13 (phonetic) and Ishigawa (phonetic) dealing with coal
14 tar, a 589?day study on rabbits?

15 A. No, sir. Was that the Japanese ??

16 Q. Dr. Kelly, my guess is it was, but I can't
17 tell you that for sure. I know that it was in English
18 language. Are you familiar with an 18?month study on
19 mice done in 1950 by Woodhouse dealing with the
20 carcinogenic potency of mineral oils ?? I'm sorry ?? of
21 oil, petroleum products?

22 A. The last word I heard was mineral oil.

23 Q. I misspoke. It's oil, petroleum products.

24 A. No, sir, but those were ?? but that one
25 certainly was in response to the fact that they were

1 concerned about petroleum oils from a carcinogenic point
2 of view.

3 Q. I would suspect that they were, given the
4 name of the study.

5 A. Beg your pardon?

6 Q. I said I suspect they were, given the
7 nature of the study. The fact is that they were doing
8 these two-year chronic toxicity studies in the '50's;
9 weren't they?

10 A. The ones you've quoted, yes, they have.

11 Q. There was no reason why you couldn't have
12 run a two-year chronic toxicity study on PCBs; was
13 there?

14 A. Well, there was no reason for it also.
15 Here we had 40 ?? In the '50's, we had 20 years of
16 experience with no problems with our workers. We had a
17 handful of isolated reports by our customers. That was
18 all. Those ones that you quoted I'm sure ?? I know the
19 mineral oil ?? the petroleum one, there were a number of
20 suppositions that they were carcinogenic, but we had no
21 reason to run a two-year study. There are hundreds of
22 industrial chemicals, thousands of industrial chemicals,
23 and you're quoting a handful of two-year testing where
24 there was some positive reason for doing it.

25 Q. Well, let's talk about that then,

1 Dr. Kelly. You had run various tests through the
2 1950's, all of which showed that PCBs were toxic and
3 were causing acute effects; correct?

4 A. The tests, yes.

5 Q. And you were receiving reports from
6 industry that there were workers that were suffering
7 acute effects from exposure to PCBs?

8 A. The amount of reports that I received of
9 acute exposures were probably three.

10 Q. Isn't it true, Dr. Kelly, that the reason
11 why people do chronic testing is because the acute
12 testing has shown positive results and they need to know
13 what might happen to a person working with this chemical
14 over their lifetime?

15 A. Yes, sir.

16 Q. You didn't think that that was necessary to
17 do in the '50's?

18 A. No, sir, I did not.

19 Q. The ?? None of the tests that you
20 performed, either the Treon studies or the LD₅₀'s or
21 any of the acute toxicity studies that you performed in
22 the '50's, were designed to look for cancer; were they?

23 A. Was what?

24 Q. None of those tests were designed to look
25 for cancer; were they?

1 A. No, sir, they were not.

2 Q. They were not designed to look for lifetime
3 effects from working with this chemical; were they?

4 A. Well, they were designed to find out what
5 prolonged exposures would do.

6 Q. Isn't it true, Dr. Kelly, that as late as
7 1970 Mr. Wheeler was writing memos saying that, "We
8 don't know what the long-term effects of PCBs are on
9 workers"?

10 A. May I see the memorandum?

11 Q. I'm asking you if you're aware of it. I
12 don't have it in front of me, but I could get it for
13 you.

14 A. I may have seen it. I don't know.

15 Q. Are you aware of him ever saying that in
16 the '70's?

17 A. I'm not aware of what he said in 1970.

18 Q. Uh?huh.

19 A. This is '94.

20 Q. Do you believe that those four-month
21 studies that Dr. Treon performed were enough to tell you
22 what the lifetime effects of working with this chemical
23 were?

24 A. No, but clinical experience I had with our
25 workers who worked 30 years with the material and

1 paucity of reports from our customers was enough to tell
2 me.

3 Q. The fact is, Dr. Kelly, you don't know what
4 was happening in the plants outside of Monsanto; do you?

5 A. I don't know what?

6 Q. You didn't know what was happening in the
7 plants outside of Monsanto; do you?

8 A. Yes, I do.

9 Q. Did you ever make inspections of customers'
10 plants?

11 A. No. I'm not allowed to. But I've talked
12 to ??

13 Q. Did you ever run any studies on any of the
14 employees of other people's plants?

15 A. No. But I've talked to the medical
16 directors of these organizations, and they didn't ??
17 They told me they didn't have any problems.

18 Q. Do you know whether they ever ran any
19 studies on their employees?

20 A. I don't know, but they ??

21 Q. Do you know whether or not they ever ran
22 any liver function tests on their employees?

23 A. I don't know, but that ??

24 Q. Do you know whether or not they ever went
25 and looked at their employees to determine whether they

1 had chloracne?

2 A. I'm sure they did.

3 Q. Do you know, Dr. Kelly?

4 A. No, I don't know, but these were excellent
5 industrial physicians, and I know they looked at their
6 employees and they found out that there were no problems
7 in their employees.

8 Q. I want to go back, Dr. Kelly, to the
9 correspondence between yourself and what I call the
10 Europe people, the Monsanto plant in England, regarding
11 the Treon studies.

12 THE COURT: Counsel, what exhibit number?

13 MR. MURRAY: Exhibit 146, Your Honor.

14 Q. One thing I've never been accused of,
15 Dr. Kelly, is being organized. I apologize for this. I
16 want to direct your attention, doctor, to page two of
17 Mr. Barrett's letter to I believe it was Howard Nason;
18 is that correct?

19 A. Yes. (Inaudible.) There's a Howard Nason.
20 I just haven't seen the memorandum yet.

21 Q. I didn't know if I was pronouncing it
22 correctly.

23 A. Yes. This is a memorandum from Mr. Barrett
24 to Howard Nason.

25 Q. Does he in that letter talk about doing

1 additional testing?

2 A. Yes, sir.

3 Q. You wrote him a letter answering that;
4 didn't you? It starts with the next page.

5 A. Yes, sir.

6 Q. I want you to read the second?to?last
7 paragraph on that page, Dr. Kelly.

8 A. Where it says ??

9 Q. "I don't know how..."

10 A. "I don't know how you would get any
11 particular advantage in doing more work. What is it
12 that you want to prove? I believe your work should be
13 directed towards finding out what the concentrations are
14 of Aroclor during different operations whether it's
15 industrial or painting. The reports you have seen from
16 Kettering Laboratory are the result of approximately 15
17 to \$20,000 expenditures by Monsanto CC." That's
18 Monsanto in the United States.

19 Q. You were basically telling him, "No, we've
20 done all the testing we're going to do"?

21 A. I couldn't hear you.

22 Q. You were basically telling him, "No, we've
23 done all the testing that we need to do"?

24 A. Well, we had ?? This has to be ?? There's
25 several other memoranda on this particular topic.

1 Q. I understand. I'm going to get to those.
2 Read the next paragraph, please.

3 A. MCC's ??

4 Q. That's Monsanto in the United States;
5 correct?

6 A. That's United States. "...can be
7 summarized in this fashion. We know that Aroclors are
8 toxic, but the actual limit has not been precisely
9 defined."

10 Q. I'm sorry.

11 A. You want to keep going?

12 Q. No. I want you to read that over because I
13 didn't catch it. Read that last sentence over again,
14 please.

15 A. "We know that Aroclors are toxic, but the
16 actual limit has not been precisely defined."

17 Q. Go ahead.

18 A. So what?

19 Q. Go ahead. Continue, please.

20 A. "It does not make too much difference, it
21 seems to me, because our main worry is what will happen
22 if an individual develops any type of liver disease that
23 gives a history of Aroclor exposure. I am sure the
24 juries would not pay a great deal of attention to
25 MAC's."

1 Q. Correct me if I'm wrong, Dr. Kelly, but
2 aren't you saying in that paragraph that it really
3 doesn't matter what the MAC's are because the juries
4 aren't going to pay attention to that either?

5 A. No, I'm not saying that.

6 Q. What ?? Tell me what you are saying.

7 A. I'm saying that we know the Aroclors are
8 toxic. We have a safe limit, and that was talked about
9 in the memorandum that preceded this, I believe. You
10 were handing me this particular memorandum by itself,
11 and if you notice in the correspondence, he wanted to
12 find out what the actual toxic level was, what it took
13 to kill the animals. Well, I said we were more
14 interested in finding out what the safe level is for the
15 animals so we could direct our efforts towards that
16 particular concentration, and I'm also saying that if we
17 had a person develop liver disease who was exposed to
18 Aroclor ?? Well, I'm getting out of my realm when I talk
19 about juries. I'm sure the jurors would not pay a great
20 deal of attention to MAC's because people would say,
21 "How do you know that the MAC was the same?" You take
22 it every day of the week.

23 Q. I'm sorry, Dr. Kelly. You and I must be
24 reading this differently.

25 A. Well, I'm reading what it says.

1 Q. Was this memo from Mr. Barrett in Europe
2 concerned that the Treon studies never found a no?effect
3 level for 1254?

4 MS. RUTTER: Objection as to relevance
5 (inaudible).

6 THE COURT: Overruled.

7 A. What was the objection?

8 Q. You don't have to worry about the
9 objection. It was overruled. I'm asking you a
10 question.

11 A. Okay. Fine. What's the question?

12 Q. The question is wasn't Mr. Barrett
13 expressing his concern that the Treon studies never
14 found a no?effect level for exposure to 1254?

15 A. Whether he did or not, he was wrong.

16 Q. You're saying that the Treon study did find
17 a no?effect level?

18 A. For 1254?

19 Q. Yes, sir.

20 A. Yes, sir.

21 Q. Dr. Treon ran two studies on 1254, right,
22 one of them being at a high level for a short period of
23 time and one of them being at a low level for a longer
24 period of time; correct?

25 A. Well, I'd have to see that report.

1 Q. There you go.

2 A. What Treon found in 1254, that when you
3 used (1.5) milligram per cubic meter, you didn't show
4 any harmful effects, except in the case of Guinea pigs,
5 or of mortality, but histopathology, that's a
6 microscopic study, showed evidence of apparently
7 reversible hepatic cellular injury in the animals.
8 These findings cannot certainly be attributed to the
9 effects of Aroclor 1254 because of the appreciable
10 incidence of pneumonia among both experimental and
11 control animals. When these nonspecific toxic changes
12 in the viscera of the animals were associated with
13 pneumonia, they are readily explained, therefore. They
14 are also found in the animals that are exposed to vapors
15 1254 and were free of pneumonia. That these may have
16 represented toxic effects of exposure to Aroclor 1254
17 finds support in the fact the livers of the exposed rats
18 had 5.4 milligrams per cubic meter, were significantly
19 heavier in relation to the control rats.

20 Q. Isn't it true, doctor, that at the level of
21 1.5 milligrams per cubic meter he was finding liver
22 problems?

23 A. Well, he was finding a reversible type of
24 liver ?? microscopic findings. Which the liver is an
25 organ that is regenerating itself all the time. If a

1 person would take a considerable amount of alcohol,
2 would get some liver problems, that would show up in
3 cellular changes. At the same time, these changes would
4 be healing. They would be reversible when you stopped
5 taking the alcohol. And I think that's what he's
6 explaining here.

7 Q. Is that liver problems?

8 A. Well, I guess you could consider it a liver
9 problem.

10 Q. He considered it liver problems; didn't he?

11 A. Beg your pardon?

12 Q. He considered to it be liver problems;
13 didn't he?

14 A. Well, I don't know whether he did or not
15 because ??

16 Q. The fact is, Dr. Kelly ??

17 MS. RUTTER: Objection. The witness is in
18 the middle of a sentence.

19 Q. I apologize. Go ahead.

20 THE COURT: Dr. Kelly, have you finished
21 your answer yet?

22 THE WITNESS: No, sir.

23 THE COURT: Why don't you finish your
24 answer?

25 A. Because he stated that 1.5 and one was

1 safe.

2 Q. Where does he say that in there?

3 A. He didn't say it in this, but he said it ??
4 Gosh, I don't know where he said it, but the information
5 that he gave to the government industrial hygiene group
6 accepted that particular statement, and then they halved
7 it to .5.

8 Q. Is there anything in that article that says
9 1.5 milligrams per cubic meter is a safe level?

10 A. No. He doesn't ??

11 Q. And, in fact, it's not a no-effect level
12 either; is it?

13 A. Well, he really doesn't say yes or no on
14 that.

15 Q. Doctor, you don't need him to say yes or
16 no; do you? You can see there were effects at 1.5
17 milligrams; can't you?

18 A. There were reversible changes that were
19 (accompanied) by pneumonia in the animals. Some of the
20 animals did have changes without the pneumonia. But,
21 regardless, he still suggested that the threshold limit
22 of one milligram per cubic meter recommended tentatively
23 for safe industrial practice by the American Conference
24 of Governmental Industrial Hygienists is reasonable.
25 That's what we went on.

1 THE COURT: Doctor, I've given you a great
2 deal of latitude to try to answer as fully as you can,
3 and in order to move this along I'm going to ask that
4 you be as precise and as concise as you possibly can
5 when answering the questions. So if you could answer
6 the question as precisely and concisely as you can, I
7 would certainly appreciate that.

8 THE WITNESS: I'll try to do that, Your
9 Honor.

10 THE COURT: Okay, counsel. Let's go.

11 Q. Dr. Kelly, in establishing TLV, isn't it
12 true that you first have to establish a no-effect level?

13 A. I do not know that.

14 Q. All right.

15 A. A person establishes a TLV on two ?? on two
16 supports: one is the animal work and the other is the
17 human experience.

18 Q. If you have animal work showing that there
19 is liver damage, reversible or otherwise, at 1.5
20 milligrams per cubic meter, that's got to tell you that
21 that's not a safe level; doesn't it?

22 A. Well, you'd have to ask the people who
23 established the safe levels. That's the government
24 industrial hygienists, and they considered that a safe
25 level.

1 Q. Doesn't Mr. Barrett in his September 8th,
2 1950 letter indicate that because a safety factor of ten
3 has to be used Aroclor 1254 should not be used where
4 atmospheres containing a quantity something less than
5 .15 milligrams results? Isn't that what he said right
6 here in the third paragraph of the first page?

7 A. Yes.

8 THE WITNESS: Your Honor, could I explain
9 what this government industrial hygiene group is?

10 THE COURT: Just answer the questions
11 (inaudible).

12 Q. I understand, and we'll get to that,
13 Dr. Kelly. Please understand I'm not trying to take
14 anything out of context. But the fact is that
15 Mr. Barrett, who is a man over there in Monsanto in
16 England; right?

17 A. Yes. Not associated the medical department
18 and not associated with toxicology. He's a research
19 man.

20 Q. He says that the normal procedure is to
21 find the no-effect level and then take a safety factor
22 of ten?

23 A. It may be in England, but it was not in the
24 United States.

25 Q. And what he's saying in here, because of

1 the fact that there were effects at 1.5 milligrams, you
2 need to do further testing to get to find out what the
3 no?effect level is? Isn't that what he's saying in this
4 letter?

5 A. He is saying that ?? He says two things in
6 there. One, he said there was some toxicity, toxicity
7 was demonstrated with a range of animals at a level 1.5
8 milligrams per cubic meter. He does not say when he
9 talks about ?? He doesn't say, "We need more testing."
10 He said, "We are giving consideration to getting more
11 toxicological data."

12 Q. How do you get more toxicological data if
13 you don't do tests?

14 A. Sure, that's true, but we've got Barrett on
15 one side, we've got the A.C.G.I.H. on the other. The
16 A.C.G.I.H. is certainly a more knowledgeable body than
17 Barrett is. If I were to vote for one, I would take
18 A.C.G.I.H.

19 Q. Just so the jury will understand,
20 Dr. Kelly, you're not implying the A.C.G.I.H. was
21 involved in this debate; are you?

22 A. That what?

23 Q. That the A.C.G.I.H. was involved in this
24 debate?

25 A. I don't think it ever reached the point of

1 a debate.

2 Q. The fact is, what happened, you sent them
3 the Treon studies and they cut the limits even further;
4 didn't they?

5 A. They what?

6 Q. They cut the limits from one milligram to
7 .5 milligrams; didn't they?

8 A. Yes, sir.

9 Q. They didn't believe 1.5 milligrams was a
10 safe level either; did they?

11 A. They believed that .5 was.

12 Q. How much did it cost, Dr. Kelly, to run
13 LD?50's in 1954? And I direct your attention to
14 Plaintiff's Exhibit ?? I can't read the number, judge.
15 We're trying to find the number. 86.

16 THE COURT: Counsel, I believe you're
17 looking for Plaintiff's Exhibit 86.

18 MR. MURRAY: Yes, sir. Here it is.

19 Q. I direct your attention to Plaintiff's
20 Exhibit 86. Do you recognize that document?

21 A. What was your question?

22 Q. My original question had to do with the
23 costs of LD?50's in 1954.

24 A. Probably around \$100.

25 Q. And what was the cost of two?year chronic

1 toxicity testing in 1954?

2 A. Probably 30,000, \$40,000.

3 Q. You were in charge of labeling at Monsanto;
4 were you not, Dr. Kelly?

5 A. No, I was not.

6 Q. All right. Let me ??

7 A. I was in charge ??

8 Q. Let me phrase it correctly. You were in
9 charge of determining the toxicity data that goes onto
10 Monsanto's labels; correct?

11 A. That's correct.

12 Q. And you were also in charge of the toxicity
13 data that went into the bulletins and pamphlets and
14 things of that nature which went out to customers?

15 A. Yes, sir.

16 Q. You were pretty consistent in your language
17 in all of those documents; weren't you?

18 A. Yes, sir. I hope so.

19 Q. All right. Tell the jury what you told
20 people about skin contact.

21 A. Avoid prolonged or repeated skin contact.

22 Q. And what did you tell them about inhalation
23 of vapors?

24 A. Do not inhale the fumes at elevated
25 temperatures or in confined spaces.

1 Q. What does prolonged and repeated mean?

2 A. Well, there are no precise limits to
3 prolonged.

4 Q. You said at one point in this case that it
5 meant more than once; didn't you?

6 A. I could not hear you.

7 Q. You said in one of your depositions in this
8 case that it meant more than once; didn't it?

9 A. Not prolonged. That was repeated.

10 Q. Well, don't your labels say prolonged and
11 repeated?

12 A. Beg your pardon?

13 Q. Don't your warnings say prolonged and
14 repeated?

15 A. Yes, sir. But you said did I mean by
16 prolonged more than once, and I said no. In my
17 deposition I said repeated means more than once.

18 Q. So they shouldn't have skin contact more
19 than once. What does the prolonged mean? For how long
20 a period of time are they allowed to have skin contact
21 that one time?

22 A. That was not established.

23 Q. And that's what you were intending to tell
24 your customers by the toxicity data that you sent to
25 them, "Don't allow skin contact more than once, but

1 we're not sure for how long a period of time"?

2 A. No, that isn't what I meant at all.

3 Q. Tell me what you meant.

4 A. That the average worker knows when he has
5 repeated skin contact. I think the average worker knows
6 what prolonged is, and he isn't supposed to put his
7 hands in it and leave it in there for a half a day.

8 Q. So you were leaving it up to the average
9 worker to determine the length of time that they should
10 have their hands in the stuff?

11 A. Well, I think the average worker certainly
12 has the intelligence to carry out avoiding skin contact,
13 A, either repeated or prolonged, and that warning was
14 quite effective because we did not have problems.

15 Q. That you were aware of?

16 A. That anybody was aware of as far as I know.

17 Q. Are PCBs biodegradable?

18 A. Is PCB biodegradable?

19 Q. Yes (nodded).

20 A. It is in a fashion. It's ?? In recent
21 years, it has been found that it can be broken down by
22 certain organisms. Previously it was believed not to be
23 biodegradable.

24 Q. Fact is, during all the time that Monsanto
25 was manufacturing PCBs during your tenure there from

1 1938 until 1974, you were under ?? you were presuming
2 that they were nonbiodegradable; were you not?

3 A. I was what?

4 Q. You presumed they were nonbiodegradable?

5 A. Yes, sir, I did, but ??

6 Q. And you knew, did you not, doctor, that
7 they were being discharged into bodies of water, rivers,
8 lakes, things of that nature?

9 MS. RUTTER: I would object on grounds ??

10 THE COURT: Sustained.

11 MR. MURRAY: Can we approach the bench,
12 Your Honor?

13 THE COURT: Yes, you may.

14 (Bench conference.)

15 Q. You mentioned earlier in your testimony,
16 Dr. Kelly ??

17 A. Beg your pardon. I cannot hear your
18 question.

19 Q. I'm getting to it. You mentioned earlier
20 in your testimony that you believed the levels
21 established by Treon for the MAC's or TLV's were safe
22 levels; correct?

23 A. Yes.

24 Q. That opinion didn't change despite the fact
25 Meigs found exposures at .1 milligrams?

1 A. No, sir, because I equated Meigs's
2 findings with the experience (inaudible) enormously more
3 usage who were working at the 5.5 and had no problems.

4 Q. And it didn't change despite the Navy test
5 that you were told about?

6 A. First of all, no, because the Navy test was
7 a test of less than 25 percent PCBs and the rest was
8 something else.

9 Q. Would you admit, Dr. Kelly, that at least
10 you were getting some conflicting readings here?

11 A. No, sir. I don't think they were
12 conflicting.

13 Q. So I guess you didn't ever recommend that
14 we retest this thing to determine what the no?effect
15 level was?

16 A. We had tested it to find out a no?effect
17 level.

18 Q. When was that?

19 A. The Treon study showed a no?effect level.

20 Q. Of what?

21 A. For PCBs.

22 Q. Of what?

23 A. Of 1254, 1242.

24 Q. We're not back at the 1.5 milligrams; are
25 we?

1 A. No, but it was ?? They used that ?? The
2 government group used Treon's work in association with
3 the clinical experience with hundreds of millions of
4 pounds.

5 Q. I hear you, Dr. Kelly, but you're not
6 answering my question. My question was you never had
7 any tests that showed a no?effect level; did you?

8 A. Of what?

9 Q. Of PCBs, 1254.

10 A. Frankly, I'm not sure.

11 Q. Was there anything besides Treon? Let's
12 don't rehash Treon. Was there anything else that showed
13 any kind of no?effect level?

14 A. At what particular period of time?

15 Q. I'm talking in the '50's, '57 when you
16 found out from the Navy about their test, when all of
17 this was occurring.

18 A. Well, the Navy test was not ??

19 Q. It's a simple question, doctor. I don't
20 mean to cut you off, and I'll allow you to explain any
21 answer you give, but I'd just like an answer to the
22 question.

23 A. What is the question?

24 Q. The question was did you ever have any
25 tests which showed a no?effect level in the '50's or

1 before?

2 A. I can't recall that.

3 Q. Did you ever recommend that Monsanto run
4 liver function tests on a periodic basis on their
5 employees?

6 A. No, sir, I did not.

7 Q. Did you ever recommend to A.C.G.I.H., the
8 American Council of Governmental Industrial Hygienists,
9 who set these standards, that they needed to reconsider
10 their MAC's because they might be too high?

11 A. I did not because I did not believe it was
12 too high.

13 Q. Did you ever warn any customers that the
14 MAC's that had been established by the A.C.G.I.H. might
15 be too high and we might need to reconsider them?

16 A. No, sir. I saw no reason for it because it
17 wasn't.

18 Q. Did you ever recommend that Monsanto run
19 some two-year chronicity studies to determine whether or
20 not this stuff might be causing long-term effects in the
21 workers?

22 A. No, sir, because ??

23 Q. Did you ever recommend that Monsanto ??

24 MS. RUTTER: Objection. You cut him off in
25 mid sentence.

1 THE COURT: I think he answered the
2 question. If you want him to explain it, counsel, have
3 him to explain it on cross?examination. Let's continue.

4 Q. Did you ever recommend that Monsanto or any
5 of its customers run any epidemiological studies on
6 humans to determine if this stuff might be affecting
7 them?

8 A. No, sir.

9 Q. Did you ever rewrite any of your warnings
10 to customers telling them that despite what the MAC's
11 that you've been telling them were they might be wrong
12 and that they might need to be reconsidered?

13 A. No, because I did not believe that they
14 were wrong.

15 Q. Dr. Kelly, did you ever consider the fact
16 that because you were dealing with human life that you
17 might need to err on the safe side rather than the high
18 side?

19 MS. RUTTER: Objection, argumentative.

20 THE COURT: Be overruled.

21 A. Do I answer?

22 Q. Yes, sir.

23 A. Certainly I considered that. And I also,
24 however, had the experience of our own workers and the
25 experience of the customers' workers, and with the

1 exception of a handful of isolated reports, there were
2 no evidences of illness in the workers, and that is not
3 only my opinion, that's the opinion of Kimbrough,
4 Dr. Kimbrough, of the Public Health ??

5 Q. Doctor, let's not get into other people's
6 opinions. I'm going to have enough trouble with yours.

7 A. I can't hear you.

8 Q. Is it true that everytime there was a
9 question as to whether to use a higher TLV or a lower
10 TLV that Monsanto chose and argued for the higher TLV?

11 A. Yes, because they were right.

12 MR. MURRAY: Thank you. That's all I have.

13 THE COURT: Miss Rutter, you may proceed.

14 CROSS?EXAMINATION

15 QUESTIONS BY MS. RUTTER:

16 Q. Dr. Kelly, what is the A.C.G.I.H.?

17 A. Beg your pardon?

18 Q. What is the A.C.G.I.H.?

19 A. The A.C.G.I.H. is a group of industrial
20 hygienists that work for either the federal, the state
21 or the city industrial hygiene departments, along with
22 people from universities and academic institutions. No
23 industrial ?? No company or industrial hygienists are
24 allowed to belong.

25 Q. When was the A.C.G.I.H. set up in the

1 United States?

2 A. In 1938 or '39.

3 Q. What was the purpose of the A.C.G.I.H.?

4 A. To establish safe working levels for
5 industry.

6 Q. Now, in the 1950's, in relation to this
7 correspondence between Mr. Barrett and Mr. Hardy at
8 Monsanto London, did England have a comparable group to
9 the A.C.G.I.H.?

10 A. It is my impression they did not.

11 Q. In what journal was the Meigs article
12 published in 1954?

13 A. "Journal of the American Medical
14 Association".

15 Q. Sometimes known as JAMA?

16 A. JAMA.

17 Q. Is that a peer-reviewed journal?

18 A. Yes.

19 Q. Is that a journal that is readily available
20 in medical libraries throughout the United States?

21 A. Oh, yes. Almost every physician got one.

22 Q. Is that a journal that is typically read by
23 industrial hygienists?

24 A. I can't answer that.

25 Q. When you talked to the United States Navy,

1 who were considering using Pydraul 150 in submarines in
2 1957, and you talked about the testing that they had
3 done for which no reports were available ??

4 MR. MURRAY: I object to the form of the
5 question, Your Honor. He never testified there were no
6 reports available. He only testified that he didn't get
7 them.

8 THE COURT: All right. Ladies and
9 gentlemen of the jury will remember the testimony.
10 Let's proceed. This is cross?examination.

11 Q. Did the Navy test pure PCBs in 1957,
12 Dr. Kelly?

13 A. Not to my knowledge. Pure PCB'S?

14 Q. Yes.

15 A. No, not to my knowledge.

16 Q. Dr. Kelly, you talked about the difference
17 between chlorinated diphenyl and chlorinated
18 diphenylbenzene.

19 A. There were some mix?ups in the Drinker
20 work.

21 Q. What is chlorinated diphenyl?

22 A. Chlorinated diphenyl is you take two phenyl
23 ?? phenol radicals and hook them together, two phenyl
24 radicals and chlorinate them. That's chlorinated
25 diphenyl. Chlorinated ?? Then they've got a bunch of

1 hydrocarbons, chlorines on the outside of these
2 molecules. Chlorinated diphenylbenzene has a third
3 benzene molecule on it, so you've got one here, one here
4 and one over here. So it's a different ?? completely
5 different structure.

6 Q. Is chlorinated diphenyl a PCB?

7 A. Yes.

8 Q. And is chlorinated diphenylbenzene a PCB?

9 A. No, because it's not diphenyl. It's got
10 three phenyl rings.

11 Q. So ??

12 A. It's not a PCB.

13 Q. And so the Halowax product that was
14 manufactured by a company other than Monsanto contained
15 chlorinated naphthalene and what?

16 A. I can't hear you, Carol.

17 Q. Halowax contained chlorinated naphthalene
18 and sometimes another product. What was that other
19 product?

20 A. Chlorinated diphenylbenzene.

21 Q. Dr. Kelly, I'm going to hand you
22 Plaintiff's Exhibit P?102. Dr. Kelly, there's been
23 discussion about deaths due to chlorinated naphthalenes
24 and related compounds. Could you please look at this
25 Greenberg article, Exhibit 102?

1 A. Yes. I have it.

2 Q. What is the date of the Greenberg article?

3 A. February 1939 to the best ?? as well as I
4 could see it.

5 Q. Could you please turn to page 31 of that
6 article? The number on the bottom is 097336.

7 A. Yes. I have it.

8 Q. And in the second column, about here on the
9 piece of paper, could you read to the jury the sentence
10 about the cause of three fatal deaths as reported?

11 A. "In 1938, three fatal cases of jaundice in
12 chlorinated naphthalene workers were recognized in this
13 country."

14 THE COURT: Is that '38 or '36, counsel?

15 MS. RUTTER: '36.

16 A. They were reported by Flinn and Drinker,
17 who summarized the cases briefly.

18 Q. Could you now please turn to page 32 of the
19 Greenberg article, Dr. Kelly?

20 A. Yes.

21 Q. On page 32, can you find this place right
22 here where ?? Do they report three additional worker
23 deaths?

24 A. Yes.

25 Q. In wire and cable plants in addition to

1 those reported by Flinn and Drinker?

2 A. Yes.

3 Q. I'd like to go through with the jury the
4 cause of these three additional deaths that are reported
5 in the Greenberg article. Case one, the fourth
6 additional death, is discussed on page 32, the same page
7 that we're on in the second column. Could you please
8 find the portion in the second column where it says, "In
9 any event, in the soldering of the condensers, she,"
10 meaning case number one, "was exposed to the fumes of
11 tetrachloronaphthalene with which the condensers were
12 originally impregnated. At the same time she was
13 exposed to fumes of the higher chlorinated naphthalenes
14 from the sealing operations conducted in close proximity
15 to the tables at which the soldering was done."

16 A. Yes, you read that correctly.

17 Q. So this fourth case in the Greenberg
18 article is attributed to chlorinated naphthalene; is
19 that correct?

20 A. That's true.

21 Q. Let's turn to page 35 of the Greenberg
22 article. It reports case number two in Greenberg, which
23 is the fifth worker death reported in the cable and wire
24 industry. Do you see on page 35 where it begins the
25 discussion of case number two?

1 A. Yes, I do.

2 Q. That's the fifth death in the cable and
3 wire industry?

4 A. Yes.

5 Q. It says he had worked in a wire factory
6 coating wire with wax, and then it has a footnote; does
7 it not?

8 A. "The waxes employed in this process are the
9 a higher chlorinated naphthalenes. These are used in a
10 molten bath ?? molten state in a bath through which the
11 wire to be is passed. The process is partially but not
12 entirely enclosed. Exhaust ventilation is in use."

13 Q. So this article is saying that the second
14 case reported in Greenberg and the fifth worker death
15 was caused by working with the higher chlorinated
16 naphthalenes; is that correct?

17 A. Yes. Yes, it is.

18 Q. And then let's turn to page 36, the next
19 page of the Greenberg article, where it discusses case
20 three, the worker death in the wire and cable factory,
21 actually worker death six since they were talking about
22 the deaths previously reported by Drinker and Flinn.
23 And about case three it says, "He was working in the
24 same wire coating plant as the previous patient."

25 A. That's correct.

1 Q. And that's the patient who was working with
2 the higher chlorinated naphthalenes; is that correct?

3 A. That's correct.

4 Q. Dr. Kelly, while you were Monsanto's
5 medical director, did you read the published articles in
6 the literature that discussed chlorinated naphthalene?

7 A. I read some of the recent ones. When I say
8 "recent," recent to following 1938. Chlorinated
9 naphthalene literature went back to the 1900's.

10 Q. Was there any confusion in the literature
11 about chlorinated naphthalenes and chlorinated diphenyls
12 or PCBs?

13 A. Yes. Quite a bit.

14 Q. And what was the source of that confusion?

15 A. It was the Halowax people who stated that
16 they sent Drinker a sample of Monsanto chlorinated
17 diphenyl. Unfortunately, they didn't, because when we
18 had Drinker recheck ?? retest the material, we sent him
19 some honest-to-goodness chlorinated diphenyl and some
20 honest-to-goodness chlorinated diphenylbenzene and he
21 found that the chlorinated diphenyl by itself was
22 considerably, by one magnitude, less toxic than what he
23 had reported.

24 Q. So there was confusion created in the
25 literature about the similarity of the two chemical

1 names, chlorinated diphenyl and chlorinated
2 diphenylbenzene, when, in fact, they were two entirely
3 different products?

4 A. That's correct.

5 Q. And so none of these six deaths reported by
6 Dr. Drinker and Dr. Flinn and discussed in this
7 Greenberg article were caused by PCBs; is that correct?

8 A. That's what they say, yes.

9 Q. Dr. Kelly, will you be 85 years old in
10 November?

11 A. Yes, I will.

12 Q. You live in the city of St. Louis on South
13 Skinker?

14 A. That's correct.

15 Q. How long have you lived in St. Louis?

16 A. All my life with the exception of four
17 years in the service.

18 Q. For what period of time were you in the
19 service?

20 A. Four years roughly.

21 Q. You were in the Army Medical Corps?

22 A. Yes.

23 Q. You received an honorable discharge as a
24 lieutenant colonel?

25 A. Yes.

1 Q. You never worked for Swann Chemical
2 Company; did you?

3 A. No.

4 Q. Now, for the first couple of years with
5 Monsanto, you were the plant doctor for the Queeny Plant
6 here in the city of St. Louis?

7 A. Correct.

8 Q. And you effectively served as Monsanto's
9 medical director from about January of 1938 until you
10 went off to serve in the war in 1942, although you
11 didn't have the title yet; is that correct?

12 A. I was sort of a medical director without
13 portfolio, in other words.

14 Q. By "without portfolio," you mean without
15 the title?

16 A. Yes, that's correct.

17 Q. Management asked you to assume certain
18 responsibilities, but you just didn't have the title
19 yet?

20 A. Correct.

21 Q. Then you came back from the war and you set
22 up a full-blown medical department with you as the
23 director in 1946?

24 A. Yes. It was an evolutionary thing. I
25 didn't set it up the day I came back or anything like

1 that. It took a couple of years to get it growing.

2 Q. Are you board certified in any specialties,
3 Dr. Kelly?

4 A. Yes. In internal medicine and occupational
5 medicine.

6 Q. And you did your internship and your
7 residency here in St. Louis?

8 A. That's correct?

9 Q. What is internal medicine?

10 A. Internal medicine is that part of medicine
11 that treats illnesses of a nonsurgical nature, such as
12 heart disease, tuberculosis, diabetes, et cetera.

13 Q. So an internist would diagnose a heart
14 problem but not operate on it?

15 A. That's correct.

16 Q. Okay. What is occupational medicine?

17 A. It's that medicine that relates to the
18 interface of a worker with his environment. It's both
19 preventive and therapeutic. In other words, if a man
20 breaks an arm (inaudible). In the sense of doing
21 occupational medicine, the doctor that examines the
22 individual to see whether or not he's in a healthy
23 situation or is he having residue from exposure to
24 chemicals is also doing occupational medicine. The big
25 part of occupational medicine is preventive. You try to

1 keep those things from happening.

2 Q. Dr. Kelly, in earlier portions of your
3 career you have been on the staff of the St. Louis
4 University Group of Hospitals here in St. Louis,
5 including St. John's Mercy Medical Center; is that
6 correct?

7 A. Yes. Well, I'm still on, but I'm an
8 emeritus, which is sort of a retread.

9 Q. Okay. And you've been an assistant
10 clinical professor of internal medicine and assistant
11 professor of community medicine at St. Louis University?

12 A. Yes.

13 Q. And you've published articles in the
14 medical literature?

15 A. Yes.

16 Q. Dr. Kelly, could you briefly describe for
17 the jury, please, the development of the staffing of
18 Monsanto's medical department during the course of your
19 employment?

20 A. Yes. When I started with Monsanto, it was
21 myself and a secretary, and after a short time I went
22 around to all the plants and saw what was going on and I
23 realized I needed an industrial hygienist. Well, there
24 were very few industrial hygienists back in 1937. We
25 did get one, Elmer Wheeler, and his job was to analyze

1 the work environment to see whether or not the lighting
2 was correct, whether there was noise exposures, whether
3 or not there was fume exposures, whether there were skin
4 exposures. That was his job. He went around to the
5 various plants to do that.

6 Q. About when did you hire Mr. Wheeler?

7 A. I think about '37 to '38. I'm not sure.
8 It was around then.

9 Q. And you had other industrial hygienists in
10 Monsanto?

11 A. By the time I left I had four.

12 Q. By the time you left in 1974, you had four?

13 A. We had four industrial hygienists. But
14 then we ?? When we were doing the toxicological work, I
15 was supervising that, but then it just got ?? the
16 company started growing, and we just needed more help in
17 the toxicological field, so we engaged a man from one of
18 the pharmaceutical companies, a Ph.D., Dr. Hunt, who was
19 our first toxicologist. When I left, we had I think
20 four toxicologists also.

21 Q. And commencing in about 1956, you had an
22 assistant medical director?

23 A. Yes.

24 Q. Dr. Johnson?

25 A. Yes. Johnson came in. During the period

1 before that, I had a professor at Washington U that came
2 in three afternoons a week as an associate medical
3 director. It was a Dr. John Saunders, who eventually
4 went on to be medical director of Mobil Oil. And we had
5 a Dr. Mesera, who was on the staff of St. Mary's,
6 M?E?S?E?R?A, who was with us until he died as a
7 part-time. He looked after the clinical aspects pretty
8 much of the medical department.

9 THE COURT: Doctor, you have to keep your
10 voice up a little bit. You're starting to kind of
11 (inaudible) a little bit.

12 THE WITNESS: Thank you, Your Honor.

13 Q. Dr. Kelly, how many chemical companies in
14 the 1950's and 1960's had their own in-house
15 laboratories for conducting toxicological testing?

16 A. Very few. DuPont had one.

17 Q. That's the Haskell Lab?

18 A. The Haskell Laboratories. Union Carbide
19 used Mellon Institute, which was in Pittsburgh. Whether
20 that would be considered a in-house or not, I don't
21 believe so because they did work for other people.

22 Q. So you're saying Union Carbide used a tox
23 lab known as Mellon, but you're not sure ??

24 A. Yes.

25 Q. ?? whether that was affiliated with Union

1 Carbide in some way?

2 A. That's right. Dow had their own. I could
3 tell you ones that didn't have it outside of Monsanto.

4 Q. Please do.

5 A. Olin didn't have one. American Cyanamide
6 did not have it. Baker did not have one. National ??
7 NALCO or something like that. I'm sorry. My voice is
8 wearing out.

9 Q. Do you need a glass of water?

10 A. No. I have it there. That was a rarity in
11 those days for a company to have their in-house
12 laboratory.

13 Q. Why did Monsanto not have an in-house
14 laboratory during the time that you were medical
15 director?

16 A. Well, to have a laboratory, you've got to
17 have it staffed with all sorts of people. You have to
18 have a physiologist, a pharmacologist, a biochemist, a
19 pathologist, probably a couple of other people which
20 don't come to mind right now. But you have to have
21 enough products coming through to keep these people
22 busy. And that's what we found. We found we did not
23 have enough products to keep a toxicological laboratory
24 going. We had cases where there were just pulmonary
25 problems. We had that done at Cyranac (phonetic)

1 Laboratory where they specialized in pulmonary problems.
2 We used the Kettering Laboratory at the University of
3 Cincinnati. We used Hazelton Laboratory in Washington,
4 D.C. All recognized laboratories that even people who
5 had their own laboratory used them. DuPont used
6 Bio?Test. That's one we used. DuPont used that. They
7 used Hazelton Laboratories. They used outside
8 laboratories also.

9 Q. Now, Dr. Drinker was with what institution?

10 A. Harvard University School of Public Health.

11 Q. What was his reputation in the community
12 when the Drinker studies were done back in the 1930's?

13 A. I think it was top drawer. In those days,
14 there weren't too many academic institutions. Harvard
15 was one. University of Cincinnati was one. I don't
16 think there were many others.

17 Q. And Drinker ?? Dr. Drinker did toxicity
18 testing on Aroclor 1268 for Monsanto and gave you a
19 report on that; did he not?

20 A. That's correct.

21 Q. With what laboratory was Dr. Treon
22 affiliated?

23 A. He was with the Kettering Laboratory, which
24 was named after the man who discovered tetra
25 (inaudible), and it was at the University of Cincinnati.

1 Q. What was Dr. Treon's reputation?

2 A. Very good. He was a Ph.D. that was
3 accepted as an excellent experimentalist.

4 Q. Dr. Kelly, have you ever known a Dr. von
5 Oettingen?

6 A. Yes, I did.

7 Q. Who was Dr. von Oettingen?

8 A. He was a man who had been in toxicology all
9 his life. I don't know if he was born in Germany or
10 not, but he was a pretty German individual. He worked
11 at the Haskell Laboratories. He was in charge of the
12 Haskell Laboratories. I don't know what he was before
13 that. I think he died sometime in the '40's, I believe.

14 Q. You and Dr. von Oettingen once attended
15 together a professional meeting or seminars where the
16 health effects of chlorinated naphthalenes and other
17 chlorinated hydrocarbons were discussed?

18 A. Yes.

19 Q. That was Dr. 's seminar at the Harvard
20 School of Public Health in 1937?

21 A. That's correct.

22 Q. Dr. Kelly, I'd like you, please, to look at
23 Exhibit M?380, which I believe should be the first
24 exhibit in your notebook.

25 A. M?380?

1 Q. Yes.

2 A. Yes.

3 Q. Could you please read the title of that
4 document to the jury?

5 A. "The Toxicity and Potential Dangers of
6 Inerteen, Submitted by W. F. von Oettingen, M.D., Ph.D.,
7 Director Haskell Laboratories."

8 Q. So this is the Dr. von Oettingen who
9 attended Dr. Cecil Drinker's symposium with you in 1937?

10 A. Yes.

11 Q. And he was the director of Haskell
12 Laboratory?

13 A. That's correct.

14 Q. And could you please read the file stamp
15 copy on this cover page of the von Oettingen report?

16 A. Which?

17 Q. The file stamp copy.

18 A. Oh, that says, "Westinghouse Electric and
19 Manufacturing Company, East Pittsburgh, Industrial
20 Hygiene Laboratory File Copy."

21 Q. And this von Oettingen report bears the
22 date 1938; is that correct? It's Exhibit M?380,
23 Mr. Murray. Dr. Kelly, I believe the date is on the
24 last ?? very last page of the report.

25 A. Yes. March 28, 1938.

1 Q. And according to the cover page of Exhibit
2 M?380, this was Westinghouse's file copy of the von
3 Oettingen report prepared in 1938; is that correct?

4 A. That's correct.

5 Q. Now, the title of the report is "The
6 Toxicity and Potential Dangers of Inerteen". What is
7 Inerteen?

8 A. Inerteen is a Westinghouse trade name for
9 their dielectric fluids.

10 Q. And dielectric fluids are used in
11 capacitors and transformers?

12 A. That's correct.

13 Q. Now, in these 1938 studies ?? And M?380 is
14 one of four studies, I believe. Dr. von Oettingen
15 performed oral, inhalation and skin absorption tests
16 using rats; correct?

17 A. Yes, sir. Yes, ma'am.

18 Q. And if you'll turn your attention to the
19 page in the von Oettingen report that's labeled 000105
20 ?? I think the actual page numbers are a little hard to
21 find. Dr. von Oettingen reports to Westinghouse his
22 conclusions about the potential toxicity of Inerteen if
23 there is skin contact; is that correct?

24 MR. MURRAY: Excuse me, Your Honor. I'm
25 going to object to the form of the question. May we

1 approach the bench?

2 THE COURT: Yes, you may.

3 (Bench conference.)

4 THE COURT: Miss Rutter, would you just
5 hold on for a minute? Duty calls. Ladies and
6 gentlemen, you can stand up and stretch your legs.
7 Doctor, if you want to stand up and stretch your legs
8 and put that heavy book down, it's fine with me.

9 Miss Rutter, you may proceed.

10 MS. RUTTER: Thank you, Your Honor.

11 Q. Dr. Kelly, could you please briefly turn
12 back to the cover page of the von Oettingen report?
13 M?380, the cover page.

14 A. Yes. I'm back.

15 Q. It says on here that this is Westinghouse
16 Electric and Manufacturing Co.'s industrial hygiene file
17 copy; is that correct?

18 A. Yes. It is.

19 MS. RUTTER: And I've asked the court to
20 take judicial notice of Exhibit M?397 whereby
21 Westinghouse Electric and Manufacturing Company changed
22 its name to Westinghouse Electric Corporation in 1945.

23 THE COURT: Any objections, Mr. Murray?

24 MR. MURRAY: No. None, Your Honor.

25 THE COURT: We'll take judicial notice of

1 the change.

2 Q. Now, Dr. Kelly, if you could please return
3 to page 000105 in the von Oettingen report. On that
4 page, Dr. von Oettingen states conclusions about the
5 potential toxicity of Inerteen if there is skin contact;
6 is that correct?

7 A. Yes.

8 Q. Specifically, he concludes, after
9 describing his animal experiments in detail, "It
10 appears, therefore, that the contact of Inerteen with
11 the skin does not only cause local reactions such as
12 dryness thickening and scaling of the skin, but also
13 systemic effects as indicated by the injurious effect on
14 the liver." Did I read that correctly?

15 A. Yes, you did.

16 Q. And that sentence about "skin contact
17 causes systemic effects as indicated by the injurious
18 effect on the liver" is underlined in the text of the
19 1938 von Oettingen report; is it not?

20 A. Yes, it is.

21 Q. In the first full paragraph on page 14, and
22 that's page number 000111 of Exhibit M2380, Dr. von
23 Oettingen states, "Continued application of Inerteen to
24 the skin of rats and humans causes dryness of the skin,
25 thickening and scaling; and the observations made in

1 rats indicate that sufficient quantities may be absorbed
2 through the skin to produce injurious effects on the
3 liver." Did I read that correctly?

4 A. I couldn't find it.

5 Q. I'm sorry. It's at the top of page 14.

6 A. I have it now, yes.

7 Q. Does it appear that I read that correctly?

8 A. Yes, it does.

9 Q. Did Dr. von Oettingen in this 1938 report
10 describe what he called a simple method for determining
11 the levels of Inerteen in the air at a Westinghouse
12 plant? And I would direct your attention to page 14
13 again where he talks about a simple method for the
14 determination of Inerteen vapors in the air. That's on
15 the last paragraph of the page.

16 A. Yes, I see it.

17 Q. I don't think we need do go into the
18 methods of the simple method, but it's set out here in
19 this report; is it not?

20 A. Yes. He said a simple method.

21 Q. And on page 15 of the report, it's Bates
22 stamp number 000112, Dr. von Oettingen has several
23 paragraphs about preventative measures; does he not?

24 A. Yes, he does.

25 Q. And those paragraphs state, "It appears to

1 be of paramount importance that the contamination of the
2 air be reduced to concentrations below 0.05 milligrams
3 per liter of air by adequate forced ventilation at the
4 site of the production of such vapors." Is that
5 correct?

6 A. Yes. But I think it should be ?? you
7 should mention the fact we're getting into the
8 difference between liter per air and cubic millimeters
9 ?? I mean, cubic meters. That would come up to .5.

10 Q. So it would be point ?? What would it
11 translate to?

12 A. Well, there are a thousand liters in a
13 cubic meter, so if he says you should have .05
14 milligrams in one liter, in a cubic liter you'd have a
15 thousand times that much. That would be safe. So he is
16 a little enthusiastic about the safety.

17 Q. And he said, "Greatest personal hygiene is
18 not less important." Is that correct?

19 A. That's correct.

20 Q. "Contamination of the skin should be
21 avoided by wearing proper protective garments, such as
22 gloves, caps and coveralls." Is that correct?

23 A. Yes.

24 Q. During the time you were Monsanto's medical
25 director, was Westinghouse knowledgeable about the

1 toxicity and safe handling precautions required for
2 Inerteen?

3 MR. MURRAY: I object to the question, Your
4 Honor.

5 THE COURT: Sustained.

6 Q. Dr. Kelly, did Westinghouse have a medical
7 director during the time period you were Monsanto's
8 medical director?

9 A. Yes.

10 Q. Who was that?

11 A. It started out T. Lyle Hazelet, who was
12 there when I went with Monsanto. He was very well
13 respected, and I was Johnny?Come?Lately in the business
14 at that time, and I don't know when he died. It was
15 probably sometime after World War II. They always had a
16 succession of medical directors. I forget ?? I don't
17 know their names, but they had an industrial hygiene
18 department that was very well accepted as well as a
19 medical department with doctors in all their individual
20 plants. It was a pretty well?staffed organization.

21 Q. Did you attend meetings and seminars with
22 Westinghouse medical directors from time to time?

23 A. Well, that wasn't the purpose. It wasn't
24 at the Westinghouse plants, but I would be at industrial
25 medical meetings and they would belong to it and I would

1 see them there.

2 Q. So at medical meetings?

3 A. That's correct.

4 Q. Okay. Dr. Kelly, who is Wilbur Speicher?

5 A. He had been an industrial hygienist for
6 some state in the Midwest. I don't know if it was Ohio
7 or Indiana. Then he went to work with Westinghouse. He
8 was a Ph.D. that was excellent, a good industrial
9 hygienist.

10 Q. You knew Mr. Speicher personally?

11 A. Yes, I did. I didn't know him quite as
12 well as Elmer Wheeler did, but I met him on a few
13 occasions. I think he was one of two industrial
14 hygienists at Westinghouse. A Dr. Barnes was the number
15 one person. I had met him a few times.

16 Q. That's Dr. E. C. Barnes?

17 A. That's correct.

18 Q. What was Dr. Barnes reputation as an
19 industrial hygienist?

20 A. Very, very well accepted.

21 Q. Now, Mr. Wheeler worked for you in
22 Monsanto's medical department for about 27 years; is
23 that correct?

24 A. Yes, he did.

25 Q. In your notebook, could you please identify

1 Exhibit M?9 for the record?

2 A. Which one?

3 Q. M?9. Could you please identify that
4 exhibit for the record, Dr. Kelly?

5 A. That's a letter from Elmer Wheeler to
6 Mr. Speicher, the administrator of industrial hygiene at
7 Westinghouse Electric, dated July 25th, 1956.

8 Q. And Dr. Kelly in this letter that Monsanto
9 sent to Westinghouse on July 25th, 1956, I'd like you to
10 follow along in the second paragraph. "I am sending
11 under separate cover two detailed reports published by
12 personnel at the Kettering Laboratories entitled 'The
13 Toxicity of the Vapors of Aroclors 1242 and 1254.'" Did
14 I read that correctly?

15 A. Yes, you did.

16 Q. And it continues, "The data contained
17 herein were condensed and presently by Dr. Treon at the
18 A.I.H.A. meeting in Philadelphia this year. It was
19 published in the form presented in the June 1956 issue
20 of the A.I.H.A. Quarterly, a copy of which I am sure you
21 must have. I am asking Dr. Treon by a copy of this
22 letter to send you a reprint of his publication if such
23 is available at the present time." Did I read that
24 correctly?

25 A. That's correct. Yes, it is.

1 Q. Dr. Kelly, could you please look at Exhibit
2 M?235 and identify that for the record?

3 A. If I can find it.

4 Q. I'm sorry. I tried to be organized. Can
5 you identify Exhibit M?235, please?

6 A. This is a reprint by Dr. Treon concerning
7 "The Toxicity of Vapors of Aroclor 1242 and Aroclor
8 1254," and it appeared in the "American Industrial
9 Hygiene Quarterly".

10 Q. Was the "Industrial Hygiene Quarterly" a
11 publication available in the public domain so
12 Westinghouse could obtain it even if Dr. Treon didn't
13 forward a copy as requested?

14 A. Yes. Yes, it was.

15 Q. You'll note that Mr. Wheeler mentions in
16 his letters that he is sure that Mr. Speicher of
17 Westinghouse already has a copy of this article in his
18 file?

19 A. Yes.

20 Q. Did Monsanto on its own also send these
21 Treon reports about the toxicity of Aroclor 1242 and
22 1254 to Westinghouse?

23 A. Yes. They sent copies of the original
24 report.

25 Q. And could you please look at Exhibits M?233

1 and M?234 and identify those for the record?

2 A. M?233 is entitled "The Toxicity of the
3 Vapor of Aroclors 1242 and 1254" by Treon, et cetera,
4 dated June 22nd, 1953 from the Kettering Laboratory, and
5 M?234 is "The Toxicity of the Vapor of Aroclor 1242 and
6 1254," dated June the 18th, 19 ?? I find it hard to make
7 out. It's '55 I believe also.

8 Q. And in Exhibit M?9, this July 25th, 1956
9 letter from Elmer Wheeler of Monsanto to Wilbur Speicher
10 of Westinghouse, Elmer Wheeler sent to Mr. Speicher of
11 Westinghouse these two reports that Dr. Treon gave to
12 Monsanto; is that correct?

13 A. That's correct.

14 Q. And Exhibit 235 is the published report
15 about these two articles of which Monsanto sent complete
16 copies to Westinghouse; is that correct?

17 A. That's correct.

18 Q. And, Dr. Kelly, I'm holding Exhibit 235 in
19 my hand.

20 A. Yes. That's correct.

21 Q. In Mr. Wheeler's July 25th, 1956 letter to
22 Mr. Speicher of Westinghouse, he points out that
23 Dr. Treon's article discusses the method and measuring
24 apparatus that can be used to make sure the air levels
25 of PCB 's in the workplace are safe. Is that correct?

1 A. That's correct.

2 Q. It's apparently called the Wilson
3 Hydrocarbon Apparatus.

4 A. Well, I won't know what that is, but that's
5 industrial hygiene talk.

6 Q. Okay. And there's some information in here
7 about how Elmer Wheeler of Monsanto has enclosed for
8 Mr. Speicher of Westinghouse a description of the
9 operating procedure prepared by one of our research
10 groups, which is somewhat more detailed than that
11 provided with the instrument. Do you see that on page
12 one of Exhibit M?9?

13 A. Yes, I do.

14 Q. So Monsanto sent some more detailed
15 operating instructions that they had worked up than the
16 manufacturer of the air testing apparatus. There was
17 also some information about safe handling of PCBs in
18 this letter; is that correct? If you'll turn to page
19 two, I think you'll see ??

20 A. Yes.

21 Q. ?? Mr. Wheeler tells Mr. Speicher, "We
22 recommend that repeated and prolonged skin contact with
23 any of the Aroclors be avoided." Is that correct?

24 A. That's correct. That's in there.

25 Q. And then the letter shows a CC to Dr. Treon

1 at the Kettering Laboratory because Mr. Wheeler of
2 Monsanto was asking Dr. Treon to forward a copy of this
3 M?235 to Mr. Speicher of Westinghouse in case
4 Mr. Speicher didn't already have it; is that correct?

5 A. That's correct.

6 Q. Let's turn to Exhibit M?14, please. Have
7 you found it?

8 A. I found it.

9 Q. This is another letter from Mr. Wheeler of
10 Monsanto, who worked for you at ?? who worked for you,
11 to Wilbur Speicher, the industrial hygienist at
12 Westinghouse; is that correct?

13 A. Yes, that's correct.

14 Q. And this letter is dated October 23rd,
15 1959?

16 A. Right.

17 Q. The first paragraph of the letter indicates
18 that Mr. Speicher had written to Mr. Wheeler inquiring
19 about the safe use of trichlorodiphenyl?

20 A. And a mixture of 40 percent
21 trichlorobenzene and 60 percent hexachlorodiphenyl,
22 right.

23 Q. What is trichlorodiphenyl?

24 A. Trichlorodiphenyl is a ?? It would be
25 roughly ?? He didn't ask for trichlorodiphenyl. He

1 asked for trichlorobenzene.

2 Q. If you'll look in the second sentence
3 there, it says, "Thank you for your letter of October
4 21st inquiring about the safe use of trichlorodiphenyl."

5 A. Yes. Well, that would be roughly Aroclor
6 1242.

7 Q. That's ?? Trichlorodiphenyl is Aroclor
8 1242; is that correct?

9 A. Yes. He said a mixture of 40 percent
10 trichlorobenzene, which went into Pydraul, plus 60
11 percent hexachlorodiphenyl, which is Aroclor 1260.

12 Q. Westinghouse used trichlorobenzene and 60
13 percent chlorinated PCBs in transformers; is that
14 correct?

15 A. I don't know the exact ratio, but they used
16 both of those products.

17 Q. They used a blend in the transformers?

18 A. That's correct.

19 Q. And they used a different Inerteen in the
20 capacitors; is that correct?

21 A. That's right. They used pure PCBs in the
22 capacitors.

23 Q. Down in the second paragraph of this
24 letter, Mr. Wheeler of Monsanto tells Mr. Speicher of
25 Westinghouse, "We market trichlorodiphenyl as Aroclor

1 1242." Is that correct?

2 A. That's correct.

3 Q. So trichlorodiphenyl is 1242?

4 A. Yes.

5 Q. And in the third paragraph on the first
6 page of Exhibit M?14, Mr. Wheeler of Monsanto tells
7 Mr. Speicher of Westinghouse that prolonged and repeated
8 skin contact with any of the Aroclors should be avoided;
9 is that correct?

10 A. It's the fourth paragraph, yes.

11 Q. And reading on in that letter which I've
12 blown up so the jury can see ?? Could you follow along
13 to make sure I'm reading this correctly. "I believe
14 prolonged and repeated skin contact with any of the
15 Aroclors should be avoided. . . It is possible that
16 prolonged or repeated skin contact could lead to
17 chloracne. I know of only two cases where such
18 experience has developed during the long history of
19 production and use of Aroclors." Then he goes on for a
20 discussion. "This indicates to me, however, that
21 sufficient exposure, whether by inhalation of vapors or
22 skin contact, can result in chloracne, which I think we
23 must assume could be an indication of more serious
24 systemic injury if the exposure was allowed to
25 continue." Have I read that correctly?

1 A. Correctly. You lost me someplace. Which
2 paragraph is that?

3 Q. Well, he goes on for a long discussion.

4 A. Yeah. What is the start of the paragraph?

5 Q. I'll show you up here.

6 A. That one?

7 Q. Yes. I realize it's an old letter so it's
8 a little hard to see. Why don't you just take a minute
9 to read it?

10 A. Yes. I believe you read it correctly.

11 Q. Okay. And then if you'll turn over to page
12 two of the letter down here, the conclusion, are you on
13 the second page of the letter?

14 A. Yes, I am.

15 Q. Do you see the part that starts out, "I
16 have been told that your company"?

17 A. No, I don't frankly.

18 Q. It's on the third page of the letter. I'm
19 sorry, Dr. Kelly. I misspoke.

20 A. I have been told, yes. All right.

21 Q. If you could follow along. "I have been
22 told that your company," Westinghouse, "has had some
23 20?25 years' experience with the products discussed
24 above... Mr. R. E. Marbury of your Bloomington, Indiana
25 plant has been associated the use of Aroclor 1242.

1 Perhaps you have already discussed potential exposures
2 with these gentlemen. If so, I would be interested in
3 learning of their practical experience with these
4 products. Sincerely, Elmer P. Wheeler."

5 A. You read it correctly, but you left out a
6 sentence where he said, "James Ford, Manager of
7 Transformer Manufacturing, would be a source of
8 information."

9 Q. Right. That's the sentence that goes right
10 in there, and because it dealt with transformers I left
11 it out on the board. So the letter also referred
12 Mr. Speicher to a Mr. Ford of Westinghouse, who had a
13 lot of experience in the use of PCB's in transformers;
14 is that correct?

15 A. That's correct.

16 Q. Dr. Kelly, could you please identify for
17 the record Exhibit M?18?

18 MR. CARNEY: Your Honor, they're going to a
19 different document. I notice it's a couple of minutes
20 to 6:00.

21 THE COURT: How long is it going to take
22 you to get through M?18?

23 MS. RUTTER: It might take me more than two
24 minutes.

25 THE COURT: Doctor, step down. You have to

1 come back tomorrow.

2 THE WITNESS: Yes. I expected it.

3 THE COURT: You may step down.

4 THE WITNESS: What time tomorrow?

5 THE COURT: Nine o'clock. Ladies and
6 gentlemen, we have gotten through another day. We're
7 going to adjourn at this time. Ladies and gentlemen,
8 justice requires that you not make up your mind about
9 the case until all of the evidence has been seen and
10 heard. You're not to discuss this case among
11 yourselves, nor are you to permit anybody to discuss the
12 case in your presence. Ladies and gentlemen, have a
13 good evening, and I'll see you tomorrow at at 9:00 a.m.

14 (Hearing was adjourned.)
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1 THE COURT: Morning, ladies and gentlemen.

2 In accordance with our discussions in chamber ?? Doctor,
3 would you just wait a moment for me, please? Why don't
4 you just ?? Thank you very much. In accordance with our
5 discussions in chambers, the Court will now at this time
6 seek the first alternate juror, juror number 230, Elaine
7 Wales. Ms. Wales, would you move to position number six
8 in the jury box? Thank you.

9 Ladies and gentlemen, today will be a test
10 of how efficient I can be. Today I have the
11 responsibility ?? Today and tomorrow I have the
12 responsibility of being the duty judge in the circuit
13 which means that throughout the day there will be
14 lawyers and police officers and all sorts of people
15 coming in here trying to see me, and I am the only judge
16 in the building, and so I have the responsibility of all
17 matters in the building, everything from search
18 warrants, arrest warrants to adult abuse type cases as
19 well as lawyers coming in with special matters.

20 So what I intend to do is, in order to
21 manage it a little better, is I will (inaudible) and see
22 who's in the courtroom and if there are lawyers in the
23 courtroom, I will probably break on the hour for about
24 ten minutes to handle the matters that I can handle very
25 quickly.

1 So depending on if there are lawyers in the
2 courtroom between now and ten, I will break at ten. If
3 there are lawyers in the courtroom between ten and 11, I
4 will break at 11 for about ten minutes. It should not
5 severely impact your morning break. However, instead of
6 giving you 20 minutes, I may only give you 15 depending
7 on how often we have to break in the morning. We will
8 do the same thing in the afternoon.

9 So I just want you to know that if we're
10 breaking, it's because there are other matters that are
11 unrelated to this case that I need to do. Mr. Kelly,
12 you may now come to the witness chair. I certainly hope
13 that's fresh water. Did you put that up there?

14 THE WITNESS: Beg your pardon?

15 THE COURT: Is that fresh water?

16 THE WITNESS: Yes, it is.

17 THE COURT: Okay. I don't want you to have
18 to deal with water from yesterday. Good morning,
19 Counsel.

20 MS. RUTTER: Good morning.

21 THE COURT: Ms. Rutter, you may proceed.

22 CONTINUED CROSS EXAMINATION

23 QUESTIONS BY MS. RUTTER:

24 Q. Thank you, Your Honor. Dr. Kelly, I'm
25 going to hand you this notebook again.

1 A. Thank you.

2 Q. We're going to be talking about Exhibit 18.

3 MR. MURRAY: What number is that?

4 Q. (By Ms. Rutter) 18. Dr. Kelly, Exhibit
5 M18 is a letter from Wilbur Speicher of Westinghouse to
6 Elmer Wheeler of Monsanto, and it's dated April 25th,
7 1962. Is that correct?

8 A. Yes, I have it in front of me.

9 Q. Yes. And the first paragraph of this
10 letter ?? I don't think we need to go into it in
11 detail ?? contains a long discussion about the
12 temperature at which local exhaust ventilation should be
13 provided. Is that correct?

14 A. Yes, it is.

15 Q. Now, Mr. Wheeler's previous letter had,
16 also M14 which we were discussing at the end of the day
17 yesterday, had been discussing the topic of temperatures
18 for local exhaust ventilation?

19 A. Yes.

20 Q. And in the first paragraph of
21 Mr. Speicher's ?? Excuse me. In the second paragraph of
22 Mr. Speicher's letter to Mr. Wheeler, Mr. Speicher of
23 Westinghouse asks some questions about using hand creams
24 to avoid contact with PCBs. Is that correct?

25 A. Wait till I find it.

1 Q. It's the second paragraph. It says,
2 "Normally."

3 A. Yes, that's correct.

4 Q. That paragraph says, "Normally we have
5 asked our people to prevent prolonged skin contact with
6 the Aroclors" ?? this is Mr. Speicher of Westinghouse
7 writing to Mr. Wheeler in 1962 ?? "and to use a good
8 grade of Neoprene coated gloves when necessary.
9 Recently the question with respect to a fairly desirable
10 hand cream was raised. I would like to know your
11 recommendation for one of the Fend creams." And then he
12 goes on to discuss a line of Fend creams. Is that
13 correct?

14 A. Yes, he does.

15 Q. And he says, "Since these liquid Aroclors
16 are of a oily nature, it is my opinion that Fend One or
17 Fend S would not be as desirable protection as Fend F.
18 I will greatly appreciate your comments." Is that
19 correct?

20 A. Yes, you have.

21 Q. Let's turn now to the reply that
22 Mr. Wheeler who worked for you at Monsanto sent to
23 Mr. Speicher at Westinghouse, and that's been marked as
24 Exhibit M19. Can you confirm, Dr. Kelly, that Exhibit
25 M19 is a letter from Elmer P. Wheeler, assistant

1 director, medical department of Monsanto to Mr. Wilbur
2 Speicher, administrator, industrial hygiene,
3 Westinghouse Electric Corporation, and it's dated April
4 30th, 1962?

5 A. Yes, I can confirm that.

6 Q. And in relation to the discussion that
7 Mr. Speicher had in the previous letter, M19, about
8 exhaust ventilation, Mr. Wheeler says, if you'll find
9 the fourth paragraph on the first page of the letter
10 that starts out, "The experience."

11 A. Yes.

12 Q. Do you see that? "The experience of your
13 company in handling the specific Aroclors that you use
14 should dictate where and at what temperatures local
15 exhaust ventilation should be provided. I can think of
16 no better experts than you and Ed Barnes as to what
17 control measures are necessary in your own plants."

18 A. Yes, that's what he says.

19 Q. Now, the very first line of Mr. Wheeler of
20 Monsanto's letter to Mr. Speicher of Westinghouse dated
21 April 30th, 1962, Mr. Wheeler says, "Dear Wilbur, thank
22 you for your letter of April 25th." Is that correct?

23 A. Yes, it is.

24 Q. Let's turn over to the second page of
25 Mr. Wheeler's letter to Mr. Speicher where he responds

1 to the question about the hand creams. Do you see where
2 he starts out saying the liquid Aroclors are good
3 solvents?

4 A. Yes, I do.

5 Q. Let me show this to the jury. Am I reading
6 correctly where I say, and this is on exhibit M19, Elmer
7 Wheeler of Monsanto to Wilbur Speicher of Westinghouse,
8 "The liquid Aroclors are good solvents for the normal
9 fats and oils of the skin. In our own operations we, at
10 Monsanto, we try to stress prevention of skin contact
11 rather than the use of creams. To answer your specific
12 question, however, it would appear to me that Fend F
13 would offer more protection than Fend I or Fend S."

14 A. Yes, that's correct.

15 Q. Have I read that correctly?

16 A. Yes.

17 Q. So Mr. Wheeler of Monsanto told
18 Mr. Speicher of Westinghouse in 1962 that at Monsanto we
19 try to stress prevention of skin contact. Is that
20 correct?

21 A. That's what it ?? Yes, they rarely use
22 creams.

23 Q. Let's turn to Exhibit M27. Do you have
24 that in your notebook, Dr. Kelly?

25 A. Yes, I do.

1 Q. M27 is a letter from Mr. Wilbur Speicher of
2 Westinghouse to Elmer Wheeler of Monsanto dated October
3 17th, 1967. Is that correct?

4 A. Yes, that's correct.

5 Q. And in this letter, Mr. Speicher says that
6 they're going to put a precautionary label on their
7 electric capacitors which are made at the Bloomington
8 plant. Is that correct?

9 A. Yes.

10 Q. And he's interested in receiving a sample
11 of the precautionary label that Mr. Speicher knows
12 Monsanto uses. Is that correct?

13 A. Yes, that's what he asks for.

14 Q. And then Exhibit M28, if you could turn to
15 that in your notebook.

16 A. Yes.

17 Q. That's a reply from Jack Garrett of
18 Monsanto. He worked with Wilbur ?? He worked with Elmer
19 Wheeler. Is that correct?

20 A. Yes. He reported to Elmer Wheeler.

21 Q. So Jack Garrett of Monsanto wrote back to
22 Wilbur Speicher of Westinghouse on November 1st, 1967
23 and said, "I am sending you a copy of our Inerteen label
24 which you requested in your letter of October 17th." Is
25 that correct?

1 A. Yes, it is.

2 Q. Dr. Kelly, could you please turn to Exhibit
3 M34 in your notebook?

4 A. Yes, I have it.

5 Q. That's a letter from Elmer Wheeler of
6 Monsanto's medical department to a Dr. Bindschadler at
7 Westinghouse dated February 12th, 1969. Is that
8 correct?

9 A. Yes, it is.

10 Q. Just skimming this letter quickly, it
11 appears to involve a PCB product that wasn't used at
12 Bloomington, Aroclor 1254, so I think we'll go over it
13 fairly quickly. Can you confirm that this letter is
14 about the Aroclor 1254?

15 A. Yes, it is.

16 Q. And after discussing the TLVs for Aroclor
17 1254 and Monsanto's experience, Elmer Wheeler concludes
18 this 1969 letter to Westinghouse ?? can you turn to the
19 concluding paragraph ?? by stating, "I am sure you know
20 that your company, Westinghouse, has had many years of
21 experience in handling and using the chlorinated
22 biphenyls as electrical transformer fluids. It is
23 possible that your experience is wider than ours in
24 terms of exposure levels in the user's plant as compared
25 to our manufacturing facilities." And, "Butch asks me

1 to send his personal regards. Sincerely, Elmer
2 Wheeler."

3 A. I didn't hear your last statement.

4 Q. My last statement was just the sign off
5 where he sent his personal regards.

6 A. Oh.

7 Q. Have I read that correctly?

8 A. Yes, you have.

9 Q. I have a letter here that we didn't manage
10 to get into the notebooks, but I've made a few copies.
11 This is M36. Do you have copies, Mr. Murray?

12 MR. MURRAY: Yes, I do.

13 Q. (By Ms. Rutter) Exhibit M36 is another
14 letter from Elmer Wheeler of Monsanto to Wilbur Speicher
15 of Westinghouse. Is that correct?

16 A. Yes, it is.

17 Q. And that letter is dated June 5th, 1969?

18 A. Yes.

19 Q. And this letter is discussing PCBs used as
20 therminols. Is that correct?

21 A. That's correct.

22 Q. And once again, Mr. Speicher or Mr. Wheeler
23 of Monsanto sends to Mr. Speicher of Westinghouse copies
24 of the Treon studies from 1956. Is that correct?

25 A. That is correct.

1 Q. So comparing Exhibit M36, a June 1969
2 letter from Mr. Wheeler of Monsanto with Exhibit M9,
3 another letter from Mr. Wheeler of Monsanto to
4 Mr. Speicher dated 1956, this is two times now that
5 Monsanto has sent the Treon studies to Mr. Speicher at
6 Westinghouse. Is that correct?

7 A. Yes, it is.

8 Q. Dr. Kelly, could you please find Exhibit M4
9 in your notebook?

10 A. I found it.

11 Q. This is a letter dated August 13th, 1946
12 from Mr. E. C. Barnes of Westinghouse. Is that correct?

13 A. That's correct.

14 Q. And it says E. C. Barnes, industrial
15 hygiene engineer?

16 A. Well, yes. He was head of our industrial
17 hygiene department.

18 Q. And the front cover of the letter indicates
19 that it's coming from headquarters, medical department?

20 A. Yes.

21 Q. And he's sending it to a Mr. Floyd Staupp,
22 S?t?a?u?p?p. Is that correct?

23 A. Yes.

24 Q. Dr. Kelly, could you find in the second
25 paragraph on the first page, the sentence that starts

1 with, "In case the material is heated"?

2 A. Yes.

3 Q. That is a letter written by Ed Barnes of
4 Westinghouse and it says, "In case the material is
5 heated," referring to Inerteen, "This drives off more
6 vapor and relatively unsafe conditions may be produced."
7 Have I read that correctly?

8 A. Yes, you have.

9 Q. And then if you'll turn to the second page
10 of the letter and look at the second paragraph.

11 A. On which page?

12 Q. Page two.

13 A. Yes.

14 Q. Look at the second paragraph. Can you tell
15 me whether I'm reading this language correctly? I think
16 it starts with the second sentence. "Inerteen is a skin
17 irritant and may produce a skin condition known as
18 chloracne. If there is sufficient exposure over a
19 period of weeks or months, this skin eruption is very
20 hard to heal and may require special treatment by a
21 person familiar with this type of skin disease. It is,
22 therefore, important that any parts which have been
23 coated with Inerteen should be handled with rubber
24 gloves to avoid contact of this material with the skin
25 of the workers. Neoprene gloves are reasonably

1 satisfactory for this application." Have I correctly
2 read that letter by Mr. Ed Barnes, industrial hygiene of
3 Westinghouse from August 13th, 1946 about the safe
4 handling procedures for working with Inerteen?

5 A. Yes, you have.

6 Q. Dr. Kelly, could you please find Exhibit M5
7 in your notebook?

8 A. Well, I've just got, seems the last page of
9 a letter from Barnes to Wigert.

10 Q. Okay. I will give you my copy. Could you
11 please confirm, Dr. Kelly, that Exhibit M5 is a letter
12 from E. C. Barnes, the industrial hygiene engineer at
13 Westinghouse to a Mr. J. W. Wigert at Westinghouse in
14 Cleveland?

15 A. Yes, it is. If I can give you this back.
16 I found the first page, I think.

17 Q. And this letter is dated September 15th,
18 1947. Is that correct?

19 A. Yes.

20 Q. Once again, this letter indicates it's
21 coming from Mr. Barnes at the Westinghouse headquarters
22 medical department?

23 A. That's correct.

24 Q. And in the opening paragraph of this 1947
25 letter, Mr. Barnes states that he is in the process of

1 preparing a safe practice data sheet for Inerteen. Is
2 that correct?

3 A. Let me find it.

4 Q. It's the first sentence, the very first
5 sentence. It says, "I am sorry for the long" ??

6 A. Yeah, I found it. That's what he says.

7 Q. So he says he's in the process of preparing
8 a safe practice data sheet for Inerteen. Is that
9 correct?

10 A. That's right.

11 Q. Do you see the portion of this 1947 letter
12 from Westinghouse's industrial hygiene department under
13 the caption "Breathing"?

14 A. Yes.

15 Q. Let's start with the second sentence in
16 that paragraph. I'd like you to follow along. "Chronic
17 poisoning may occur where there are repeated or
18 recurring exposures to a sufficient concentration of
19 Inerteen" ?? then it describes the number of the
20 Inerteen ?? "vapor over a period of months or years.
21 Such exposures may produce internal bodily injury which
22 may be disabling or could be fatal." Have I correctly
23 read this 1947 letter from Westinghouse's industrial
24 hygiene department under the caption noted "Breathing"?

25 A. Yes.

1 Q. Could you please turn to the portion of the
2 letter that discusses skin irritation? That's on the
3 second page.

4 A. Yes.

5 Q. Let's skip the first sentence and go
6 straight to the second sentence. It says, "Even though
7 it is not very irritating, it is absorbed through the
8 skin and can produce toxic reactions internally. It may
9 also produce, after exposures of months or years, a skin
10 condition known as chloracne. This condition is very
11 difficult to heal." Have I read that correctly?

12 A. I haven't found it. I've never seen this
13 before.

14 Q. Right there.

15 A. Oh, that.

16 Q. I think you're missing a page, too. You
17 may use my copy of the letter.

18 A. Now, would you ?? You've said it is a mild
19 skin irritant, even though it is not very irritating to
20 the skin. This absorbs through the skin and can produce
21 toxic reactions internally. It produces, after
22 exposures of months or years, a skin condition known as
23 chloracne. This condition is very difficult to heal,
24 yes.

25 Q. And now if you could turn to the portion of

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1 the letter that says "Precautions."

2 A. I have that.

3 Q. Good. Let's start out with the very first
4 sentence of that paragraph, and if you'll follow along.
5 "Care must be taken to prevent any appreciable contact
6 with this material with the skin, especially when these
7 contacts are repeated." And then we left out a couple
8 of sentences because of space. I'll go ahead and read
9 them to the jury. "If any appreciable area of the skin
10 becomes coated with the Inerteen, it should be removed
11 by washing with soap and water." And it talks about
12 some other methods.

13 Then it says, "The maximum allowable
14 concentration of vapor, previously specified" ?? it was
15 discussed earlier in the letter ?? "Should not be
16 exceeded under normal working conditions. This can be
17 accomplished either by using a totally enclosed system
18 or by providing adequate ventilation. Where this is not
19 practical, respirators may be used." Have I read that
20 correctly?

21 A. Yes, you have.

22 Q. And this is a letter from Ed Barnes,
23 industrial hygiene engineer of Westinghouse dated
24 September 15th, 1947 discussing the toxicity and safe
25 handling of Inerteen. Is that correct?

1 A. That's correct.

2 Q. Dr. Kelly, can you find Exhibit M15 in your
3 notebook, please?

4 A. I go from 14 to 18. I can't find 15.

5 Q. Let me see if I can help. I think there's
6 an error in your notebook. Here's M18. I may have
7 misspoken the exhibit number. It's M15 for the record.

8 A. Beg your pardon?

9 Q. The exhibit number is M15.

10 A. 15, one, five?

11 Q. Do you have M15 in your hand?

12 A. If that's the one you gave me, if that's
13 M15.

14 Q. That's M15. Dr. Kelly, can you confirm
15 that this letter is a letter from Wilbur Speicher in the
16 industrial hygiene department at Westinghouse dated
17 November 2nd, 1959?

18 A. Yes, to Mr. Frank Wright of U.S. Naval
19 Ordnance in Silver Springs, Maryland.

20 Q. So Mr. Speicher of Westinghouse is writing
21 to Mr. Frank Wright of the United States Navy, and he is
22 a safety engineer?

23 A. Yes.

24 Q. And the letter starts out, "Your letter
25 concerning properties and safe usage precautions for

1 Inerteen has been referred to me for a reply." Is that
2 correct?

3 A. Yes.

4 Q. So United States Navy has written to
5 Westinghouse asking about the properties and safe
6 handling practices for Inerteen?

7 A. Yes.

8 Q. And Mr. Speicher of Westinghouse sends a
9 reply in 1959. Is that correct?

10 A. Yes, he has.

11 Q. Mr. Speicher points out that there's
12 capacitor Inerteen and that's transformer Inerteen. Is
13 that correct?

14 A. Yes, he does.

15 Q. That's the subject of the second paragraph.

16 A. Yes.

17 Q. And he says capacitor Inerteen is
18 trichlorobiphenyl?

19 A. Yes.

20 Q. And that's Aroclor 1242?

21 A. Correct.

22 Q. And then in the third paragraph,
23 Mr. Speicher tells the United States Navy in 1959 that
24 contact with the skin can cause chloracne. Is that
25 correct?

1 A. Yes, he does.

2 Q. And then in the fourth paragraph he says,
3 "It is well to provide Neoprene coated gloves and aprons
4 to prevent skin contact and clothing contamination where
5 necessary."

6 A. Yes, he does.

7 Q. That's what Wilbur Speicher of Westinghouse
8 is telling the United States Navy in 1959. Is that
9 correct?

10 A. That's correct.

11 Q. And then in the final paragraph on the
12 first page of the letter, if you could follow along, he
13 says, "Prolonged or excessive vapors from excessively
14 heated Inerteen should not be breathed. The maximum
15 acceptable concentration for trichlorodiphenyl appears
16 to be one milligram per cubic meter of air." Is that
17 correct?

18 A. Yes, it is.

19 Q. Now, that's the ACGIH recommendation for
20 Aroclor 1242. Is that correct?

21 A. Yes.

22 Q. Then he talks about something that's not
23 relevant. It's relevant to transformer Inerteen, so
24 we'll skip to the next sentence. It says, "High
25 concentrations may produce irritation of the respiratory

1 tract, eyes and throat. It is believed that significant
2 vapors should not be released from the chlorinated
3 diphenyls at temperatures below 150 degrees Fahrenheit
4 where good general ventilation is provided." Have I
5 read that correctly?

6 A. Yes, you have.

7 Q. So in 1959 we have Wilbur Speicher of
8 Westinghouse telling the United States Navy it's
9 important to prevent skin contact with Inerteen. Is
10 that correct?

11 A. Yes, he has.

12 MS. RUTTER: Your Honor, at this time I
13 would move to admit into evidence the following
14 documents: M380, the von Oettingen report; M397 ??

15 THE COURT: Counsel, it may be more
16 efficient to do that at the conclusion of the
17 plaintiff's case and you'll tell me all of the exhibits
18 at that time.

19 MS. RUTTER: I will be happy to defer it
20 till that time, Your Honor.

21 Q. (By Ms. Rutter) Dr. Kelly, could you
22 please find Exhibit 212 in your notebook?

23 A. Yes, I have.

24 Q. Exhibit M212 is a Monsanto customer
25 brochure called, "The Aroclors, Physical Properties and

1 Suggested Applications." Is that correct?

2 A. That's correct.

3 Q. Who received this brochure?

4 A. Customers, anybody who wrote and asked for
5 it, people that we sent the material to. We sent along
6 a bulletin. Salespeople disseminated it.

7 Q. Okay. Could you ?? I'm sorry, I didn't
8 mean to cut you off.

9 A. I sent it out to anybody who asked me about
10 the ?? well, not this bulletin, but those are the ones
11 that used, that was some of the development bulletin
12 there were suggested applications rather than a pure
13 sales bulletin where there was an established market for
14 the material.

15 Q. If you'll turn to the last page of the
16 bulletin, could you read the date stamp on it?

17 A. Yes.

18 Q. I've got a date stamp of June 18th, 1945.

19 A. That's correct.

20 Q. Okay. So this appears to be an early
21 Aroclor bulletin. Is that correct?

22 A. Quite early.

23 Q. Now, this brochure that was out in 1945
24 even at that date had a toxicity section on page 11. Is
25 that correct?

1 A. Yes, there is such a statement.

2 Q. I'd like to hand you for a moment a
3 document marked as Monsanto Exhibit M3. This is not in
4 the notebook, Your Honor. Dr. Kelly, Monsanto Exhibit
5 M3 is a memo from L. A. Watt dated October 11th, 1937.
6 Is that correct?

7 A. That's correct.

8 Q. And L. A. Watt was a Monsanto employee. Is
9 that correct?

10 A. Yes, he was.

11 Q. And in this he sets out some, a toxicity
12 statement for the Aroclors. Is that correct?

13 A. That's correct.

14 Q. And the last paragraph says, "In talking
15 with Dr. Kelly before these three paragraphs were
16 written, we agreed that they might as well be phrased so
17 that they could be used not only in the Aroclor booklet,
18 but quoted in correspondence as that may be necessary."
19 Is that correct?

20 A. That's correct.

21 Q. So this memo, M3, dated October 11th, 1937
22 contains toxicity information about Aroclors that you
23 prepared before World War II. Is that correct?

24 A. That's correct.

25 Q. And if you'll look at page 11 of the

1 Monsanto Aroclor brochure, Exhibit M212, can you compare
2 that to the language that you wrote here in 1937 from M3
3 and tell me if that's identical?

4 A. Yes, it is.

5 Q. It's a number of paragraphs, and I didn't
6 have room for all of them on the board, but can you tell
7 me whether what I've put up here is accurate? It says,
8 "Experimental work on animals shows that prolonged
9 exposure to Aroclor vapors evolved at high temperatures
10 or by repeated oral ingestion will lead to systemic
11 toxic effects." Is that correct?

12 A. That is correct.

13 Q. Now, in 1937 when you wrote this language,
14 the Treon work hadn't been done yet, had it?

15 A. It hadn't even been considered.

16 Q. Okay. Did this refer to Dr. Drinker's
17 work?

18 A. Yes.

19 Q. It says, "Repeated bodily contact with
20 liquid Aroclors may lead to an acne?form skin eruption."
21 Is that correct?

22 A. That's correct.

23 Q. And then finally it says, "Suitable draft
24 ventilation to control the vapors evolved at elevated
25 temperatures, as well as protection by suitable garments

1 from extensive bodily contact with the liquid Aroclors,
2 should prevent any untoward effect."

3 A. That's correct.

4 Q. And this was something that Monsanto was
5 sending out to its customers in 1937. Is that correct?

6 A. That's correct.

7 Q. Dr. Kelly, could you please identify for
8 the record Exhibits M216, M217 and M219? Or maybe to
9 speed things up a little bit, if you'll find them in
10 your notebook, I'll read the titles.

11 A. 216, 217 and 2 ??

12 Q. 219. They should all be there one right
13 after the other.

14 A. Yeah. Right.

15 Q. I know they're big, thick booklets.

16 A. Yes, I have them.

17 Q. Exhibit 216 is a brochure called "The
18 Proper Handling of Aroclors and Their Mixtures in the
19 Electrical Industry." Is that correct?

20 A. That is correct.

21 Q. So this brochure was designed for
22 Monsanto's dielectric customers, the customers who used
23 Aroclors in transformers and capacitors. Is that
24 correct?

25 A. Use for (inaudible).

1 Q. Right.

2 A. Yes, that's correct.

3 Q. And this particular Monsanto customer
4 brochure directed toward the electrical industry is
5 dated December 1st, 1954. Is that correct?

6 A. That is correct.

7 Q. Let's turn to page 73 of that thick
8 brochure and find the section that's labeled
9 "Dermatology and Toxicology."

10 A. Yes, I have it.

11 Q. There are some similar sections in some
12 other brochures we're going to do, so I'm just going to
13 focus on one thing in this section. There's a two?page
14 chapter called, chapter nine, "Dermatology and
15 Toxicology." Is that correct?

16 A. That is correct.

17 Q. And if you'll look at the last sentence on
18 page 73, it says ?? do you see where it says,
19 "Laboratory Techniques"?

20 A. Yes.

21 Q. It says, "Laboratory technique merely
22 requires keeping the hands free of the liquid and
23 handling it under a well?ventilated hood." Is that
24 correct?

25 A. That's correct.

1 Q. So that was the statement about keeping the
2 hands free of the liquid that was contained in
3 Monsanto's customer brochure toward the electrical,
4 directed to the electrical industry as of 1954. Is that
5 correct?

6 A. That is correct.

7 Q. Could you find Exhibit M217?

8 A. Yes.

9 Q. Once again, this is another Monsanto
10 brochure called "The Proper Handling of Aroclors and
11 Their Mixtures in the Electrical Industry." Is that
12 correct?

13 A. Yes.

14 Q. That's correct? This again is a very thick
15 brochure. The date of this brochure is May 1st, 1956.
16 Is that correct?

17 A. That's correct.

18 Q. And once again, there's a chapter on
19 dermatology and toxicology, chapter nine contained at
20 pages 75 and 76 of that brochure. Is that correct?

21 A. Yes, I have it.

22 Q. Since that toxicology section is very
23 similar to the next section, to shorten things up a
24 little bit, I'm going to focus on Exhibit 219, the next
25 exhibit.

1 A. Yes.

2 Q. Could you please turn to Exhibit 219? That
3 document is called "The Proper Handling of Aroclors and
4 Their Mixtures in the Electrical Industry." Is that
5 correct?

6 A. That's correct.

7 Q. It's a big, thick brochure?

8 A. Yes.

9 Q. And I think Mr. McClain of Westinghouse who
10 testified by video deposition yesterday testified that
11 he had a copy of this document. Let's turn to pages 98
12 to 100 of this brochure, "The Proper Handling of
13 Aroclors and Their Mixtures in the Electrical Industry"
14 dated January 1960.

15 A. Yes.

16 Q. We've now got pages 98, 99 and 100, chapter
17 12 on dermatology and toxicology out of this January
18 1960 Monsanto customer brochure. Is that correct?

19 A. That's correct.

20 Q. Dr. Kelly, could you please look at page 99
21 of that exhibit where it says "Exposure to Vapors"?

22 A. Yes.

23 Q. And tell me whether I am reading
24 accurately. "Vapors from hot Aroclor, or askarel, have
25 a degree of toxicity and should not be inhaled over a

1 prolonged period of time. Experimental work on animals
2 indicates that the maximum safe concentrations of vapors
3 in workrooms is in the range of 0.5 to 1.0 milligrams
4 per cubic meter of air." Is that correct?

5 A. That's correct.

6 Q. And those standards that are set out in
7 this brochure are the standards that are recommended by
8 the American Conference of Governmental Hygienists for
9 Aroclor 1242 and 1254. Is that correct?

10 A. That's correct.

11 Q. Except the 1.0 is for Aroclor 1242 and the
12 0.5 is for Aroclor 1254?

13 A. That's correct.

14 Q. Let's move down to the next paragraph where
15 it talks about capacitor impregnations like what they
16 did at the Bloomington plant. Can you follow along and
17 tell me if I'm reading this correctly? "Capacitor
18 impregnations may be done at temperatures as high as 266
19 degrees Fahrenheit or 130 degrees Centigrade. Following
20 impregnation and draining the chamber, exhaust
21 ventilation should be applied to the chamber to prevent
22 askarel vapors entering the workroom. Also, when
23 opening a heated capacitor impregnating chamber, the
24 workmen should wear a respirator during this short
25 interval of exposure." Have I read that correctly,

1 Dr. Kelly?

2 A. Yes, you have.

3 Q. And this is from the Monsanto customer
4 brochure directed to the electrical industry in 1960.
5 Is that correct?

6 A. That's correct.

7 Q. Then it talks about transformer askarels.
8 Let's define the term askarel for the jury. What does
9 the word askarel means?

10 A. Askarel is a generic name used to, for
11 dielectrics, for ?? it's not a Monsanto trade name
12 that's used in the industry. Westinghouse uses their
13 own proprietary name of Inerteen for their askarel. GE
14 is Pyranol for theirs, and we call ours Aroclor.

15 Q. Okay. Let me just make sure we've got all
16 this correct. PCB containing dielectric fluid was
17 referred to generally in the electrical industry as
18 askarels. Is that correct?

19 A. That's correct, that's correct.

20 Q. Monsanto called it Aroclor. That was
21 Monsanto's trade name; correct?

22 A. Right.

23 Q. Westinghouse's trade name, they called it
24 Inerteen. Is that correct?

25 A. That's correct.

1 Q. And General Electric called it Pyranol. Is
2 that correct?

3 A. Pyranol, that's correct.

4 Q. Actually I think I took away the exhibit
5 before I read it because I was defining askarels, but
6 there's a paragraph in here saying that if transformer
7 askarels are used at temperatures above 125 to 150
8 degrees Fahrenheit, exhaust ventilation should be
9 provided in the immediate area. Is that correct?

10 A. That's correct.

11 Q. Dr. Kelly, do you have this McClain Exhibit
12 P5 in your notebook?

13 A. I have a McClain Five.

14 Q. This exhibit, McClain Exhibit P5, was
15 referred to in Mr. McClain's video deposition yesterday
16 as a copy of a brochure that Mr. McClain had at
17 Westinghouse, Bloomington, and I'd appreciate it if you
18 could compare the cover of this brochure that
19 Mr. McClain had with the cover of Exhibit M219 that I've
20 just been discussing, the Monsanto brochure. It appears
21 to me to be the identical brochure, "The Proper Handling
22 of Aroclors and Their Mixtures in the Electrical
23 Industry," P. G. Benignus, revised, January 1960. Can
24 you compare those two covers and tell me whether they
25 appear to be identical?

1 A. Yes, yes, they seem to be identical.

2 Q. Except for the handwriting?

3 A. Yes.

4 Q. And the McClain exhibit, if you'll turn to
5 page 99, chapter 12 on dermatology and toxicology.

6 A. Yes.

7 Q. Has the identical section about capacitor
8 impregnations that we just read and had up here on the
9 demonstrative board. It says, "Capacitor impregnations
10 may be done."

11 A. Yes.

12 Q. "At temperatures as high as 266 degrees
13 Fahrenheit."

14 A. Yes, that's the same as the one we just
15 read.

16 Q. It talks about the exhaust ventilation that
17 should be applied to prohibit it from entering the room
18 when you open the capacitor impregnating chamber?

19 A. That's correct.

20 Q. Dr. Kelly, could you please identify
21 Exhibit M222 for the record?

22 A. Yes, that was the exhibit, that is a
23 technical bulletin from Monsanto on the Aroclor
24 polychlorinated biphenyls.

25 Q. That's PCBs. Is that correct?

1 A. Yes. I want to see if there are other
2 things included in it.

3 Q. Well, I'm really only interested in the
4 PCBs, but take your time if you'd like to look through
5 it. Would you look for the date of the brochure? If
6 you'd look on the last page, it looks to me like it says
7 April 1966 in the date code. That's on page 24. There.
8 Can you confirm that that date appears to be 4?66? I
9 know the print isn't very good.

10 A. That's pretty hard for me to read it
11 frankly.

12 MR. MURRAY: Where are you?

13 A. Yes, I can confirm it.

14 Q. (By Ms. Rutter) Page 22 of this Monsanto
15 technical bulletin for PCBs. Exhibit M222 has a chapter
16 on dermatology and toxicology. Is that correct?

17 A. Wait till I find it. Which page?

18 Q. Page 22.

19 A. Yes, I found it.

20 Q. If you could turn to page 23, it talks
21 about safe handling. Is that correct?

22 A. Yes, it does.

23 Q. Could you look at the first paragraph,
24 please, of the safe handling chapter? Tell me if I'm
25 reading this accurately. "Vapors of the Aroclor liquids

1 at room temperature should not be breathed in a confined
2 space. Vapors evolved at elevated temperatures should
3 not be allowed to be dispersed into the general work
4 room. Instead, engineering control must be applied to
5 reduce vapor concentrations below the allowable
6 concentrations mentioned above," and that's the TLVs
7 discussed on the previous page." Is that correct?

8 A. Yes.

9 Q. And then it says, "Continuous or repeated
10 skin contact with Aroclor must be avoided by the use of
11 gloves and protective garments. If any Aroclor is
12 spilled on the skin, the skin should be washed in the
13 usual manner with a soap solution." Is that correct?

14 A. That's correct.

15 Q. Dr. Kelly, during the time that you were
16 Monsanto's medical director, did you have a philosophy
17 or goal that you followed in writing the safe handling
18 instructions of the types in these customer brochures
19 that we've been describing?

20 A. Did I have a philosophy?

21 Q. Yes.

22 A. Yes, the philosophy was to be succinct, to
23 not put any extraneous material in there, make it short
24 so the person could read it and remember it.

25 Q. By being succinct, you mean not to use too

1 many words?

2 A. That's correct.

3 Q. To keep it clear and simple; is that
4 correct?

5 A. Yes, and short.

6 Q. Dr. Kelly, at the time you retired from
7 Monsanto in December of 1974, did you have an opinion to
8 a reasonable degree of medical certainty whether if the
9 safe handling instructions were followed in relation to
10 PCBs such as those that we have just discussed in these
11 brochures including Exhibit M219, that the products
12 could be used without any ill effect?

13 MR. MURRAY: Excuse me, Your Honor. May we
14 approach the bench?

15 THE COURT: Yes, you may.

16 (At this time there was a discussion held at the
17 bench.)

18 THE COURT: You may proceed.

19 Q. (By Ms. Rutter) Thank you. Dr. Kelly, at
20 the time you retired from Monsanto in December of 1974,
21 did you have an opinion to a reasonable degree of
22 medical certainty whether the safe handling instructions
23 contained in Exhibit 219 were sufficient to prevent
24 against harm if they were followed by Monsanto workers?

25 A. Yes.

1 Q. And what was that opinion?

2 A. That if you followed the instructions, you
3 would get no problems.

4 Q. Okay.

5 A. You said I retired in November.

6 Q. November 1974; is that correct?

7 A. That's correct. I thought you said
8 December. It was November.

9 Q. If I misspoke, I'm sorry. It was November.
10 And what's the basis of that opinion, Dr. Kelly?

11 A. Well, the basis was that we had absolutely
12 no complaints from or conditions of our workers. We had
13 no reports of any injuries in the literature, and
14 talking to the medical directors of the largest, two
15 largest users, GE and Westinghouse, they stated they had
16 no problems.

17 Q. Dr. Kelly, at the time of your retirement
18 from Monsanto in December of 1974, did you have an
19 opinion to a reasonable degree of medical certainty
20 concerning the toxicity of PCBs in relation to human
21 health?

22 MR. MURRAY: Your Honor, excuse me.

23 A. You misspoke again, Ms. Rutter.

24 MR. MURRAY: It's the same issue, Your
25 Honor.

1 THE COURT: The objection will be
2 sustained.

3 MS. RUTTER: May we approach the bench,
4 Your Honor?

5 THE COURT: Sure.

6 (At this time there was a discussion held at the
7 bench.)

8 THE COURT: Doctor, she said December
9 again, didn't she?

10 THE WITNESS: Pardon me?

11 THE COURT: She said December again. It's
12 actually November.

13 THE WITNESS: It was November.

14 Q. (By Ms. Rutter) Doctor, I apologize. You
15 retired in November 1994. I'll try to remember that.
16 Dr. Kelly, as Monsanto's medical director, it was part
17 of your job to look after the health of Monsanto
18 workers. Is that correct?

19 A. Your voice failed me again.

20 Q. I'm sorry. As Monsanto's medical director,
21 it was part of your job to be concerned about the health
22 and safety of Monsanto workers. Is that correct?

23 A. That's correct.

24 Q. While you were Monsanto's medical director
25 through November of 1974 when you retired, what was your

1 opinion about the toxicity of Monsanto PCBs in relation
2 to Monsanto workers?

3 A. I considered them to be a mild to moderate
4 industrial, a mild to moderate industrial toxicity for a
5 industrial chemical. We had absolutely zero problems
6 with our workers from the time I came with Monsanto in
7 '36 until I retired in '74.

8 Q. At the time of your retirement in November
9 1974, was there anything in the scientific or medical
10 literature that even suggested that PCBs caused cancer
11 in humans?

12 A. No, there was not.

13 Q. Now, you know who Dr. Renate Kimbrough is.
14 Is that correct?

15 A. Yes, I do.

16 Q. Could you explain Dr. Kimbrough's
17 credentials to the jury, please?

18 A. Her credentials?

19 Q. Yes.

20 A. She was a pathologist, I believe, by trade,
21 but she went with the government in one of those,
22 either ?? It was before EPA. She was down at the
23 research triangle in North Carolina, I believe, where
24 she did not only toxicology, she did some epidemiology,
25 and she was a well-respected individual. We disagreed

1 with her at some point that as far as her interpretation
2 of 1260 was concerned, some tests she did on 1260, but
3 she had a very good reputation in good standing in the
4 United States scientific community.

5 Q. Now, Dr. Kimbrough is a scientist who found
6 some liver cancer in rats that were fed high doses of
7 Aroclor 1260 for their lifetime. Is that correct?

8 A. That's correct, in females.

9 Q. In female rats. I believe it was female
10 Sherman stream rats. Is that correct?

11 A. That is correct.

12 Q. But that study by Dr. Kimbrough finding the
13 liver, I believe the term is hepatomas?

14 A. Yes.

15 Q. In rats that were fed high doses of Aroclor
16 1260 over their lifetime wasn't published until after
17 you retired. Is that correct?

18 A. That is correct.

19 Q. Dr. Kimbrough's findings were published in
20 about 1975?

21 A. That's correct.

22 Q. Now, at the time of your retirement from
23 Monsanto in November of 1974, did you hold an opinion to
24 a reasonable degree of medical certainty whether PCBs
25 caused the cancer in humans?

1 MR. MURRAY: Your Honor?

2 THE COURT: Objection will be sustained.

3 THE WITNESS: Was there an objection?

4 Q. (By Ms. Rutter) Yes, there was an
5 objection, and it was sustained, so we'll move along.
6 Dr. Kelly, while you were Monsanto's medical director,
7 you were aware that overexposure to PCBs could cause
8 chloracne. Is that correct?

9 A. That is correct.

10 Q. Can you describe to the jury any instances
11 where you learned that customers of Monsanto had had
12 chloracne?

13 A. I remember one. It was a thermometer
14 company up in someplace (inaudible), but it was pretty
15 early in my career, and I went up to see them because I
16 hadn't had much experience with chloracne, something
17 done with PCBs.

18 So I found that these people were making a
19 sort of a bell's type thermometer for ovens or something
20 like that. It was sort of a (inaudible) it was a pouch
21 that they filled with PCBs. So they filled it up by
22 taking it in their hands, including this pouch with
23 liquid. I don't know which one it was, liquid PCBs, and
24 they developed chloracne. I said, "Can't you get some
25 sort of a gimmick that keeps their hands out of the oven

1 and dip them in with forceps or something?"

2 So they did and it was pretty obvious, and
3 that was it. They had no other symptoms of the
4 chloracne (inaudible). That was about the only case
5 that was not in the electrical industry of chloracne
6 that I saw with PCBs to the best of my recollection.

7 Q. And that was pre-World War II. Is that
8 correct?

9 A. That's correct.

10 Q. And Dr. Kelly, could you please find
11 Exhibit M14 in your notebook?

12 A. Beg your pardon?

13 Q. M14. It's a letter from Elmer Wheeler of
14 Monsanto to Wilbur Speicher of Westinghouse.

15 A. Yes.

16 Q. On October 23rd, 1959, looking at Exhibit
17 M14 which is a letter from Elmer Wheeler of Monsanto to
18 Wilbur Speicher of Westinghouse, on page two of that
19 letter, Mr. Wheeler of Monsanto described to
20 Mr. Speicher of Westinghouse that chloracne incident
21 that you just told the jury about. Is that correct?

22 A. That is correct.

23 Q. And specifically, what Mr. Wheeler of
24 Monsanto told Wilbur Speicher, the Westinghouse
25 industrial hygienist, in 1959 was, "A second case of

1 mild chloracne," and we'll get to the first in a minute,
2 "About which we have any knowledge resulted from workmen
3 dipping their hands in the liquid Aroclor as if it were
4 mineral oil or vegetable oil. In addition, their
5 clothing sooner or later became impregnated with the
6 material and, thus, exposure was magnified."

7 A. That's correct.

8 Q. I read that correctly?

9 A. Yes.

10 Q. So in 1959, Mr. Wheeler told Mr. Speicher
11 that workmen dipping their hands into Aroclor as if it
12 were mineral oil or vegetable oil had produced
13 chloracne. Is that correct?

14 A. That was correct.

15 Q. Now, Dr. Kelly, the Meigs' article that was
16 published in JAMA, that's the Journal of the American
17 Medical Association?

18 A. Yes.

19 Q. That publication occurred in, is it 1954?

20 A. I'm not sure about the dates.

21 Q. It was either ?? It was in 1954 or 1955
22 time frame?

23 A. That's correct.

24 Q. And if you'll look in this, if you'll turn
25 to page one of Exhibit M14, Mr. Speicher's October 23rd

1 or ?? excuse me ?? Mr. Wheeler's October 23rd, 1959
2 letter to Mr. Speicher, Mr. Wheeler tells Westinghouse
3 in this 1959 letter about the Meigs incident, does he
4 not?

5 A. Yes, he does.

6 Q. And that's the first case of the chloracne
7 that he is referring to in this letter?

8 A. That's correct.

9 Q. Now, actually Mr. Wheeler had transposed
10 the dates. As I understand it, the people dipping their
11 hands into the liquid PCBs was before World War II?

12 A. That was in the '30s, yes.

13 Q. Right. And specifically, Mr. Wheeler said
14 to Mr. Speicher in 1959, "I know of only two cases where
15 such experiences chloracne has developed during the long
16 history of production and use of the Aroclors. In one
17 case, an Aroclor was being used as a heat transfer
18 medium in a system that allowed vapors to escape when
19 the material was heated to 600 degrees Fahrenheit," and
20 then he goes on and describes what happened to the
21 workmen. Is that correct?

22 A. That's correct.

23 Q. Now, Dr. Kelly, based on the work of
24 Dr. Drinker and Dr. Treon, it was ?? you knew, did you
25 not, when you were Monsanto's medical director that

1 there was the potential for injury to the liver if there
2 was overexposure to PCBs. Is that correct?

3 A. Yes, that's correct.

4 Q. There are a number of chemicals that damage
5 the liver. Is that correct?

6 A. Oh, yes.

7 Q. And PCB is only one of them?

8 A. That's correct.

9 Q. So it's common in an industrial work place
10 to be concerned about the potential for liver injury due
11 to working with industrial chemicals?

12 A. That is correct.

13 Q. Okay. Now, liver injury as we saw and it
14 was discussed, liver injury could be fatal if it
15 progresses far enough. Is that correct?

16 A. Oh, yes, that's correct.

17 Q. And that's the deaths due to chlorinated
18 naphthalene that we discussed in the Greenberg article?

19 A. That's correct.

20 Q. Now, while you were Monsanto's medical
21 director, did you become aware of any deaths caused by
22 exposures to PCBs?

23 A. No, I did not.

24 Q. In response to some questions that
25 Mr. Murray asked you, you mentioned several times that

1 you recall about a handful or less of customer?reported
2 incidents with PCBs. Did you follow up when a customer
3 called?

4 A. Yes, I did.

5 Q. Well, first of all, what was Monsanto's
6 procedure while you were the medical director if a
7 customer of Monsanto had a problem or some questions
8 with the toxicity and safe handling of the product?

9 A. Well, let's take a for instance. Suppose
10 somebody at the Detroit sales office had a customer of
11 Ford and Ford said, "What is the problem? Are there any
12 problems with X compound or PCBs when Ford used them?"
13 He would say, "I'll get in touch with our medical
14 department and ask. You'll get an answer from them."
15 Of course, he would say, he would say, "Well, we've used
16 it so and so long and I don't know anything about it,
17 any injuries, but I'll get in touch."

18 If a customer wrote in and said, or called
19 and said, "We have a man who is sick, he's been exposed
20 to PCBs, here is what happened," that call would be
21 referred to me, and I'd talk to them. That occurred in
22 about three or four cases that I know of and mostly heat
23 transfer applications of which there were leaks and
24 there was a jury?rigged, a jury?rigged installation or
25 temporary installation that wasn't welded or something

1 like that, and I would talk to them.

2 And I remember one that said these people
3 were exposed and they were nauseated, and I said, "Well,
4 watch them because they're liable to get some jaundice,
5 and keep in touch with me." So two weeks later
6 (inaudible) they did get jaundice and they were
7 hospitalized, and they're doing okay. So all inquiries,
8 complaints and reports about injuries to Monsanto
9 products were referred to and answered by the medical
10 department.

11 Q. Did you do something to make sure that that
12 occurred while you were medical director?

13 A. Well, I don't know what you mean by do
14 something. It was a directive from executive committee,
15 and the people were very ?? out in the field were very
16 happy to buck it over to me.

17 Q. Okay. So you're saying that Monsanto
18 management issued a directive that any questions from
19 customers about the toxicity or safe handling of a
20 Monsanto product or a problem with the Monsanto product
21 would be directed to the medical department?

22 A. That's correct.

23 Q. And that was a directive issued by
24 Monsanto's top management?

25 A. Yes, it was.

1 Q. Okay. You described that from the handful
2 of customer complaints about PCBs, you remember an
3 incident where there was a heat transfer system that was
4 leaking?

5 A. Well, the Meigs' article was a heat
6 transfer leaking. There were other, two others that I
7 know of where chloracne did not develop, but acute
8 hepatitis occurred which is, hepatitis is a chemical
9 inflammation of the liver occurred. There were ?? but
10 there were no fatalities, and there was three days,
11 approximately three days of inhalation of these fumes at
12 elevated temperatures, quite elevated.

13 Q. Are you talking about an incident that a
14 Dr. Spolier reported to you in Brazil, Indiana?

15 A. He was one of the ?? Spolier was industrial
16 physician for the State of Indiana, I believe, and he
17 had ?? I had the article. It was published in, I
18 thought it was Indiana State Medical Journal which is
19 something that I don't usually read, but I must have
20 seen an abstract of it because I called him up and said,
21 "What goes on with this?" He explained how there was a
22 leaking heat transfer apparatus and these people did
23 develop the chemical hepatitis, but that was to be
24 expected if you breathe a PCB for a prolonged period of
25 time at elevated temperatures, but they, it was

1 relatively mild because I checked with them a month
2 later, and the people were well.

3 Q. Did Monsanto PCB workers ever have problems
4 with chloracne or liver problems caused ??

5 A. Beg your pardon?

6 Q. Did Monsanto PCB workers ever have problems
7 with chloracne or liver problems due to exposure to
8 PCBs?

9 A. They did not.

10 Q. Now, Swann Chemical Company, Monsanto's
11 predecessor, had some chloracne in its workers. Is that
12 correct?

13 A. Yes, they did, that's correct.

14 Q. But that was investigated and was found to
15 be due to exposure to a, it was a bad off spec batch of
16 one of the ingredients of the PCB. Is that correct?

17 A. Well, let me go into this a little bit.
18 Swann manufactured PCBs from the '30s on. In 1935 they
19 developed, they've changed their supplier who was
20 supplying them benzene to a new supplier. After six
21 months they developed chloracne of rather sizable
22 proportions in about 14 or 15 cases.

23 They sent these people to a dermatologist
24 in Atlanta, and they sent the material to a
25 toxicologist, Frederick Flynn in New York. He ?? This

1 is all before Monsanto, so I knew nothing about it till
2 after about six months at Monsanto.

3 They never came up with any problem, any
4 definite reason with the exception that they had
5 believed that the specimen, that the benzene was off
6 specification. It was also off specification as far as
7 the dielectric capacity of the finished material was
8 concerned.

9 In fact, it turned out to be a different
10 color than their usual Aroclors. I don't know why they
11 sold them, but they did. That's Swann, not Monsanto.
12 So they changed the benzene back to their old supplier
13 and the condition faded, and there was no problem
14 afterwards.

15 We took over Swann in, gosh, I guess late
16 '36 or eight months after all this happened. I went to
17 see Swann. I went to see the Monsanto plant. We kept
18 on manufacturing the PCBs. I went there in '37 at least
19 and saw some of the workers just in passing, and they
20 were not completely healed. They had some scars, but
21 they had no eminence of recurrence of the chloracne.
22 That was it.

23 Q. And what I think I heard you say is you,
24 Swann had one benzene supplier. Benzene is a component
25 that goes into the manufacture of PCBs. Is that

1 correct?

2 A. That's right.

3 Q. And at the time of the Swann chloracne
4 incident, Swann had tried switching over to a different
5 supplier of benzene?

6 A. That's correct.

7 Q. And the belief was that the second source
8 of benzene had supplied an inferior or an off
9 specification product. Is that correct?

10 A. That's correct.

11 Q. And so Swann switched back to its regular
12 supplier of benzene, and after that they didn't have any
13 more problems with chloracne?

14 A. That's correct.

15 Q. Is that correct?

16 A. That's correct.

17 Q. Now, you as Monsanto's medical director
18 visited Monsanto's two plants that manufactured PCBs
19 from time to time, did you not?

20 A. Yes, I did.

21 Q. How frequently ?? and that was the
22 Krummrich plant that's across the river here and the
23 plant in Anniston, Alabama. Is that correct?

24 A. That's correct.

25 Q. How often did you visit those plants?

1 A. Gosh, at least yearly.

2 Q. And did both of those plants have plant
3 physicians who were experienced occupational physicians?

4 A. Yes, they did. One had Dr. Morton who is
5 dead, and the other had two part-time physicians,
6 Dr. Ellis. They were brothers and did just occupational
7 medicine.

8 Q. Okay. And you did spot checks of
9 employees' medical records?

10 A. That's correct.

11 Q. During those plant visits?

12 A. That's correct.

13 Q. And you are confident, are you not, that
14 the Monsanto PCB workers never had any chloracne or
15 liver problems due to exposure to PCBs?

16 A. I'm completely confident they did not have
17 any PC ?? any chloracne.

18 Q. Now, Dr. Kelly, you also kept track of the
19 number of cancers occurring in Monsanto employees. Is
20 that correct?

21 A. Well, let me tell you what we did. We had
22 what we call a cancer index, and at first about 95
23 percent of the wage role employees had Monsanto group
24 insurance, so we took the, had someone who handled the
25 group insurance make a note of what, any time any

1 retiree was covered by insurance or active worker
2 developed cancer, that would be noted as well as the
3 department they worked in.

4 After a few ?? That started in ?? I'm not
5 sure if it started in before the war or in the first
6 part after I came back. I think it was probably in the
7 early '40s. After a while, after, just about after, in
8 the '40s, Monsanto insured all workers, and there was
9 none noncontributory. So all the wage role employees
10 and the hourly, and the salaried people were covered.

11 So we had a record then of all the people
12 who had had medical conditions. We made a, kept a
13 running log of these cases, and I had looked it over
14 about every quarter or something like that to see if
15 there was any group to have tumors of cancers in any
16 particular department or any particular plant, and I
17 found none. After all ??

18 Q. You found none in the PCB workers. Is that
19 correct?

20 A. Beg your pardon?

21 Q. You found no unusual occurrences of cancers
22 in the PCB workers. Is that correct?

23 A. That's correct. Of course, everybody is
24 going to die of something, and about 30 percent or 33
25 percent will die of cancer.

1 Q. Dr. Kelly, I have another notebook for you.

2 A. Yes.

3 Q. Let me trade here. Let's put this one
4 down.

5 THE COURT: What volume?

6 MS. RUTTER: It's volume two, Your Honor,
7 and let me give Mr. Murray.

8 Q. (By Ms. Rutter) Dr. Kelly, I'm handing you
9 a notebook, and I need to read these exhibit numbers
10 into the record. This contains Monsanto Exhibits M271,
11 276 through 282, M284, 286, M260, M263 through 270, M272
12 through 275 and M287 to 306, and I asked you to look at
13 this note, take a look at this notebook yesterday to
14 sort of speed things up here in court. Is that correct?

15 A. That's correct.

16 Q. And this is a booklet that contains acute
17 toxicity tests on PCBs by the Younger Labs and
18 Scientific Associates ?? those were laboratories here in
19 St. Louis ?? between 1951 and 1967. Is that correct?

20 A. That's correct.

21 Q. And specifically I think Exhibit M260, if
22 you'll turn to that, is dated 1951, and Exhibit M305 and
23 306 is dated 1967. Would you take a moment to confirm
24 that, please?

25 A. Which are the numbers again?

1 Q. M260 should reflect a date in 1951.

2 A. M260 is the date of April the 17th, 1951,
3 and what's the number on the second one?

4 Q. And then we're trying to get the end range
5 of dates. You can look at either M305 or M306.

6 A. M305 is dated October the 13th, 1967.

7 Q. Let's turn to Exhibit M279, please.

8 A. Yes.

9 Q. M279 is a Younger Laboratories' certificate
10 of analysis dated June 19th, 1962. Is that correct?

11 A. That's correct.

12 Q. And the subject is the toxicological
13 investigation of Aroclor 1242. Is that correct?

14 A. That's correct.

15 Q. And it describes a test procedure on
16 feeding Aroclor 1242 to rats and skin absorption tests
17 in rabbits. Is that correct?

18 A. That's correct.

19 Q. And Exhibit M278 is a Younger Laboratories'
20 certificate of analysis dated, looks like it's June
21 15th, 1962 on Aroclor 1248. Is that correct?

22 A. That's correct.

23 Q. And once again, that is animal feeding
24 studies, and they did skin absorption tests on rabbits.
25 Is that correct?

1 A. That's correct.

2 Q. Now, some of these acute toxicity tests in
3 this folder refer to PCBs by the Aroclor name like
4 Aroclor 1242. We just discussed that one.

5 A. Yes.

6 Q. 1248. I think there's one on 1260 and 1254
7 in here. Is that correct?

8 A. That's correct.

9 Q. Now, there are also a lot of these toxicity
10 studies that relate to Pydrauls. Is that correct?

11 A. That's correct.

12 Q. And those were PCB-containing products?

13 A. That's correct.

14 Q. But here 30 years later, you're confident
15 that these were tests on products that contained PCBs
16 even though you don't remember the exact product
17 composition?

18 A. That's correct.

19 Q. You remember that Pydraul 150 had about 25
20 percent PCBs?

21 A. That's correct.

22 Q. And when you went through this notebook at
23 a break yesterday, you picked out three exhibits in here
24 that you said you couldn't identify for sure as being
25 PCB tests?

1 A. That's correct.

2 Q. And I'll call those out so there's no
3 confusion. We're excluding M285, M266, M267 and M288.
4 Is that correct?

5 A. That's correct.

6 Q. But with the exception of those four
7 numbers, this notebook contains the toxicity testing
8 that was done on PCBs including Aroclor 1242 and a
9 number of other PCB-containing products done by Monsanto
10 or at Monsanto's request between 1951 and 1967. Is that
11 correct?

12 A. That's correct.

13 Q. I'm through with that notebook for now.
14 Dr. Kelly, I'd like to turn back for a moment to some of
15 the internal memos of Monsanto's affiliate in London
16 that Mr. Murray discussed with you yesterday, and
17 specifically I'm going to hand you Plaintiff's Exhibit
18 P12. P12 is a memo apparently from Monsanto, London.
19 What was the name of the Monsanto affiliate in London?

20 A. Monsanto Chemicals, Limited.

21 Q. That's different than Monsanto Company?

22 A. Yes.

23 Q. Okay. And this is a memo dated August
24 19th, 1955 to J. W. Barrett from a E. E. Hardy, and
25 those were both employees of Monsanto Chemicals, Limited

1 in London. Is that correct?

2 A. That's correct.

3 Q. It appears to me from reviewing this memo
4 dated August 19th, 1955 that the people in London,
5 Mr. Hardy and Mr. Barrett, were considering the
6 potential for putting PCBs in ordinary household paint.
7 Is that correct?

8 A. That's correct.

9 Q. And if you'll look here at this last
10 paragraph on page two, it refers to their considering
11 putting Aroclors in ordinary paint. Is that correct?

12 A. That's correct.

13 Q. It's the kind of paints that you or I could
14 go to the Sherwin Williams store or the Porter Paint
15 store and buy?

16 A. That's right.

17 Q. Now, Monsanto in the United States had in
18 some limited applications, I think there were some PCBs
19 on the stripes in the paint that gets painted down the
20 highway?

21 A. It was for industrial use. It was not for
22 consumer use at all.

23 Q. Because in industry there are industrial
24 hygienists and you can measure the concentrations of
25 PCBs in the air. Is that correct?

1 A. That's right.

2 Q. Whereas if you sell it to people in a
3 house, the concern is going to be how are you going to
4 know how much is in the air and what are they, what if
5 they go into a closet or an attic and that type of
6 thing?

7 A. That's correct.

8 Q. And in this memo, Mr. Hardy even mentioned,
9 "If we're really considering it for this application,
10 certainly we must say that these paints must not be used
11 on hot surfaces such as radiators and hot water pipes."
12 Is that correct?

13 A. That's what he says, yes.

14 MR. MURRAY: I'm sorry. What was the
15 exhibit number?

16 MS. RUTTER: P12.

17 (Whereupon, an off the record discussion was held.)

18 MR. MURRAY: I know that's not the right
19 number on the exhibits.

20 MS. RUTTER: We'll straighten out the
21 exhibit number for the record.

22 MR. MURRAY: Go ahead. I don't want to
23 interrupt.

24 A. Beg your pardon?

25 Q. (By Ms. Rutter) We're having a discussion

1 about the exhibit number which we'll straighten out
2 later. For the record, we're definitely talking about a
3 memo dated August 19th, 1955.

4 MR. MURRAY: The specific date was August
5 19th?

6 THE COURT: The exhibit number is 257?

7 Q. (By Ms. Rutter) 257. Now, this memo which
8 we're now calling Exhibit 257 states in the second
9 paragraph, "The people in London were looking at the
10 Treon reports which they" ??

11 A. That's correct.

12 Q. "Which they had obtained from Monsanto in
13 the United States." Is that correct?

14 A. That is correct.

15 Q. And they were talking about in London, they
16 were talking about using Aroclor 1254 in an application.
17 Is that correct?

18 A. Oh, I see.

19 Q. They're discussing the Treon results?

20 A. Yes, yes.

21 Q. In relation to Aroclor 1254?

22 A. They're talking about 1254.

23 Q. And they note and mention in passing that
24 these Treon tests gave negative results with 1242. Is
25 that correct?

1 A. Yes.

2 Q. In fact, Dr. Treon tested the test animals,
3 and it was several different species at varying levels
4 of exposure with Aroclor 1242, and he found no effects
5 using Aroclor 1242. Is that correct?

6 A. That's right.

7 Q. I'm going to try to find my exhibit here,
8 the Treon 1956 American Industrial Hygiene Quarterly.
9 It's M235. I have it.

10 THE COURT: 235, did you say?

11 Q. (By Ms. Rutter) Yes. First of all, let's
12 turn to the very last page of this published Treon
13 report. It came out in 1956. On page 213 of Exhibit
14 M235, do you see where it says "Summary"?

15 A. Yes.

16 Q. Please follow along with me and tell me
17 whether I've read this correctly. "Prolonged
18 intermittent exposure of animals to the vapor of Aroclor
19 1242," and then it lists the levels at which they were
20 exposed, "Demonstrated no injury." Is that correct?

21 A. That's correct.

22 Q. They use several different species in these
23 studies, did they not?

24 A. They used a mixed bag of animals, yes.

25 Q. And in fact, on page 205 they describe what

1 those animals were if you'll turn here to the second
2 column.

3 A. Yes.

4 Q. "In all experiments, the period of exposure
5 or confinement was seven hours per day on five days per
6 week for several weeks," and it discusses cats, guinea
7 pigs, mice, rabbits and rats. Is that correct?

8 A. That's correct.

9 Q. And if you'll turn to page 207 and 208, I'm
10 looking at the text that occurs right here in the second
11 column. It says that they exposed the test animals to
12 the vapors of Aroclor 1242 for seven hours a day on 150
13 days over a period of 214 days. So as I understand it,
14 214 days is about seven months. Is that correct?

15 A. That's correct.

16 Q. But they were only exposing the animals to
17 the vapors five days a week instead of seven days a
18 week?

19 A. That's right.

20 Q. So the animals were exposed for five
21 months. Is that correct?

22 A. Well, yes, when you look at it that way.

23 Q. Right. You'd have 150?

24 A. Yes.

25 Q. 150 days, and if you divide that by 30,

1 that's about five months?

2 A. They were exposed to the period of five
3 months over seven months.

4 Q. Right. And in fact, Dr. Treon describes
5 this as a seven-month study in several places?

6 A. Yeah.

7 Q. It took them seven months to expose the
8 animals. Now, the highest level exposure was 8.6
9 milligrams per cubic meter. Is that correct?

10 A. That's correct.

11 Q. And that's the same thing as 8.6 micrograms
12 per liter?

13 A. Yes.

14 Q. But I'm going to stick with milligrams per
15 cubic meter because if I'm ??

16 A. That's correct.

17 Q. ?? capable of understanding anything, I can
18 understand that. And if you look at the second column
19 on page 212 ?? or excuse me. That's page 206. I'll
20 come back to that cite in a minute. On page 207, they
21 talk about the concentrations at one level. I don't
22 think I'm going to go over the intricacies of all the
23 test procedures, but Dr. Treon concluded, he looked at
24 the animals at several exposure levels ranging from 1.9
25 milligrams per cubic meter to 8.63 milligrams per cubic

1 meter, and he concluded that with Aroclor 1242, the
2 animals demonstrated no injury. Is that correct?

3 A. That's correct.

4 Q. Now, you look at page 212 of this exhibit,
5 M235, here in this second column, Dr. Treon is talking
6 about the Aroclor 1242 tests, and he makes his
7 recommendation that the allowable concentration of the
8 vapor of Aroclor 1242 should be at least two micrograms
9 per liter for two milligrams per cubic meter. Is that
10 correct?

11 A. That's correct.

12 Q. And then he points out in this article
13 that's published in the Industrial Hygiene Journal, "I
14 want you to know that this is twice the level that is
15 recommended by the American Conference of Governmental
16 Hygienists." Is that correct?

17 A. That's correct.

18 Q. So he was alerting people to the fact that
19 this was his opinion based on his experiments, but that
20 the American Conference of Governmental Hygienists were
21 a little more conservative. Is that correct?

22 A. That's correct.

23 Q. And it says that right here in this
24 published article?

25 A. That's what he says.

1 Q. Now, Dr. Treon found no effects in the test
2 animals with Aroclor 1242 at concentrations of heated
3 vapor as high as 8.63 milligrams per cubic meter. Is
4 that correct?

5 A. Yes, that's true.

6 Q. Now, Mr. Murray has been discussing tenfold
7 safety factors that they apparently looked at in
8 England. Is that correct?

9 A. That's what he was, Mr. Murray was stating.

10 Q. Since there was no effect in Dr. Treon's
11 experimental animals with 1242, Dr. Treon's
12 recommendation of two milligrams per cubic meter is
13 building in a safety factor of four, is it not?

14 A. Yes.

15 Q. But the American Conference of Industrial
16 Hygienists said that the threshold limit value or safe
17 level for Aroclor 1242 should be one milligram per cubic
18 meter. Is that correct?

19 A. That's correct.

20 Q. So based on the no effect level of 8.63
21 milligrams per cubic meter for Aroclor 1242 found by
22 Dr. Treon, the American Conference of Industrial
23 Governmental Hygienists built in a safety factor of
24 almost nine times. Isn't that correct?

25 A. That's correct. As I have told Mr. Murray,

1 that they viewed actual work experience just as well as
2 the laboratory testing on animals.

3 Q. Let me see if I can find Plaintiff's
4 Exhibit 146 that Mr. Murray discussed with you. Now,
5 Dr. Kelly, Monsanto never recommended the use of PCBs in
6 household paint in the United States, did they?

7 A. That is correct.

8 Q. And in London apparently they were
9 considering it, but you don't know if it ever happened?

10 A. I don't know if it ever happened or if they
11 were using it at any time.

12 Q. But ??

13 A. They were certainly talking about it.

14 Q. And this is the context for the
15 correspondence that occurred involving Mr. Barrett and
16 Mr. Hardy and you about the Treon studies. Is that
17 correct?

18 A. That's correct.

19 Q. And instead of, they were focusing on
20 Dr. Treon's report about Aroclor 1254?

21 A. Yes.

22 Q. And that's a different PCB from the Aroclor
23 1242 that we've been discussing?

24 A. That is correct.

25 Q. And as I understand it, the people at

1 Monsanto London were saying yes, we're thinking about
2 this new potential application. I wonder if we ought to
3 do more toxicology work. Is that correct?

4 A. Well, I guess that's what you could ?? I'm
5 not sure from reading this letter whether they were
6 already using it or talking about using it.

7 Q. Okay. And you responded in your letter
8 dated September 20th, 1955 that Mr. Murray has talked
9 about we've just did this extensive testing at the Treon
10 labs. Is that correct?

11 A. That's correct.

12 Q. You said, you know, we spent \$20,000 on
13 state?of?the?art tests at the Treon labs. Is that
14 correct?

15 A. That's correct.

16 Q. And what you said is I believe your work
17 should be directed towards finding out what the
18 concentrations of Aroclors are during the operations
19 regardless of whether it's industrial or painting. Is
20 that correct?

21 A. That's correct.

22 Q. Because they had written you a letter
23 saying we don't know what the concentrations are going
24 to be in the household when it's used in paint, if it
25 is. Is that correct?

1 A. I don't know if they said that, but I think
2 they inferred that or I said it to them. They certainly
3 weren't going to go around checking on somebody that
4 bought a can of paint at English Wal?Marts that painted
5 a bedroom with it.

6 Q. But so you wrote them this letter back
7 saying we've done the toxicity testing. We know what
8 the safe levels are. What you need to focus on is what
9 are the concentrations going to be if you put it into a
10 consumer use. Is that correct?

11 A. That's correct.

12 Q. Dr. Kelly, could you please identify
13 Exhibit, find and identify Exhibit 481 for the record?
14 Actually I may have to get you a different notebook.
15 Your Honor, that's in notebook volume four.

16 A. Same as this.

17 Q. I'm going to move these out of the way
18 here. Exhibit 481 is an article by Dr. Renate
19 Kimbrough. Is that correct?

20 A. Yeah, that's correct.

21 Q. And this is ?? It's published in 1987 in
22 the Annual Review of Pharmacology and Toxicology. Is
23 that correct?

24 A. That is correct.

25 Q. Is that a peer review journal?

1 A. Yes, it is.

2 Q. What's a peer review journal, just briefly?

3 A. It means that before you have an article
4 published in a scientific journal, you send a proposed
5 draft to the editor. He sends it around to a group of
6 individuals whom the editor thinks is pretty
7 knowledgeable about the same problem. They're his peers
8 or his equals in the scientific community, and if they
9 say ?? they either try to pick holes in them or they
10 say, well, this looks like it's pretty good stuff, it's
11 pretty accurate, so that it's published. In other
12 journals, and these are really the smaller ones like the
13 Missouri Medical Journal or something like that, that
14 you send an article in, if the editor likes it, he
15 publishes it.

16 Q. Now, this is the same Dr. Renate Kimbrough
17 who published an article in 1975 saying that she had
18 found liver hepatomas in the livers of female rats fed
19 high doses of Aroclor 1260 over their lifetime. Is that
20 correct?

21 A. Did you say '75?

22 Q. Yes. You retired in November of '74.

23 A. '74, that's right.

24 Q. And her work was published in '75. Is that
25 correct?

1 A. That's correct, that's correct.

2 Q. And if you'll turn to page 98 of this 1987
3 article by Dr. Kimbrough and look at the first sentence
4 in the second paragraph, it says, and tell me whether
5 I'm quoting this correctly ?? Have you found the spot,
6 Dr. Kelly? It's page 98.

7 A. Yes, I'm on it.

8 Q. It says, "No conclusive evidence thus far
9 reported shows that occupational exposure to PCBs causes
10 an increased incidence of cancer." Is that correct?

11 A. That's correct.

12 Q. And that's in 1987?

13 A. That's correct.

14 Q. The same Dr. Renate Kimbrough that found
15 liver hepatomas in rats testing with Aroclor 1260 in
16 1975?

17 A. That's correct.

18 Q. Dr. Kelly, could you please find Exhibit
19 M484 in your notebook? I think it's all the way at the
20 end of that same notebook. The last exhibit.

21 A. Yes, I have it.

22 Q. This is a 1994 article by the same
23 Dr. Renate Kimbrough, is it not?

24 A. Yes, it is. Yes, it is.

25 Q. Well, it says 1993, Massachusetts

1 Institutes of Technology on the inside page.

2 A. Yes.

3 Q. Could you please turn to page 224 of that
4 article? And this article that was published in a book
5 in either 1993 or 1994, Dr. Kimbrough at page 224 ??
6 have you found the page?

7 A. Yes, I have.

8 Q. Has a conclusion about her feelings about
9 the human health effects of PCBs today. Is that
10 correct? If you look under the conclusion section.

11 A. Yes, yes, I see it.

12 Q. And do you see the paragraph that starts
13 out, "By contrast"?

14 A. Yes.

15 Q. She says, "Claims of association based on
16 epidemiologic studies of chronic health effects such as
17 cancer and trace exposure to environmental levels of
18 PCBs are unjustified. One highly chlorinated mixture of
19 PCBs does cause cancer in laboratory animals (see tables
20 91A and 91B), but at levels that vastly exceed any to
21 which the general population is exposed. People have
22 overreacted to possible hazards from PCBs at typical
23 environmental levels." Is that correct?

24 A. That's correct.

25 Q. And if you'll just tell me if I've read

1 this correctly. At the top of page 224.

2 A. Yes.

3 Q. Just follow along and say whether I'm
4 reading this correctly. She says, "Sinks, et al., 1990,
5 reported a retrospective mortality study of workers at a
6 capacitor plant." Is that correct?

7 A. That's correct.

8 Q. And in skipping down a couple of sentences,
9 she talks about the study. She says, "For most of the
10 brain cancer cases, the investigators could not confirm
11 the diagnosis through medical records or pathology
12 reports." Is that correct?

13 A. That's correct.

14 Q. And then it's ?? After she discusses that
15 study, that she comes down here and makes her conclusion
16 that claims of association based on epidemiologic
17 studies of chronic health effects such as cancer and
18 trace exposure to environmental levels of PCBs are
19 unjustified. Is that correct?

20 A. That's correct.

21 Q. Dr. Kelly, let me hand you Exhibit M35.
22 It's in volume four.

23 THE COURT: I'm sorry. M?

24 MS. RUTTER: M35.

25 THE COURT: M35?

1 MR. MURRAY: I'm sorry?

2 MS. RUTTER: M35.

3 MR. MURRAY: Is that one we offered?

4 MS. RUTTER: What?

5 MR. MURRAY: Is that one we offered?

6 Q. (By Ms. Rutter) Yeah. Dr. Kelly, I only
7 want to touch on this letter real briefly.

8 A. All right.

9 Q. "PCBs were discovered in trace amounts in
10 the environment in the late 1960s." Is that correct?

11 A. That is correct.

12 Q. And this is a letter from Elmer Wheeler who
13 worked for you in the medical department at Westinghouse
14 Electric Corporation in Bloomington, Indiana. Is that
15 correct?

16 A. That is correct.

17 Q. And it's dated March 3rd, 1969?

18 A. Yes.

19 Q. And this letter from Mr. Wheeler is telling
20 Westinghouse about reports that are appearing about PCBs
21 in trace amounts in the environment. Is that correct?

22 A. That is correct.

23 Q. Dr. Kelly, have you heard of the
24 Environmental Defense Fund?

25 A. Have I heard of it?

1 Q. Yes.

2 A. Yes, I'm generally familiar with it, but I
3 don't know too much details about it.

4 Q. Okay. Could you please find Exhibit P61 in
5 your notebook?

6 THE COURT: M61?

7 MS. RUTTER: I'm sorry. M61.

8 MR. MURRAY: Can we approach the bench,
9 Your Honor?

10 THE COURT: Ladies and gentlemen, if you'd
11 like to stand to stretch your legs, feel free to do
12 that.

13 (At this time there was a discussion held at the
14 bench.)

15 MS. RUTTER: I have no further questions at
16 this time, Dr. Kelly. Mr. Murray will have some more
17 for you.

18 THE WITNESS: I can't hear you.

19 MS. RUTTER: I have no further questions at
20 this time. Mr. Murray will have some for you, I
21 imagine.

22 THE COURT: Mr. Murray, at this time we're
23 going to take a break. You're going to have to return
24 after the break. Our break will be until 11:20, so
25 you're going to have to return to the witness stand at

1 which time Mr. Murray may have additional questions for
2 you. So you may step down at this time.

3 Ladies and gentleman, at this time we're
4 going to take our morning break. We're going to be at
5 recess until 11:20. Ladies and gentlemen, justice
6 requires that you not make up your mind about the case
7 until all of the evidence has been seen and heard.
8 You're not to discuss this case among yourselves, nor
9 are you to permit anyone to discuss the case in your
10 presence. Ladies and gentlemen, we're going to be in
11 temporary recess until 11:20.

12 (Whereupon, Ms. Irvin was replaced by Ms. Madison.)

1 THE COURT: Mr. Murray, you may proceed.

2 REDIRECT EXAMINATION

3 BY MR. MURRAY:

4 Q. (By Mr. Murray) Dr. Kelly, Ms. Rutter on
5 several occasions made various ??

6 A. I'm sorry, I couldn't hear you.

7 Q. I'm sorry. On various occasions, Ms. Rutter
8 made distinctions between the types of Aroclors, 1242,
9 1254, 1260, and thereabouts. Isn't it true, Doctor, that
10 all of those various percentages in numbers that were
11 used are a blend of various percentages of chlorinated
12 diphenyls?

13 A. A blend of some of them, yes. The average
14 concentration is reflected by the 42 or 54.

15 Q. So the 42 percent may have some that have
16 higher chlorinated in them and lower chlorinated? 42 is
17 only a percentage, right?

18 A. That's correct. It's an average.

19 Q. And the same is true with the 54 and all of
20 the rest of them?

21 A. Yes, sir.

22 Q. I want to again refer you to the Hardy and
23 Garrett memos and the correspondence going back and forth
24 between yourselves and England. Ms. Rutter made some
25 comments about household paints.

1 A. Yes.
2 Q. Do you see any mention at all in any of
3 those memos about household paints?
4 A. Yes, one of them right here, it says,
5 lustrex strength latex paint.
6 Q. That's not a household paint, is it, Mr.
7 Kelly?
8 A. Yes, it is.
9 Q. Dr. Kelly ??
10 A. Yes.
11 Q. ?? the paint that they are mentioning in
12 there is a household paint?
13 A. The lustrex latex paint is a household
14 paint.
15 Q. Isn't it true that none of Monsanto's
16 products were ever used in paints that went into
17 households?
18 A. None of them in the United States were used.
19 Whether or not England were using them or was talking
20 about using them or had used them, I can't be sure of it.
21 Q. How do you know that that paint that he's
22 referring to in there is a household paint?
23 A. Because I know by looking at the hardware
24 store that lustrex is a paint and it has latex on it, so
25 it's a household paint.

1 Q. It's true that, Dr. Kelly, you don't know
2 whether this paint in here he's referencing is a
3 household paint or not, do you?

4 A. I believe. I don't have any reason to
5 believe it isn't.

6 Q. You don't have any reason to believe that
7 the United States Monsanto doesn't use any Aroclor in
8 household paints; isn't that true?

9 A. That's correct.

10 Q. And you have no way of knowing whether they
11 used Aroclor in household paints, do you?

12 A. Well, except that he's talking about lustrex
13 latex paint, and lustrex latex is a household paint, yes.

14 Q. He says in our literature that paint with
15 Aroclor 1248, plasticized lustrex latex paint, that's not
16 a household paint now is it, Dr. Kelly?

17 A. Certainly it isn't. A plasticizer is in
18 paint.

19 Q. I understand that. You are just assuming
20 that because it's got lustrex on there that it's a
21 household paint?

22 A. That if he is talking about painting a room
23 that is plasticized with Aroclor 1242, he is talking
24 about a household paint. If he is talking about a
25 lustrex latex paint, he's talking about a household

1 paint.
2 Q. Didn't you just tell me a second ago that
3 you didn't know whether or not they used any Aroclors in
4 any of their paints, in any household paints?
5 A. I'm not sure whether they did or did not.
6 Q. But you don't know really whether this is
7 household paint, do you?
8 A. I know that lustrex latex paint is household
9 paint, yes.
10 Q. Do you know why Aroclors were added to
11 paints?
12 A. I'm sorry, sir?
13 Q. Do you know why Aroclors were added to
14 paints?
15 A. As a plasticizer.
16 Q. And what benefit would that have to
17 household paints?
18 A. I don't know that.
19 Q. Now, in this again, P?257 ?? this memo, by
20 the way, is written by D.V.N. Hardy. Do you know who he
21 is?
22 A. Yes.
23 Q. Who?
24 A. He is somebody at their research and
25 development. He was not in industrial hygiene.

1 Q. He is, in fact, a doctor, though, is he not?

2 A. He's a Ph.D., I believe. I'm not certain.

3 Q. He's referred to in here as Dr. Hardy.

4 A. Well, that is a Ph.D., yes.

5 Q. How do you know he's not in industrial
6 hygiene or medicine or anything else?

7 A. Because I had a visit with him. I have been
8 talking to him, and I knew that he wasn't.

9 Q. D.V.N. Hardy, Dr. Hardy, in his August 19,
10 1955 memo, states, "With 1254, we know that 1.5
11 milligrams per cubic liter is above the maximum
12 permissible concentration for test animals, so that the
13 maximum for human beings must be placed below 1.5 cubic
14 milligrams per liter and must be applied to all Aroclors
15 on account of their similar constitution." Tell me if
16 I've read that correct, and if that's an accurate
17 statement.

18 A. Yes, you read that correctly, but it also
19 reflects that Dr. Hardy is certainly out of his field
20 when he's making such a statement.

21 Q. In this response by Helmer Wheeler dated
22 October 13, 1955 ??

23 MS. RUTTER: Excuse me, counsel, what's the
24 exhibit number?

25 MR. MURRAY: P?271.

1 Q. (By Mr. Murray) Mr. Wheeler mentioned that
2 Joe Treon, that's that person who did the Treon studies,
3 right?

4 A. That's correct.

5 Q. "Called me to clear several statements he
6 was going to include in a paper on his Aroclor inhalation
7 studies." Do you know why Dr. Treon would be calling
8 Helmer Wheeler to clear statements with him that he would
9 be using in a published paper?

10 A. I haven't the slightest idea.

11 Q. He says, "Based upon the animal results, Joe
12 and I agreed that he should propose a suggested maximum
13 allowable concentration for Aroclor 1242 of two
14 milligrams per cubic liter of air. In the case of 1254,
15 the MAC of one milligram per cubic liter would be
16 proposed." Do you know why Dr. Treon would be discussing
17 something with Helmer Wheeler what MAC should be purposed
18 based upon his own studies?

19 A. I haven't the slightest idea, but Dr. Treon
20 was a scientist in his own right, and he did the work, so
21 that's all I can say.

22 Q. That's what surprised me about it too.

23 A. I beg your pardon?

24 Q. I said, that's what surprised me about it
25 too. You have no explanation why he would be calling

1 Helmer Wheeler to get clearance on statements?

2 A. Well, that doesn't mean anything. I don't
3 know what was going on in Treon's mind.

4 Q. Helmer Wheeler goes on to state in this
5 October 13, '55 letter, that, "I hope that MCL," again,
6 that's Monsanto in England, right?

7 A. That's correct.

8 Q. "Will not interpret Treon's results in such
9 a fashion that MAC values lower than those indicated
10 above are ever mentioned in public in Great Britain." Do
11 you know why he would make a statement like that?

12 A. No, sir, I do not.

13 Q. Again, going back to that Treon study, Ms.
14 Rutter indicated that the tests run on 1242 did not show
15 any adverse results; is that correct?

16 A. That's correct.

17 Q. That's not completely accurate, is it,
18 Doctor?

19 A. I think it is.

20 Q. The studies ?? some of the studies on
21 Aroclor 1242 showed increased liver weights on the
22 exposed group and not on the control group; isn't that
23 correct?

24 A. Let's see it. Let's see the article.

25 THE COURT: Exhibit number, Counsel?

1 MR. MURRAY: That is Exhibit ?? Monsanto
2 Exhibit 235.

3 A. It says, no significant differences in
4 average changes of weight experimental control animals
5 were found on liver or kidneys. He states, "Aroclor 1242
6 at 6.83 micrograms with those of the controls they
7 tested, that liver and kidneys of rats, guinea pigs, and
8 rabbits," and they said, "Except in the case of the liver
9 reveal no significant difference between the test of the
10 controlled groups of guinea pigs, rats, and rabbits."

11 Q. Except in the case of the liver?

12 A. I beg your pardon?

13 Q. It says, "Except in the case of liver there
14 were no differences"?

15 A. No, it doesn't say that according to the way
16 I'm reading it. It says here, "Application of the test
17 would reveal any significant difference between the test
18 of the controlled groups of guinea pigs, rats, and
19 rabbits." I can highlight it for you if you'd like.

20 Q. You don't need to highlight it. I will read
21 it. I will read the whole sentence. "The comparison by
22 the "F" test of the variances of the ratios of the livers
23 or kidneys to the body weights of rats, guinea pigs, and
24 rabbits exposed to the vapor of Aroclor 1242, 6.83
25 micrograms per liter, with those of the control were no

1 significant difference except in the case of the livers
2 of the rats." Isn't that not what it says, Doctor? I
3 will show it to you right here.

4 A. Yes, but he's stating that part of this one
5 test didn't show a change, so he used another test, a "T"
6 test. I don't know what the "F" test is, but the test I
7 know is used in experimental work for a long time, and he
8 said, "Revealed no significant difference between the
9 test of controlled groups of guinea pigs, rats, an
10 rabbits." That's what he says.

11 Q. Again, dealing with Aroclor 1242,
12 concentration of 6.83 micrograms per liter application of
13 the "T" test no differences. In the mean values for the
14 experimental and control animals yield borderline
15 evidence of significant differences in the number of
16 leukocytes and the concentration of the hemoglobin and
17 the blood of guinea pigs. That's another difference,
18 isn't it?

19 A. It's an irrelevant difference.

20 Q. I apologize for taking so long.

21 A. I beg your pardon. I couldn't hear you.

22 Q. I said, I apologize for taking so long on
23 this. I think I found the area now. In the section of
24 his article talking about liver weights, reading the
25 whole paragraph, "The weights of the livers and kidneys

1 and the relationship of their weights to the body have
2 weights expressed as grams per 100 grams of body weight
3 of the animals that survived following exposure to vapor
4 of Aroclor 1242 in concentration of 6.83 microgram per
5 liter, are shown in Table III, which also gives the
6 corresponding data on the controls. Comparison by the
7 "F" tests to the body weights of rats, guinea pigs, and
8 rabbits exposed to the vapor of Aroclor 1242 with those
9 of the controls revealed no significant difference except
10 in the case of the liver of the rats." Isn't it true,
11 you can look at the table that's shown right there that
12 the livers of the rats exposed to 1242 were much heavier
13 in the controls?

14 A. Mr. Murray, I cannot make much sense out of
15 tables, but you are picking holes ?? you are picking
16 isolated items out of this report. The conclusion that
17 he has is the vapors of the Aroclor 1242 at one to eight
18 micrograms per liter demonstrated no injury. Now, that's
19 his conclusion. And he has shown by the "T" test that
20 the previous test, whatever that one, was showed in
21 guinea pigs some increasment on further study for the "T"
22 test. It was normal. So the summary is normal. So I'm
23 going to say, ask any toxicologist that will be here what
24 they think about this.

25 Q. Maybe that's what we ought to do about that,

1 Doctor.

2 A. I think so, because I'm certainly convinced
3 that Aroclor 1242 in this report was normal.

4 Q. You used the MACs a great deal in your
5 letters and correspondence back and forth between
6 yourselves and customers, didn't you, Dr. Kelly?

7 A. Well, I used it some in the TLVs came in. I
8 don't know when the TLVs came in.

9 Q. Well, I think, whether it's TLVs or MACs,
10 they were basically the same thing, aren't they?

11 A. No, they aren't the same thing. Maximum
12 allowable concentration, as the words apply, the top ??
13 the lowest limit and the highest limit I can expose a
14 worker to. TLV is a limit that a man can be exposed to
15 for eight hours a day for his lifetime, so there is a
16 victim. TLV is a more sophisticated term for industrial
17 hygiene. I don't want to quibble with you, Dr. Kelly,
18 but aren't they used for the same thing, whether there is
19 a TLV or MAC used to determine exposure in the work
20 place, isn't it, and it's used to determine maximum
21 amount of exposure in a work place?

22 A. No, it isn't because a TLV shows how much a
23 man can be exposed to for a lifetime, a maximum allowable
24 concentration can refer to a minute and a half hour and a
25 day.

1 Q. So what you are saying is under the
2 maximum ?? under the MACs, a man can't be exposed to any
3 or for any period of time above what the maximum is
4 specified?

5 A. Yes, because that's why they stopped using
6 it. They found that was inaccurate. That suppose a man
7 was exposed to twice, two milligrams of something for ten
8 minutes, well, that has no relationship to whether he was
9 exposed to eight hours a day. In fact, maximum are not
10 used anymore. You are quoting me from the '50s.

11 Q. We had this conversation yesterday, didn't
12 we, Dr. Kelly?

13 A. Well, I don't remember it, but ??

14 Q. Yeah, because yesterday you said they were
15 the same thing.

16 A. No, I didn't.

17 Q. All right. We'll let the jury remember.
18 Did the numbers change when they changed from maximum to
19 TLVs?

20 A. They may have, or they may not. I don't
21 know.

22 Q. It was Monsanto's goal in dealing with PCB
23 exposure to you, its employees, that there be no contact
24 with the skin, correct?

25 A. Well, that was an ideal goal, yes.

1 Q. Was there any piece of a brochure, a warning
2 label, a literature that says, "Avoid contact with the
3 skin," that you ?? that went out there in your tenure at
4 Monsanto?

5 A. No, because I knew there was going to be
6 contact. It's impossible to manufacture anything outside
7 of a radioactive substance without having contact.

8 Q. Let me show you an exhibit marked as
9 Plaintiff's Exhibit No. 78.

10 A. Yes, sir.

11 MR. MURRAY: Your Honor ??

12 (At this time there was a discussion held at the
13 bench.)

14 Q. (By Mr. Murray) Dr. Kelly, you indicated in
15 response to one of Ms. Rutter's questions that it was
16 your philosophy that in dealing with warnings, that they
17 be succinct, that there no extraneous materials, and that
18 they be short correct?

19 A. That's correct.

20 Q. If you said, avoid skin contact with
21 Aroclors. Is that short, succinct, and no extraneous
22 material?

23 A. I said, avoid prolonged or repeated skin
24 contact.

25 Q. I know what you said. I said, if you had

1 said ??

2 A. Oh, if I ??

3 Q. Um?hum. Does that fit within your
4 philosophy?

5 A. Well, that isn't necessary because
6 occasional skin contact is not poisonous. We are not
7 talking about sulfuric acid or something like that. We
8 are talking about an industrial compound that has a mild
9 to moderate toxicity, and you can get some on your skin,
10 and all you do is wash it off. There are hundreds of
11 millions of pounds of this material used.

12 Q. I will ask the question one more time,
13 Doctor.

14 A. I beg your pardon.

15 Q. I will ask it one more time because I don't
16 believe I got an answer. The question is: If you had
17 said avoid skin contact, that would be short, succinct,
18 and no extraneous material, wouldn't it?

19 A. Yes, it would, but so is what I said.

20 Q. Now, Doctor, Ms. Rutter asked you, "In 1974,
21 when you retired from Monsanto, was there anything in the
22 literature showing health effects from PCBs". And you
23 said, "No," correct?

24 A. I'm not exactly sure how she phrased it, no.

25 Q. But Monsanto, who was the manufacturer of

1 the product, never did any human health studies, did
2 they?

3 A. What do you mean they never did any human
4 health studies?

5 Q. I didn't know that that was a difficult
6 question.

7 A. I beg your pardon.

8 Q. I didn't know that that was a complicated
9 question. Did you ever do any human health study while
10 you were a medical director at Monsanto?

11 A. We examine our workers yearly, if you want
12 to consider that a health ??

13 Q. I don't. And you know from your own
14 experience that that would not be considered a
15 toxicological study, would you?

16 A. You are talking about toxicological study.
17 Are you talking about giving the material in humans?

18 Q. No, Dr. Kelly, and you know better than
19 that. There are epidemiological studies. There are all
20 kinds of studies that you can do with humans that would
21 determine if there are any long term effects from a
22 chemical. You didn't do any of those?

23 A. I examined our workers. We examined our
24 workers. And we knew that we had no problems in our
25 workers.

1 Q. And you knew also that part of the target
2 organ of this chemical was the liver, and you never ran
3 any liver tests when you worked ??

4 A. Yes, we did.

5 Q. Well, you did yearly, sometimes bi?yearly
6 examinations of your employees, did you not, Dr. Kelly?

7 A. Yes, we did.

8 Q. Did you ever run liver function tests with
9 those examinations?

10 A. Yes, we did. Sometimes we ran them in the
11 early, the late '30s and early '40s. We did not run them
12 routinely. We found we weren't getting any clinical
13 evidence of ailments. We ran a batch of them, but the
14 interest became more (inaudible) whatever is more
15 interested in 1972 or '73, and it came back normal.

16 Q. Referring you to Plaintiff's Exhibit 175, a
17 letter from you to William ?? Dr. William Heeks, May 17,
18 1963, "In our plants where we manufacture Aroclors, we do
19 periodic physical examinations on our workers at 12 to 24
20 month intervals. These are quite comprehensive but do
21 not include any special laboratory procedures such as
22 liver function tests." Have I read that correctly?

23 A. Yes, you have read it correctly.

24 Q. Thank you.

25 MR. MURRAY: One second, Your Honor. That's

1 all I have, Dr. Kelly.

2 A. Thank you.

3 THE COURT: Recross, Counsel.

4 RECROSS?EXAMINATION

5 MS. RUTTER:

6 Q. Dr. Kelly, I'd like to return briefly to
7 Exhibit P?257. It's the August 19, 1955 memo from Mr.
8 Hardy of Monsanto Chemicals Limited in London to Dr. J.W.
9 Barrett.

10 MR. MURRAY: What number is that, Counselor?

11 MS. RUTTER: It's 257.

12 Q. (By Ms. Rutter) That's the letter that Mr.
13 Murray was just discussing with you that refers to
14 lustrex latex paint?

15 A. That's correct.

16 Q. And there was a lot of questions about
17 whether that's a household paint or not. I refer you to
18 the last paragraph of this Exhibit P?257, and I'm sorry,
19 I'm down to one copy of it now. It says, "We still have
20 to examine the position of Aroclors in ordinary paints;"
21 is that correct?

22 A. That's correct.

23 Q. So that ordinary paint is a household paint;
24 is that correct?

25 A. Well, it's an ordinary paint.

1 Q. It's an ordinary paint that you can go to
2 the hardware store ??

3 A. I'm sorry. I didn't hear you.

4 Q. It's an ordinary paint that the general
5 public can go to the hardware store and buy?

6 A. That's my interpretation of it.

7 Q. And the last page of the memo they are
8 talking about, "Certainly these paints must not be used
9 on hot surfaces such as radiators and hot water pipes."

10 A. That's correct.

11 Q. And those are found in homes; is that
12 correct?

13 A. Absolutely.

14 Q. Mr. Murray referred to Plaintiff's Exhibit
15 271, a October of 1955 memo from Helmer Wheeler to Dr.
16 Newman in Newport, referring to Mr. Wheeler's discussions
17 with Joe Treon, and I understand you weren't part of
18 those discussions. Mr. Murray referred to clearing
19 statements included in the study. Referring to Exhibit
20 123, once again, I'm down to one copy of this now. Here
21 on the cover page of this Exhibit there is a lot of
22 technical information about Aroclor 1242 and 1254; is
23 that correct?

24 A. Yes.

25 Q. That's the kind of information that Monsanto

1 would have in its possession and it would be logical for
2 a scientist doing a test ??

3 A. I don't hear any of that.

4 Q. The information on page 1 of that exhibit
5 describes the physical properties of Aroclor 1242 and
6 1254; is that correct?

7 A. Yes, it does.

8 Q. If I can borrow the exhibit back for a
9 minute. For example, it talks about the specific gravity
10 of Aroclor 1242, and it talks about the distillation range
11 and the refractive index; is that correct?

12 A. Yes.

13 Q. That's the type of information that you
14 might expect a researcher to confirm with the
15 manufacturer of the chemical?

16 A. Yes.

17 Q. Now, there is a lot of technical
18 pathological discussion in the text history on this
19 study; is there not?

20 A. Yes, there is.

21 Q. And the highest dose of Aroclor 1242 that
22 was given to the animals was 8.63 milligrams per cubic
23 liter; is that correct?

24 A. That's correct.

25 Q. On page 212 of this document ??

1 THE COURT: Counsel ??
2 A. I have a copy.
3 MS. RUTTER: Thank you, Your Honor.
4 Q. (By Ms. Rutter) On page 212, that here in
5 the text, do you see in column one ??
6 A. Yes.
7 Q. ?? it says, "Discussion." Could you follow
8 along and tell me whether I'm reading this accurately?
9 "In terms of mortality growth except that of guinea pigs
10 and non?occurrence of pathological changes, the favor of
11 Aroclor 1242 and the concentration of 8.6 micrograms per
12 liter approaching saturation appeared to be non?injurious
13 to the experimental animals subjected to seven hours on
14 each of 17 days over a period of 24 days;" is that
15 correct?
16 A. That's correct.
17 Q. And then after he have discussed "F" tests
18 and "T" tests and summarized everything in charts, the
19 author of this study published in a peer review journal
20 concludes prolonged intermittent exposure of animals to
21 the vapor of Aroclor 1242 at 1.90 to 7.63 micrograms per
22 liter demonstrated no injury; is that correct?
23 A. That's correct.
24 Q. That's the conclusion of the scientist who
25 wrote the paper?

1 A. That's his conclusion, yes.
2 Q. And it was separate in a peer review journal
3 publication?
4 A. Yes, it was.
5 Q. Dr. Kelly, we've been talking about short
6 and succinct warnings. We've got a letter here from Mr.
7 Wheeler to Mr. Speicher. It's Monsanto Exhibit M?19, and
8 I will get you a copy. Could you, please, read that
9 sentence by Mr. Wheeler to Mr. Speicher.
10 THE COURT: Excuse me. What is the exhibit?
11 MS. RUTTER: M?19, Your Honor.
12 A. This is a letter from Wheeler to Speicher,
13 april 30, '62. "The liquid Aroclors are good solids from
14 normal fats and oils on skin in our own operation" ?? is
15 this the one you want?
16 Q. That's the one.
17 A. "In our own operation, we try to prevent
18 stress prevention of skin contact rather than the use of
19 trees."
20 Q. So what he said is in our own operation, we
21 try to stress prevention of skin contact?
22 A. That's correct.
23 Q. Is that clear and concise?
24 A. Yes.
25 Q. Prevention of skin contact is what Helmer

1 Wheeler recommended to William Speicher of Westinghouse;
2 is that correct?
3 A. That's.
4 MS. RUTTER: I have no further questions.
5 THE COURT: Thank you, Doctor. You may step
6 down.
7 A. Thank you, Your Honor, for your courtesy.
8 Thank you, Ladies and Gentlemen.
9 THE COURT: Counsel, you may call your next
10 witness.
11 MR. RACE: The plaintiffs call Dr. David
12 Marder.
13 THE CLERK: Do you solemnly swear the
14 testimony you are about to give in this case will be the
15 truth, the whole truth, and nothing but the truth?
16 THE WITNESS: Yes.
17 THE CLERK: Please, give your name for the
18 Court.
19 THE WITNESS: David Charles Marder,
20 M?A?R?D?E?R.
21 THE COURT: You may proceed, Mr. Race.
22 MR. RACE: Thank you, Your Honor.
23 ??????????
24 DIRECT EXAMINATION
25 BY MR. RACE:

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