

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
EASTERN DIVISION

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:
WALTER OWENS, et al., :
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Plaintiffs, :
v. :
:
:
MONSANTO COMPANY, :
:
:
Defendant. :
:
- - - - -X

Videotaped Deposition of
E. SCOTT TUCKER, III, PH.D.
VOLUME II
(Taken by Plaintiffs)
Charlotte, North Carolina
Wednesday, August 2, 2000
Reported by: Sydney C. Silva
Registered Professional Reporter
Notary Public

Tucker, E. Scott (deft's analyt chem expert) in OWENS

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12 ALSO PRESENT: Donald Graves, Videographer

13
14 Volume II of the deposition of E. SCOTT
15 TUCKER, III, PH.D., taken by the Plaintiffs at
16 Smith Helms Mulliss & Moore, LLP, 30th Floor,
17 Interstate/Johnson Lane Building, 201 North Tryon,
18 Charlotte, North Carolina, on the 2nd day of
19 August, 2000, 9:47 a.m., before Sydney C. Silva,
20 Registered Professional Reporter and Notary
21 Public.

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23
24
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3 E. SCOTT TUCKER, III, Ph.D.,

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11 EXHIBITS - VOLUME II

12 NUMBER IDENTIFIED

13 7 Letter from Henry Strand to 292
14 D. Wood, 11/28/66, MONS
090075 - 09007715 8 Letter from Gunnar Widmark 308
16 to Mr. Ford, 12/29/66,
MONS 08815017 9 "Pesticide Analysis," TRAN 311
18 056973 - 056975 (also marked
Plaintiff's Exhibit 318 Tucker)19 10 "Organochlorine Residues, OECD 311
20 Preliminary Study 1966-67,"
(also marked Plaintiff's Exhibit
21 319 Tucker), TRAN 057358 - 05737322 11 Memo from D.V.N. Hardy to 329
23 P.G. Benignus, et al, 1/17/67,
one page24 12 Memo from D. Wood to G. R. 341
Buchanan, MONS 097920 -
097922

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EXHIBITS - VOLUME II CONTINUED

NUMBER	IDENTIFIED
13	Memo from P. Emmet Kelly to Gene Wilde, 2/21/67, MONS 096495 354
14	Memo from R. Emmet Kelly to Dave Wood, 2/27/67, MONS 097694 358
15	Press Release for January 10, 1967, MONS 062162 - 062165 365
16	Memo from Cumming Paton to W. R. Richard, 6/18/68, MONS 097094 367
17	Memo from Elmer F. Wheeler to W. R. Richard, 10/21/68, MONS 097123 377
18	Memo from Elmer F. Wheeler to W. R. Richard, 10/21/68, SCM 051029 - 051045 377
19	Memo from Elmer F. Wheeler to W. R. Richard, 4/8/69, TRAN 008733 (also marked Plaintiff's Exhibit #353 Tucker) 460
20	Memo from E. S. Tucker to R. E. Keller, 6/24/69, MONS 097041 - 097042 467
21	"Study of the Open Air Combustion of Paper Containing Aroclor 1242," Special Study 70-6, MONS 071074 - 071078 494
22	Telex 3/2/70, MONS 21782 498

(Exhibits attached)

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P R O C E E D I N G S

THE VIDEOGRAPHER: Today's date is
August 2, 2000, this is tape four of the
deposition of Dr. E. Scott Tucker, III.
We're on the record at 9:47.

E. SCOTT TUCKER, III, PH.D.,
reappeared as a witness and, having been
previously duly sworn by the court reporter,
continued in deposition and testified as follows:

EXAMINATION

BY MR. WRIGHT:

Q. Today I would like to get into your
expert opinions, and let me start with the
question, what is your understanding of why
Monsanto has placed you forward as an expert in
this case?

A. Well, first of all, my understanding is
that in my area of expertise I am an expert. And
so that is one of the reasons, of course, that you
classify somebody as an expert because they are
qualified.

The other reason I believe is, is that
because of the length of time that I have been in
this particular business and been involved with
this particular subject I can provide a

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1 perspective from the beginning to the current day.

2 And so I believe that's why.

3 Q. Are you familiar with -- I believe one
4 of the things in your report says you're familiar
5 with Monsanto's response to the polychlorinated
6 biphenyl environmental situation. Is that true?

7 A. In the capacity that I was with Monsanto
8 with during the period of time that I was with
9 Monsanto, that is true.

10 Q. Okay.

11 A. Certainly it is not all-inclusive,
12 obviously. That's why I say I qualify it with the
13 capacity and period.

14 Q. And as we discussed yesterday, you were
15 the person that Monsanto tasked with the primary
16 responsibility for validating the work of Jensen
17 and the other scientists who found PCBs in the
18 environment initially?

19 A. That's correct. I was tasked with the
20 responsibility of verifying that the tentative
21 identifications that these people had done were
22 indeed true. And further with the task of
23 optimizing methods and adopting methods and
24 developing methods that were specific for
25 measuring PCBs and actually quantitating those.

1 Q. Was it your impression at the time you
2 were given that task that that was a matter of
3 some importance to Monsanto?

4 A. Correct. I don't believe Monsanto was
5 in the habit of taking Ph.D. chemists and
6 assigning them problems that were trivial.

7 Q. And in all honesty, based upon your
8 experience, it would have been a matter of concern
9 for any responsible company to know that their
10 product is persisting in the environment, may be
11 bioaccumulating and may have the kind of toxic
12 effects that were contended that PCBs might have?

13 MR. PRAUSE: Object to the form of the
14 question.

15 A. If you are asking me do I agree that a
16 chemical company such as Monsanto and especially
17 Monsanto was concerned about how what they did
18 impacted society, I would agree with that. I
19 think that's kind of in the broad vein that you
20 asked that question.

21 Q. Yes, that's exactly what I was asking.

22 And in that respect, a responsible
23 chemical company would do everything within its
24 power to reasonably determine what its products
25 were doing in the environment as soon as it became

1 aware of a potential problem like that?

2 MR. PRAUSE: Object to the form of the
3 question.

4 A. That's, that answer is yes and I believe
5 to this day that that is true of Monsanto.

6 Q. All right. And you believe that because
7 as soon as you were given this task of validating
8 Dr. Jensen's work you set out to do so in as
9 expeditious a manner as you could perform?

10 A. Yes.

11 Q. And in fact, Dr. Tucker, however, you're
12 aware, are you not, that by the time Monsanto gave
13 you the task of validating Dr. Jensen's work that
14 Monsanto had been aware of Dr. Jensen and
15 Dr. Widmark and others' work for at least a
16 year-and-a-half?

17 MR. PRAUSE: Object to the form of the
18 question.

19 A. I'm not, I couldn't swear to that.

20 Q. All right. In fact, a year-and-a-half
21 delay would not have been proper in response to a
22 matter like the environmental concerns that we
23 talked about earlier?

24 MR. PRAUSE: Object to the form of the
25 question.

1 A. I don't agree with that. In my opinion,
2 we have here what is called and evolutionary
3 process. And based on the knowledge that was
4 available at the time that I became involved, it
5 was more of a, "Gee, I wonder how that got there?
6 And gee, I wonder if it is not an artifact?"

7 For example, I think the first report,
8 if I remember correctly, was that there was a
9 polychlorinated biphenol -- or biphenyl -- found
10 and qualitatively identified in extracts of eagle
11 feathers. And you know there was even some
12 thought at that point in time that PCBs or the
13 polychlorinated biphenyl might be a part of a
14 formulation that was used to preserve these birds
15 in the museum.

16 So I think that what you have said makes
17 a quantum jump, and that wasn't the state of the
18 knowledge at that time.

19 Q. And the time you're talking about is the
20 time that you were given the task of validating
21 the work?

22 A. I believe we have been talking about '68
23 and '69 --

24 Q. Yes.

25 A. -- is the time frame that we were

1 talking about. Is that correct?

2 Q. Yes.

3 A. Okay, then yes.

4 Q. Okay. In fact, Dr. Tucker, Monsanto had
5 been advised in November of 1966 of several of the
6 things that we discussed yesterday you were
7 advised in the summer of 1968, correct?

8 A. I haven't looked at the document that
9 you are showing or going to show me --

10 Q. Okay. Let me show you a letter --

11 A. -- so if you are talking about it, I
12 need to look at it.

13 (Deposition Exhibit No. 7 marked for
14 identification.)

15 A. Let me show you a letter that we have
16 marked as Exhibit 7, which is a letter from
17 Monsanto. I'll just represent to you that these
18 were Monsanto's agent in Europe, Rising and
19 Strand.

20 Q. And this is a letter to David Wood, who
21 I believe you are familiar with, are you not?

22 A. Yes.

23 Q. Okay. Have you seen that letter before?

24 A. No, I have not.

25 Q. Okay. Why don't you take a moment to

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1 review it and then I'll ask you some questions
2 about it.

3 A. (Witness peruses document.)

4 I have completed reading it.

5 Q. Okay. Was this information given to you
6 at the beginning of your task in or about July of
7 1968?

8 A. As I stated earlier, I have not seen
9 this, so no.

10 Q. All right. There is a lot of
11 information in this three-page letter about what
12 Dr. Jensen found in 1966, correct?

13 A. It appears that, that most of the
14 information is taken from popular newspaper
15 articles and does reference what Jensen has
16 apparently told them and that they have written.

17 Q. Okay. It mentions a meeting of
18 scientists in Stockholm on November 22, correct?

19 A. Where? Okay, the --

20 Q. The second paragraph. Mentions, it
21 states, "The findings were discussed at a meeting
22 of the scientists at the Wenn-Gren Centre in
23 Stockholm on November 22."

24 A. Right.

25 Q. Correct?

1 A. It also says, "Below please find the
2 translation of an article in a Swedish daily
3 newspaper."

4 Q. All right. And what was stated in that
5 paper about the scientific meeting was that
6 polychlorinated biphenols, and that's the point
7 you were talking about yesterday, in this part of
8 this paper -- of this letter it says phenol,
9 P-H-E-N-O-L, correct?

10 A. Correct that was spelled --

11 Q. It says "PCB for short"?

12 A. This is what I had seen earlier in a
13 copy of a telex.

14 Q. All right.

15 A. Correct.

16 Q. And on this document it is handwritten
17 "This is not biphenyl. P.K.B." Are you aware
18 that that's Paul Benignus?

19 A. Right. I'm not sure, I don't recognize
20 that as his initials, but I have no reason to
21 believe it couldn't be Paul Benignus.

22 Q. Right.

23 A. And basically it appears that he's
24 saying that, he's pointing out the fact that, as
25 we discussed earlier, that "phenols" is not the

1 way to prefer to biphenyl --

2 Q. Right?

3 A. -- and that indeed recollects a

4 different group of compounds.

5 Q. That's right. And in fact, Monsanto was

6 aware that it was not biphenols but it was in fact

7 biphenyls such as was manufactured by Monsanto

8 within a matter of days if not weeks of this

9 letter?

10 MR. PRAUSE: Object to the form of the

11 question.

12 Q. Are you aware of that?

13 A. It appears that individuals within

14 Monsanto could have been. But if you are saying

15 that the whole company knew it, I doubt that.

16 Q. Okay. What is further indicated in this

17 November 1966 document is that Dr. S. Jensen

18 and -- Dr. Jensen has long, for a long time seen

19 something as unknown peaks on their gas

20 chromatographs, correct? Do you see that

21 language?

22 A. Yes. No, I see that language --

23 Q. All right.

24 A. -- and I'd have to tell you that today

25 we seen unknown peaks on those chromatographs,

1 too.

2 Q. Okay. And that -- do you see the
3 statement, "It has been found that they consist of
4 a group of poisons, polychlorinated biphenols,"
5 again with the O instead of the Y, "(for short
6 PYB) which are closely related to, and equally
7 poisonous as, DDT."

8 Do you see that?

9 A. I see it, yes.

10 Q. All right. And I understand that you're
11 going to tell us that you don't agree with that
12 but --

13 A. I don't.

14 MR. PRAUSE: Object to the form of the
15 question.

16 A. I see the language --

17 Q. Let me ask --

18 A. -- and since you have decided what I'm
19 going to say, would you like me to say it?

20 Q. No. Let me just ask you the question:
21 Did I read that statement correctly in the
22 document from November 1966?

23 A. You have read the statement, you have
24 read excerpts of the statement correctly.

25 Q. All right. In the next page there's a

1 paragraph that says, "research Assistant S. Jensen
2 has tested 200 fishes and a number of birds and
3 has taken several samples of air and has reached
4 the conclusion that PCB is equally common in
5 nature as chlorinated hydrocarbons of the type of
6 DDT, DDE and Lindane."

7 Do you see that?

8 A. Yes, I do.

9 Q. Do you see that he says, or this
10 November document says, "In the course of his
11 work, Mr. Jensen has found that it is frequently,"
12 and I'm skipping a little bit?

13 A. I believe that he said "not found."

14 Q. "has not found anything indicating that
15 the source of contamination comes from
16 agricultural additives. It is, however, obvious
17 already now that PCB is most frequently found in
18 organisms living in water or feeding from water
19 animals."

20 Did I read that correctly?

21 A. Yes, you did.

22 Q. All right. "In all examined pikes, PCB
23 was found." Is pikes a kind of a fish, to your
24 knowledge?

25 A. Oh, yeah, pike is a fish. It is kind of

1 like a walleye.

2 Q. Okay. The next paragraph indicates,
3 "PCB is found in water and air, and not only in
4 the Swedish air but also in E.G.," example, I
5 assume he means, "London air."

6 Did you see that or do you see that in
7 this November '66 document?

8 A. Yes, I do. And I think, to be fair,
9 what they are saying is that unknown peaks in
10 chromatograms similar to the ones that Jensen is
11 using to do PCB -- to do pesticide analysis, that
12 they are seeing peaks similar to what he is
13 seeing.

14 And I also recall that Dr. Widmark, who
15 is Jensen's -- who is the director of the
16 institute and who is Jensen's boss, was not as
17 positive as Jensen was. And in fact, there was a
18 disagreement between he and Jensen that there
19 should be more work done to really confirm it for
20 sure before they started getting into the popular
21 press.

22 And in fact, I don't believe that the
23 information had even been published and
24 peer-reviewed in any acceptable journal at that
25 point in time either.

1 But that's just my knowledge of the
2 subject in 1968.

3 Q. All right. Let me object nonresponsive.

4 Continuing with this November 1966
5 document, do you see the paragraph where it
6 states, quote, "Mr. Jensen had also examined the
7 heir of his family and himself and has found PCB
8 on all samples. Most PCB was found in the hair of
9 his wife but most sensational was that the girl
10 aged five months had more PCB in her hair than her
11 brothers and sisters of three and six years.
12 Probably the girl had got the poison via the
13 mother's milk."

14 Did I read that correctly?

15 A. You read it correctly.

16 Q. And in fact, Dr. Tucker, you are aware
17 that PCBs do bioaccumulate in humans, correct?

18 A. Yes.

19 Q. And you are aware that there is now no
20 question that PCBs are transferred from mothers to
21 children through breast milk?

22 A. Yes.

23 Q. And that they accumulate in human beings
24 just as they do in fish, birds and mammals?

25 A. PCBs are lipid soluble and yes, they do.

1 Q. Now in the next --

2 A. That's not what that says, I hope you
3 know that.

4 Q. No, we read exactly what it says.

5 A. I know. but that is not what that says,
6 what you are saying. But that's okay.

7 Q. You don't think a fair reading of this
8 is that PCBs contaminate human beings and are
9 passed to the children through the mother's breast
10 milk?

11 MR. PRAUSE: Object to the form of the
12 question.

13 A. I think in the year 2000 that that's a
14 fair statement to make for even you. I do not
15 believe in 1966 that it was a fair statement for a
16 responsible scientist to make based on the
17 information and the knowledge that was available
18 at that time, and certainly not in a popular
19 newspaper article.

20 Q. Well, it turns out, however, that it was
21 confirmed after this statement was made that that
22 statement is essentially true?

23 A. Yes, that is correct. And in fact, we
24 were major participants in confirming the facts.

25 Q. And in fact Monsanto had an absolute

1 responsibility to confirm whether or not its
2 products were accumulating in human beings and
3 being passed from mother to child in breast milk?

4 MR. PRAUSE: Object to the form of the
5 question.

6 Q. Correct?

7 A. I'm not sure that -- the concept, yes.
8 And Monsanto did participate in that and did just
9 as you have said.

10 Whether or not it gravitates down to as
11 specific as something as mother's milk, I don't
12 know whether an absolute responsibility is
13 associated with something like that.

14 Q. You don't believe a corporate --

15 A. In 1966.

16 Q. You don't believe a corporation like
17 Monsanto had a duty even in 1966 to determine
18 whether its chemicals were accumulating in humans
19 or gravitating into humans and being passed from
20 humans into their children through the mother's
21 milk?

22 MR. PRAUSE: Object to the form of the
23 question.

24 A. Not only -- I'm sorry. Not only do I
25 believe that, as I've stated earlier, the company

1 participated in that thing and was a major player
2 and had major resources dedicated to doing just
3 that.

4 Q. All right. And the next paragraph I
5 believe is what you were referring to yesterday
6 about taking samples from a museum, and I'll just
7 read the paragraph.

8 "In the state museum Mr. Jensen has
9 examined the whole collection of sea eagles dating
10 back to 1880. By testing it could be established
11 that PCB was present only in birds from 1944 and
12 thereafter while birds collected before 1944 were
13 quite free from PCB."

14 Do you see that paragraph?

15 A. Yes, I do.

16 Q. Does that give a hint the scientific
17 community and producers of PCBs in particular
18 that, in fact, what was being found was
19 accumulating after the widespread use of PCBs
20 began?

21 MR. PRAUSE: Object to the form of the
22 question.

23 A. No.

24 Q. That gives no hint to either Monsanto or
25 anybody else?

1 A. No. There's so many explanations with
2 that limited amount of information that it -- no.

3 Q. Okay. But in fact, we know that that is
4 true now, correct?

5 A. Not based on eagle feathers.

6 Q. No, but based on the entire body of
7 science that developed after this --

8 A. 33 years later --

9 Q. -- indication?

10 A. -- we know that for sure based on
11 responsible scientists investigating the problem,
12 sharing it with each other, and determining what
13 was going on, absolutely.

14 Q. And the next paragraph says, "The use of
15 PCB in Sweden is not established in detail.
16 According to American sources these type of
17 products are used in the manufacture of a variety
18 of heat-resistant materials that are used for
19 electrical insulation, for fireproof heat
20 transport in hydraulic oils, in lubricating oils
21 used at high temperature and pressure, in paints
22 and as pigments in various plastics."

23 That describes essentially the spectrum
24 of Monsanto's PCB products at the time, correct?

25 MR. PRAUSE: Object to the form of the

1 question.

2 A. It's a description, a summary
3 description, of the uses of PCBs.

4 Monsanto, by the way, wasn't the total,
5 the only U.S., the only international manufacturer
6 of PCBs, so --

7 Q. I understand that. Monsanto was the
8 only U.S. manufacturer?

9 A. Correct. But there were multiple ones
10 in Europe and Russia and those kinds of places,
11 too. So it was kind ever presumptuous to assume
12 that they came all the way from the United States
13 to Sweden when there were closer sources.

14 Q. And it didn't really matter where they
15 came from in November of 1966, did it, Dr. Tucker?
16 Wasn't the important fact that PCBs were being
17 found in wildlife, found in human beings, presumed
18 to accumulate through the food chain, and have
19 toxic properties?

20 MR. PRAUSE: Object to the form of the
21 question.

22 Q. Weren't those the important points?

23 A. That's a multiple question. I don't
24 know how to answer --

25 Q. Were each one --

1 A. -- each of the questions.

2 Q. Okay. Were each one of those points
3 important to Monsanto or should have they been
4 important to Monsanto?

5 MR. PRAUSE: Object to the form of the
6 question.

7 A. All of those points were important to
8 the world and including Monsanto; and I think I
9 have established and stated that Monsanto took
10 them as being important.

11 Q. Would those points be more important to
12 the world's leading manufacturer of PCBs than to
13 the ordinary person on the street in November of
14 1966?

15 MR. PRAUSE: Object to the form of the
16 question.

17 A. Yes.

18 Q. Now here in the last paragraph there is
19 stated, quote, "I suppose there is no doubt that
20 what has been termed polychlorinated biphenyls,"
21 and here it is spelled correctly, isn't it,
22 Dr. Tucker?

23 A. Here what is spelled correctly?

24 Q. Biphenyls, it's spelled polychlorinated
25 B-I-P-H-E-N-Y-L-S?

1 A. Yes, and it does say, "I suppose there
2 is."

3 Q. Yes. So to read that sentence, the
4 summary sentence of this November 1966 letter, I
5 suppose there, quote, "I suppose there is no doubt
6 that what has been termed polychlorinated
7 biphenyls is equal to Aroclor. There is also no
8 doubt that the published facts will cause
9 considerably unrest in several quarters. We
10 probably will have to have Aroclor registered with
11 the Swedish Board of Poisonous Substances and the
12 industry will have to be particularly careful in
13 handling the material."

14 Did I read that correctly?

15 MR. PRAUSE: Object to the form of the
16 question.

17 A. You read it correctly. Is there -- let
18 me ask you a question. Is there a question here
19 outside the fact did you read the paragraph
20 correctly?

21 Q. No.

22 A. Okay. Thank you.

23 Q. The only question that I just asked you
24 is, "Did I read that paragraph correctly?"

25 MR. PRAUSE: Object to the form of the

1 question.

2 Q. Or did I read the first part --

3 A. I was trying to understand if you had a
4 question for me there outside of that one. And
5 you apparently don't. So you did read it
6 correctly as it is written.

7 Q. And in fact, whoever wrote this,
8 Monsanto's agent, Henry Strand, was correct.
9 Eventually Aroclor was regulated, and eventually
10 industry was instructed to be careful in handling
11 the material, and eventually in fact the material
12 was banned worldwide?

13 MR. PRAUSE: Object to the form of the
14 question.

15 A. Parts of your question can be answered
16 yes and parts of your question can be answered no.
17 Which parts of your question would you like me to
18 address?

19 Q. I don't think we need to address it any
20 further.

21 Would you have liked to have had this
22 information when you began your attempt to
23 validate Dr. Jensen's work in July of 1968?

24 MR. PRAUSE: Object to the form of the
25 question to the extent you are posing a

1 hypothetical question to a fact witness.

2 Q. You can answer.

3 A. My answer is that it wouldn't have
4 impacted what I did in any way, shape or form. I
5 would have done the same thing regardless of
6 having that information or not in terms of what my
7 responsibilities were, what my function was and
8 what my assignment was. It would have neither
9 made it easier or harder; it wouldn't have made it
10 faster or slower.

11 (Deposition Exhibit No. 8 marked for
12 identification.)

13 Q. Now, in fact, within approximately a
14 month of this November 1966 letter, Dr. Widmark
15 himself is communicating to Mr. Ford in St. Louis
16 directly, correct?

17 A. Did you want me to read this?

18 Q. Well, first of all, just see if that is
19 what I represented, a direct communication from
20 Dr. Widmark to --

21 A. What you have represented here is a copy
22 of what appears to be a cover page or a letter
23 that is addressed to a Mr. Ford from Gunnar
24 Widmark.

25 Q. All right. And you can review that.

1 But before you do, you're aware that Gunnar
2 Widmark is the Dr. Widmark that we have talked
3 about that works with --

4 A. That is correct.

5 Q. -- Dr. Jensen in Sweden?

6 A. (Nods head up and down.)

7 MR. PRAUSE: Object to the form of the
8 question.

9 Q. Go ahead. Is that correct?

10 A. Yes.

11 Q. All right. Why don't you go ahead and
12 review the letter and the attached materials.

13 A. (Witness peruses document.) Did you
14 want me to read the entire document or simply the
15 cover letter?

16 Q. No, yeah, for the time being just read
17 the cover letter.

18 A. I have read that.

19 Q. I will represent to you that the
20 documents that are attached to that are an exhibit
21 from a previous deposition that you gave, and they
22 are essentially Dr. Widmark's and Dr. Jensen's
23 paper. But why don't you take a quick look at --

24 A. Do you want me to review Plaintiff's
25 Exhibit 318 Tucker?

1 Q. To the extent you feel necessary.

2 A. (Witness peruses document.) May I ask a
3 question about the exhibit?

4 Q. Yes, sir.

5 A. The letter on top is dated December 29,
6 1966, and the exhibit is designated as
7 September 14, 1967. So there's almost a year
8 difference between the two.

9 Q. Okay.

10 A. Is that important?

11 Q. I'm not sure whether it is or not.

12 Let's talk about them piece-by-piece, because --

13 MR. PRAUSE: Do you have any other
14 copies of that?

15 MR. WRIGHT: No.

16 MR. PRAUSE: Given the questions that
17 Dr. Tucker has raised about it, I would like
18 to look at it before we proceed.

19 MR. WRIGHT: Why don't we break them up,
20 then.

21 MR. PRAUSE: Okay.

22 MR. WRIGHT: I put them together because
23 I thought they went together. But perhaps
24 you can explain why they don't go together.

25 THE WITNESS: Did you want an

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 explanation of that, was that a question?

2 MR. WRIGHT: No, not yet. The first
3 document is Exhibit No. 8; and that is the
4 letter that we discussed from Dr. Widmark to
5 Mr. Ford in St. Louis, Missouri, in December,
6 dated December 29, 1966.

7 THE WITNESS: Did you want Marsh or did
8 you want Mr. Prause to look at it?

9 MR. WRIGHT: He wanted to look at it.

10 MR. PRAUSE: Mr. Prause would like to
11 look at it. (Pause)

12 (Deposition Exhibits Nos. 9 and 10
13 marked for identification.)

14 Q. The next two exhibits, Exhibits 9 and
15 Exhibits 10, are exhibits from a previous
16 deposition of yours, the deposition that you gave
17 in the TransWestern case for Monsanto.

18 First of all, do you recall giving that
19 deposition? That was the one that was given in
20 Greenville, South Carolina.

21 A. Yes.

22 Q. And exhibit -- well, I'll just ask you
23 what Exhibit 9 and Exhibit 10 are.

24 Let's start, however, with Exhibit
25 No. 8, which is the cover letter. In this letter

1 from Dr. Widmark, he indicates that -- well, in
2 the first paragraph he basically greets Mr. Ford
3 and reminds him of a meeting that they had had a
4 the year before, correct?

5 A. Actually it goes a little bit further
6 than that, from my viewpoint; in terms of what I
7 read, at least.

8 Q. Well I'm trying to focus on the
9 significance. You think there is some
10 significance to what else is stated in the first
11 paragraph?

12 A. Yeah, I do. Because it kind of
13 indicates that there has been a cooperative effort
14 between Monsanto and Dr. Widmark on phenolic
15 composition of TCP, which is probably
16 trichlorophenol. And I think that's important
17 relative to the confusion with respect to the
18 polycaloric biphenyls and things of that sort.

19 I also think it is important to note
20 that there has been a cooperative effort between
21 Widmark and Monsanto as early as this.

22 Q. And so there was a clear line of
23 communication between Monsanto and Widmark for
24 whenever Monsanto chose to exercise it prior to
25 December 1966, apparently?

1 MR. PRAUSE: Object to the form of the
2 question.

3 A. The letter demonstrates that Widmark
4 could communicate with Mr. Ford and did.

5 Q. Okay. In the second paragraph of this
6 letter it states, and I will read it and you tell
7 me if I'm reading it correctly:

8 "This letter is to inform you that we
9 recently have identified most of the unknown
10 GC-peaks at residue analyses of pesticides in
11 biological samples. By the aid of combined GC and
12 mass spectrometry Mr. Jensen of this institute has
13 found the unknowns to be polychlorinated
14 biphenyls," with a Y. And that is underlined,
15 correct?

16 A. Yes.

17 Q. "polychlorinated biphenyls," underlined,
18 "which among other companies are manufactured by
19 Monsanto, trade name Aroclor."

20 Did I read that paragraph correctly?

21 A. You read it very well.

22 Q. The next paragraph states, "Added to
23 this letter you will find a preprint of the
24 synopsis of our publication which will appear in,"
25 and it's an acronym ACTA?

1 A. Acta. Chem. Scand.

2 Q. Acta. Chem. Scand.?

3 A. Analytical Chemistry of Scandinavia.

4 Q. "(Summer 1967.) Two gas chromatograms

5 are also added to show that the chlorinated

6 biphenyls are enriched in ecological series. In

7 the sample of the sea eagle were found:

8 polychlorinated biphenyls," is that 80 ppm?

9 A. It could be 80, 60, 50.

10 Q. You can't read it?

11 A. No, I can't read whether it's an eight,

12 a six or a five.

13 Q. All right.

14 A. But it, I mean...

15 Q. All of that is essentially irrelevant,

16 whether it is an eight or a six or a five?

17 A. Exactly. But you asked me if I could

18 read it.

19 Q. Okay. "Ordinary chlorinated pesticides

20 80 ppm and mercury," something in parentheses, "40

21 ppm."

22 Did I read that correctly?

23 A. Yes, you did.

24 Q. Then the last paragraph, "At present we

25 have no knowledge of the biological significance

1 of the presence of these compounds in living
2 organisms. We have started a collaboration with
3 the Department of Toxicology at the Carolin
4 Institute but we should very much appreciate to
5 work with your toxicologists over this problem."

6 Last paragraph, "We will be glad to give
7 you any further informations of the results
8 obtained in this laboratory.

9 "Sincerely yours, Gunnar Widmark."

10 Did I read the rest of the letter
11 correctly?

12 A. Yes.

13 Q. Okay. And so obviously attached to this
14 letter was, according to him, a synopsis of the
15 publication that will appear in the summer of '67
16 and two gas chromatograms. And that's why I
17 attached Exhibit 9, because it seemed to me to
18 match what he was describing. But if you would
19 look at Exhibit 9, you may --

20 MR. PRAUSE: Object to the form of the
21 statement in the last question.

22 Q. -- believe that it was not --

23 A. From my viewpoint, too, it is nice to
24 see that they agree with us that at that point
25 they had no knowledge of the biological

1 significance. Later on that was, that was
2 developed; but at this point in time that was an
3 accurate estimate of the knowledge, including his.

4 On the exhibit that you had attached to
5 this when I --

6 Q. Let me object nonresponsive and ask you
7 a question, because I --

8 A. I thought you questioned me a question.
9 It's becoming very confused so you might --

10 Q. As counsel, as counsel pointed out in
11 his objection, perhaps I made more of a statement
12 than a question, so let me ask you a question.

13 A. Okay.

14 Q. And you answer my question.

15 A. And it is appreciated, thank you.

16 Q. What does Exhibit 9 appear to be to you?

17 A. (Witness peruses document.) Exhibit 9
18 appears to be a part of what you had shown me
19 earlier and asked me to review.

20 Q. Yes. And what does it appear to be to
21 you?

22 MR. PRAUSE: Object to the form of the
23 question. That's asked and answered.

24 Q. Apart from being what I had shown you
25 earlier, what does Exhibit 9 appear to be to you,

1 Dr. Tucker?

2 A. It is a, according to it itself -- it
3 looks, first of all, like it is a copy of a larger
4 document because you can see in the binding in the
5 area there that there's much more to this than, or
6 at least it would appear.

7 And the front page is called a synopsis.
8 And the second page is a chromatogram, one
9 chromatogram, of a residue. And it looks
10 primarily to be DDT and DDE and some other unknown
11 peaks. There probably could be some Lindane, some
12 other things in here, too.

13 And then attached to that single
14 chromatogram is a, likes like a written org chart.

15 Q. A written what chart?

16 A. Organizational chart having to do with
17 Widmark being the head. And then it shows that
18 there is a secretary; and that there is some 15
19 research fellows. And that the education is 24
20 students a year, 12 graduates. That there are
21 four technical assistants, that they have two
22 workshops. That they have about a 400-meter,
23 square meter, laboratory.

24 And then it lists some examples of some
25 instrumentation that they have. They have 40 gas

1 chromatographs. They have an infrared, an
2 ultraviolet. They have an atomic absorption,
3 which we talked about earlier. They have a
4 differential scanning calorimeter. They have an
5 ion chamber.

6 Q. Doctor --

7 A. They have an electrophoresis.

8 Q. -- let me just stop you there.

9 MR. PRAUSE: I think the doctor is
10 entitled to finish his answer.

11 Q. Okay, that's fine.

12 A. They have, interestingly enough, at the
13 end of that paragraph they have written in an LKB
14 9000 mass spectrometer, which is the one that was
15 first used by them and LKB and attached to a GC
16 and used on environmental samples.

17 Q. Somebody has written that in, you're
18 saying?

19 MR. PRAUSE: Objection to the form of
20 the question.

21 A. Yeah, how could I get there unless, you
22 know, they could have -- it would appear, yes.

23 Q. Somebody hand-wrote something --
24 somebody hand-wrote what you just said on top of
25 the --

1 A. I believe that's what I said.

2 Q. -- text.

3 A. Yes.

4 Q. Well, you said "they did it," and --

5 A. "They" as a general term.

6 Q. Right.

7 A. But that's fine. I'm missing something
8 here. But as I said, handwritten on the sheet,
9 interestingly enough, is -- to me at least -- is
10 the mass spectrometer, the actual model number and
11 everything that was used for the first time on the
12 environmental samples by those folks. It's kind
13 of a hallmark.

14 "Research specialties: Analytical
15 chemistry in the field of organic, biochemistry
16 and medicine."

17 And then it has got, "Basic research,"
18 and it lists four people in gas chromatography;
19 analysis of expired air, which I assume breathing,
20 head space analysis, and quantitative gas
21 chromatography. And those are basic research
22 items.

23 And then it has applied research items:
24 Analysis of chlorinated pesticides, and it lists
25 Soren Jensen there. And then it has, "Analysis of

1 3,4-Benzopyrene," which is a polynuclear aromatic
2 that -- and it lists a gentleman's name that I
3 can't pronounce.

4 Then there's lipid analysis, there's
5 mercury analysis by atomic absorption. There's
6 organic mercury by gas chromatography -- again,
7 that lists Jensen. And there's isotope synthesis.

8 And then there's a footnote that
9 designates what the X on some of these means, and
10 it means, "Research combined with stations for
11 routine analysis." And my assumption is, is that
12 those people are responsible for research in their
13 designated areas as well as routine analysis of
14 samples that are somehow provided them.

15 And that's what you gave me.

16 Q. All right. So in summary, Exhibit No. 9
17 does three basic things. The first is a synopsis
18 of Jensen and Widmark's work, correct?

19 A. That's what I said.

20 Q. The second is a chromatograph like the
21 one that is referenced in the letter of
22 December 29, 1996 -- or 1966, correct?

23 A. No. I -- actually, if I may, it could
24 be but it is not as clear as I think you have
25 stated, at least to me.

1 Q. Okay.

2 A. And I think you are asking my opinion.

3 Q. Let me restate the question, or let me
4 restate the question.

5 Exhibit No. 9 consists of essentially
6 three different types of information, the first
7 being a synopsis of Dr. Jensen and Dr. Widmark's
8 work, correct?

9 A. It is a synopsis.

10 Q. Okay.

11 A. I'm not sure of the scope.

12 Q. All right. The second piece of
13 information that is contained in Exhibit No. 9 is
14 a chromatogram, correct?

15 A. Yes.

16 Q. And the third is a description of
17 Dr. Widmark's laboratory dated in the upper
18 right-hand corner September 1966, correct?

19 A. That's correct.

20 Q. Okay. And --

21 A. There are no dates on the other
22 documents, are there? Just for my own
23 education --

24 Q. I don't know whether there are --

25 A. -- since these are together.

1 Q. -- or not?

2 A. I don't see any dates on those and I
3 don't --

4 Q. Yeah. My main question to you, --

5 A. Okay.

6 Q. Dr. Tucker, right now is, was this
7 information provided to you when you began your
8 work in July of 1968?

9 A. And we're talking about Exhibit 8 and 9?

10 Q. Yes.

11 A. I think I testified earlier, maybe it
12 was the one before this, I don't recall seeing
13 Exhibit 8.

14 Q. All right.

15 A. Previously.

16 Q. Yeah, you testified you didn't remember
17 seeing --

18 A. Was Exhibit 8 part of the deposition for
19 the TransWestern Pipeline as you intimated
20 earlier.

21 Q. No, not that I know of.

22 A. Okay. Then I just want to make sure
23 that I am correct in saying I have not seen
24 Exhibit 8 previously.

25 Q. Okay. Well, let me just ask you the

1 question, because --

2 A. I thought that was the question you
3 asked me. I'm not trying to be argumentative, but
4 was that not the question you asked me?

5 Q. No, that was not the question I asked
6 you.

7 A. Okay. I'm sorry.

8 Q. But I will ask you that question. Let
9 me ask you: You had indicated that you had not
10 seen Exhibit No. 7 before, which is the letter
11 from Rising and Strand dated November 28, 1966,
12 correct?

13 A. Yes, I'm not confused on that issue.

14 Q. All right. Have you ever seen the
15 letter from Dr. Widmark dated December 29, 1966,
16 before, to the best of your knowledge?

17 A. The one that we have now broken out and
18 called Exhibit 8?

19 Q. Yes, sir.

20 A. That we have answered questions on
21 previously?

22 Q. Yes.

23 A. No.

24 Q. Okay. Have you ever seen, other than at
25 your deposition, Exhibit No. 9, which is the

1 information that we just talked about, which is
2 the synopsis of the chromatogram and the
3 description of the laboratory?

4 A. And you are talking about the deposition
5 in the TransWestern case in Greenville? Have I
6 ever seen this document previous to that? Is that
7 the question?

8 Q. Yes.

9 A. Are you sure that's the question?

10 Q. No.

11 A. I'm not sure you're sure that's the
12 question.

13 Q. No, I'm not really sure that's the
14 question.

15 A. Ask the question, please.

16 Q. I don't really care about that, to be
17 honest. The question that I care about is: Was
18 this information that is incorporated in Exhibit
19 No. 9 given to you at the time you started your
20 investigation in about July of 1968?

21 A. I have seen this document before the
22 deposition on the TransWestern case, and I think I
23 have seen this document a long time before the
24 TransWestern deposition.

25 And I would say that at or about the

1 time or after that time, certainly within a
2 reasonable period, I probably was -- I probably
3 did see this document.

4 Q. Okay.

5 A. However, the other part of the document
6 that you broke out is labeled 67 --

7 Q. Yeah, hang on just a second.

8 MR. PRAUSE: I would like to have the
9 doctor finish his answer. He's trying to
10 explain his thought process to you and he's
11 entitled to do is that.

12 MR. WRIGHT: It's going to be
13 nonresponsive and all I'm saying is --

14 MR. PRAUSE: You're welcome to move to
15 have it stricken as nonresponsive, but he is
16 entitled to give it to you.

17 I'm not trying to be difficult. I don't
18 know what Dr. Tucker is about to say, it
19 might be important.

20 MR. WRIGHT: Well, he was about to talk
21 about a different exhibit and we're talking
22 about Exhibit No. 9 right now. And I'll be
23 glad to let him talk for the rest of the day
24 about exhibit No. 10 if he would like; but my
25 specific question related to the information

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1 contained in Exhibit No. 9 and he had
2 answered that question and was moving on to
3 another exhibit and --

4 MR. PRAUSE: I don't know what he was
5 going to do because you didn't give him the
6 chance to do it. Can we give him a couple
7 sentences to see where he is going?

8 MR. WRIGHT: If he wants to keep going,
9 that's fine.

10 MR. PRAUSE: Thank you.

11 MR. WRIGHT: Okay.

12 THE WITNESS: Where I was going was that
13 originally these items had been presented as
14 one item; and so I'm making sure that when I
15 answer a question on Exhibit 9 and/or
16 Exhibit 8 that I'm not also implying or that
17 you think I'm referring to Exhibit 10. And
18 that's all I meant by that. And I'm sure
19 I --

20 MR. PRAUSE: Thank you for indulging me.

21 THE WITNESS: Thank you.

22 MR. WRIGHT: Thank you, doctor. I will
23 object that it is nonresponsive and I will
24 re-ask my question and then we'll move on to
25 Exhibit No. 10.

1 BY MR. WRIGHT:

2 Q. My question specifically is, were you
3 given this information when you began your
4 investigation in or about July of 1968?

5 A. I believe that I was provided that
6 information shortly after I began my investigation
7 during that time frame.

8 Q. Can you say when you first saw the
9 information that is contained in Exhibit No. 9?

10 A. Since we're dealing with something that
11 happened 33 years ago, I believe I have already
12 said that.

13 Q. To the best of your ability?

14 A. And that's exactly what I'm trying to do
15 here.

16 Q. Okay. Now exhibit No. 10 is also an
17 exhibit from your deposition in the TransWestern
18 case, and you reviewed that a little while ago.
19 If you would like to review it again, feel free.

20 A. It depends on what we're going to do
21 with it.

22 Q. All right. My question is, did you --
23 first of all, had you seen that document to the
24 best of your knowledge before your deposition in
25 the TransWestern case?

1 A. Yes.

2 Q. Did you have that information at the
3 beginning of your investigation in July of 1968?

4 A. Yes.

5 Q. Are you sure about that?

6 A. We're using the word "beginning"; and as
7 I defined it earlier, yes.

8 Q. Okay. Well, how is "beginning" defined
9 in your mind, within the first few months?

10 A. I believe we can read my answer to the
11 other question back. I believe that what I said,
12 and I'll try to repeat myself exactly, is that
13 we're dealing with something that happened 33
14 years ago. And to the best of my recollection I
15 received these documents shortly after I began the
16 initial date that I started working on this.

17 Q. All right.

18 A. That's what I said. That's the best
19 resolution that my memory can give me at the
20 moment of something that happened 33 years ago.

21 Q. Thank you, doctor. I'll object to the
22 nonresponsive portion.

23 Now, in fact, Dr. Widmark and Dr. Jensen
24 were not the only researchers who were working in
25 this field even as early as 1967, correct?

1 MR. PRAUSE: Object to the form of the
2 question. I would like you to tell him what
3 field you're talking about.

4 Q. Finding polychlorinated biphenyls in
5 environmental samples.

6 A. I'm going to have to ask you to state
7 your question again, please, because I'm --

8 Q. Are you aware or were you aware at the
9 beginning of your investigation that there were,
10 well, let me just ask you this:

11 A. We're done with Exhibit 10?

12 Q. Yes.

13 A. Okay.

14 (Deposition Exhibit No. 11 marked for
15 identification.)

16 Q. Did you ever talk to a Mr. Richardson
17 from the Shell Company in Europe?

18 A. No.

19 Q. Did you ever hear about a Mr. Richardson
20 at the Shell Company in Europe doing work in
21 identifying PCBs in environmental samples?

22 A. No.

23 Q. Okay. Let me hand you what we have
24 marked as Exhibit No. 11 and ask you to take a
25 moment to look at that.

1 A. (Witness peruses document.)

2 Q. Have you had an opportunity to review
3 the document, Dr. Tucker?

4 A. I'm in the process and I'll let you know
5 just as soon as I finish. (Witness peruses
6 document.)

7 Okay, as I said, I have finished
8 reviewing it now. Oh, I'm sorry.

9 Q. Is that the first time that you have
10 seen Exhibit No. 11?

11 A. That's my recollection, yes.

12 Q. Exhibit No. 11 shows that it was
13 originally sent from a D.V.N. Hardy in London.
14 Are you aware of who Dr. Hardy was?

15 A. No.

16 Q. Let me just represent to you that he, I
17 believe, it was on the medical staff for Monsanto
18 in London.

19 MR. PRAUSE: Object to the form of the
20 question to the extent that it implies
21 Monsanto's United Kingdom operation is the
22 same thing as Monsanto U.S.

23 Q. Let me just ask you a quick series of
24 questions in that regard. During your time at
25 Monsanto, you were aware that Monsanto had a

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1 facility or actually more than one facility in
2 England, correct?

3 A. Yes.

4 Q. One of the facilities in England
5 manufactured polychlorinated biphenyls, correct?

6 A. Yes.

7 Q. You had a fair amount of contact with
8 personnel in England about polychlorinated
9 biphenyls over the years, correct?

10 A. I had contact. I don't know whether you
11 would qualify it as "fair" or not, but yes, I had
12 contact.

13 Q. And you knew that the people you were
14 contacting with at Monsanto Europe were a part of
15 the Monsanto corporation, correct?

16 A. I knew that they were, they represented
17 Monsanto in England, yes.

18 Q. All right. Now some of the addressees
19 of this document include Paul Benignus in
20 St. Louis, correct?

21 A. I'm going to have to move around where I
22 can see.

23 Q. That's okay, I'll hold it there.

24 MR. PRAUSE: So you do have extra copies
25 of these.

1 MR. WRIGHT: Is that the same thing?

2 MR. PRAUSE: Yeah.

3 MR. WRIGHT: So actually, that's true,
4 that's a good point. Why don't you give him
5 back the originals. I do have extra copies
6 of a couple of them, so you and I can look at
7 it together.

8 BY MR. WRIGHT:

9 Q. Now for the record, we're looking at
10 Exhibit No. 11 and one of the lead addressee is
11 Paul Benignus in St. Louis, correct?

12 A. Yes.

13 Q. And you knew Mr. Benignus, correct?

14 A. Yes.

15 Q. Mr. Benignus was involved in working on
16 the PCB -- in the PCB area during your period of
17 time at Monsanto?

18 A. My understanding Mr. Benignus was a
19 technical marketing type for PCBs.

20 Q. All right.

21 A. Involved with sales, especially as
22 associated with dielectrics.

23 Q. G. R. Buchanan was another recipient of
24 this letter. Who is he?

25 A. I don't know.

1 Q. Dr. R. Emmet Kelly of St. Louis was a
2 recipient, who was he?

3 A. Dr. Kelly was the Medical Director for
4 Monsanto in St. Louis.

5 Q. G. R. Graham in New York, did you know
6 him?

7 A. No.

8 Q. R. A. Steenrod in St. Louis, did you
9 know him?

10 A. No.

11 Q. David Wood in Brussels, we talked about
12 earlier. You did know him or know who he was?

13 A. I knew of him.

14 Q. J. A. Evans in London, did you know J.
15 A. Evans?

16 A. No, sir.

17 Q. And H. A. Baxter in Ruabon, I believe
18 you did know, correct?

19 A. You are correct again.

20 Q. Then up above that there is a little
21 stamp with several initials and check marks.
22 First of all, what does, during your years at
23 Monsanto, what did a stamp like that generally
24 signify?

25 A. It wasn't particularly a Monsanto stamp

1 that I ever used. In fact, I never used something
2 like; this, this is the first time I have ever
3 seen one.

4 Q. It is the first time that you have ever
5 seen a stamp that has initials and check marks and
6 says "File, Destroy, Initials."

7 A. No, in my career I have seen lots of
8 stamps that have initials and file marks on them.
9 I'm telling you that in our area we never used a
10 stamp. This is probably a stamp that may have
11 been used by whoever this copy belonged to.

12 Q. Okay.

13 A. And I got the feeling you were asking me
14 if this is a Monsanto stamp, and it really wasn't.

15 Q. Okay. Well, I'm just asking you if you
16 are familiar with it and you're telling me you're
17 not. That's fine.

18 Some of the initials I'm assuming are
19 going to sound familiar to you. EPW, does that
20 sound like Emmet Wheeler's initials?

21 A. Certainly doesn't sound like Emmet. It
22 might sound like Elmer.

23 Q. Like Elmer? I'm sorry.

24 A. That's okay, that's fine, a lot of
25 people do that.

1 Q. Yeah. Elmer Wheeler's initials?

2 A. It could be. I mean, there's no
3 guarantee there's not another EPW in the company.

4 But if you are asking me in the
5 condition text of our discussion what it might
6 mean, then I would have to say that on a
7 probability basis that's probably what it means.
8 P. Wheeler, I don't remember what P. stands for.
9 In fact I don't even remember -- okay.

10 Q. R. E.K. I know that R. Emmet Kelly had
11 the initials R. E.K. Didn't your boss have the
12 same initials, R. E. Keller?

13 A. His name was Robert E. Keller; and as I
14 stated earlier, there are probably a lot of people
15 who are REK. So that could mean him, it could
16 mean somebody else.

17 Q. MMJ, are you aware of somebody who
18 worked in --

19 A. No, that doesn't.

20 Q. -- that you worked with the initials
21 MMJ?

22 A. No, that's not familiar to me.

23 Q. WHH?

24 A. No. JTDG, who apparently didn't --
25 well, there's no check about it. And RAM, doesn't

1 mean anything to me either.

2 Do you know what those two columns mean?

3 There are two columns.

4 Q. Well, I know what I assume that they
5 mean but I don't know what they mean.

6 A. Yeah, I don't, I can't.

7 Q. The top column it says "File" and
8 there's a check mark there. There's also a check
9 mark for "Destroy"; and this one is not checked,
10 correct?

11 A. There's boxes that could be checked if
12 it was to be destroyed. But there's a second
13 column and I am just curious because it is
14 obliterated on my document.

15 Q. Okay. Yeah, there's a hole punch. This
16 was obviously hole-punched at some point, current?

17 A. Looks like it now that you mention it.

18 Q. Okay. Now let's talk about the subject
19 matter of Exhibit No. 11, this January 12, 1967,
20 communication from D. V. N. Hardy to the people
21 that we have talked about, including Mr. Benignus
22 and Dr. Kelly and David Wood and so forth. And
23 Mr. Baxter.

24 And I'll just read the first paragraph.
25 "On 2nd January 1967, Mr. A. Richardson of Shell

1 Chemicals' Tunstall Laboratory, Sittingbourne,
2 Kent talked with me over the telephone concerning
3 the Swedish press report relating to the
4 identification of 'polychlorinated biphenols,'"
5 here they spelled it with and O in quotations, "as
6 trace contaminants in sea birds, fish, et cetera.
7 Richardson has been working for some years on a
8 similar problem with insecticides such as DDT,
9 which are known to have wide distribution in trace
10 quantities. He had already found that the
11 chlorine-containing residue contained substances
12 more stable than DDT, and just as Soren Jensen
13 reports he has obtained spectrographic evidence
14 that these are very similar if not identical with
15 Aroclors. He has obtained samples of Aroclors
16 1242, 1254, 1262 and 5460 from us, and would now
17 like to have small samples of any chemically pure
18 Aroclor constituents which we may be able to
19 supply. Milligram quantities would suffice for
20 his purpose."

21 Did I read the first paragraph
22 correctly?

23 A. You did, you did it exactly the way it
24 is. Yes, you did read it correctly.

25 Q. The second paragraph sates, quote,

1 "Mr. Richardson was quite sure that the compounds
2 reporter to be 'polychlorinated biphenols," and
3 again that word is in quotes, "are really meant to
4 be polychlorinated biphenyls," and that's
5 underlined as it was in the Widmark letter that we
6 just looked at, correct?

7 A. It's underlined.

8 Q. Continuing the quote, "and as support he
9 has sent me a copy of the synopsis of a paper
10 entitled," quote, "'Pesticide Analysis: Presence
11 of Polychlorinated Biphenyls at Residue Analysis
12 of Biological Samples' by Soren Jensen and Gunnar
13 Widmark (photocopy attached)."

14 Did I read the second paragraph correct?

15 A. You read the second paragraph
16 accurately.

17 Q. The third paragraph states, "I discussed
18 with Richardson the soundness of Jensen's claims
19 and was assured that his work and findings are
20 sound. Jensen is on the staff of the Institute of
21 Analytical Chemistry, University of Stockholm. A
22 note on the staff and work of the Institute is
23 attached. From this you will see that Jensen is
24 wholly concerned with the analysis of chlorinated
25 pesticides and with the work of stations for

1 routine analysis."

2 Did I read the third paragraph
3 correctly?

4 A. You read the third paragraph accurately.

5 Q. And then finally, he asked for
6 Dr. Baxter and Dr. Buchanan to send samples of
7 pure Aroclor constituents that may be available at
8 Ruabon and St. Louis, respectively, correct?

9 A. Ruabon, I think is.

10 Q. Ruabon, however you pronounce it?

11 A. That's okay, I could be wrong. But you
12 read that paragraph accurately also.

13 Q. All right. You never spoke with
14 Mr. Richardson, correct?

15 A. No, sir, I did not.

16 Q. Did you ever speak with anyone that you
17 know that did speak with Mr. Richardson?

18 A. I'm sure I did.

19 Q. But you don't know it?

20 A. Well, I spoke with Paul Benignus a lot;
21 he may have spoken to them. He's certainly on
22 this memo. I spoke with Emmet Kelly, not
23 frequently.

24 Q. I'm sorry, I --

25 A. I spoke with Baxter and I'm sure Baxter

1 talked with him because he was in there over the
2 years. And I do recall that a request was made
3 for us to try and find as many pure PCB isomers as
4 we could and to send them to I believe Baxter in
5 Europe, who in turn provided them to people who
6 needed them to do the identification process.

7 Q. All right.

8 A. So I recall that kind of thing.

9 Q. You just don't recall anything
10 specifically about Dr. Richardson or his work?

11 A. Again, I have problems with the "all"
12 and "any." I do not recall this document and I do
13 not recall being apprised of this document or seen
14 it before, as I have stated.

15 Q. Okay. Now the next document that I
16 would like to ask you about if you have seen --

17 MR. PRAUSE: Larry, are we going to be
18 at a stopping point in the next 10 minutes or
19 so?

20 MR. WRIGHT: I would say 10 minutes.

21 MR. PRAUSE: Okay. Thanks.

22 MR. WRIGHT: Then I will be through with
23 this area and we can move on to an additional
24 area.

25 (Deposition Exhibit No. 12 marked for

1 identification.)

2 Q. Exhibit 12 is a three-page memo from

3 David Wood to G. R. Buchanan in St. Louis.

4 Correct?

5 A. Yes.

6 Q. Dated --

7 A. Wait a minute, let me look at it.

8 Exhibit 11, the documents that are referred to in

9 it, were those the ones you showed me earlier?

10 Q. They might have been.

11 A. Yeah, okay, because --

12 Q. They might have been.

13 A. Okay, thank you, just checking my sanity
14 here.

15 Q. Yeah. So he either -- so either from,
16 either on January 12th from Mr. Hardy or on
17 December 29th, 1966, from Dr. Widmark himself,
18 Exhibit No. 9 was received?

19 A. I wouldn't draw that conclusion from
20 that necessarily, but you can, you can produce
21 that conjecture.

22 Q. I thought that was the point you were
23 trying to make --

24 A. No, I was just asking, I was asking you
25 if any of those documents had been attached to

1 that when it was originally sent --

2 Q. No.

3 A. -- and whether you knew that or not.

4 Just curiosity on my part.

5 Q. Let me tell you my problem.

6 A. Okay.

7 MR. PRAUSE: I will object. We'll

8 discuss it off the record.

9 MR. WRIGHT: No, we'll do that off the
10 record, we'll discuss the problem with
11 documents and what they are attached to off
12 the record and probably on the record with
13 the judge but we don't need to do it now.

14 MR. PRAUSE: I agree.

15 BY MR. WRIGHT:

16 Q. My specific question is, is it Exhibit
17 No. 12 or does it appear to be a memo or
18 correspondence of some sort from David Wood to a
19 Mr. Buchanan in St. Louis regarding the Aroclor
20 situation in Sweden with copies to, again, Paul
21 Benignus, D. S. Cameron, Dr. Hardy in London,
22 Dr. Kelly in St. Louis, and Mr. Steenrod in
23 St. Louis?

24 A. (Witness peruses document.) Okay,
25 Mr. Wright, I have completed reviewing the memo.

1 Q. Okay. You have reviewed Exhibit No. 12?

2 A. As I said, Mr. Wright, I have completed
3 reviewing; and it is Exhibit 12, correct, that's
4 the, if that's the clarification you needed.

5 Q. And again for the record, Exhibit No. 12
6 appears to be a correspondence from David Wood in
7 Europe to Mr. G. R. Buchanan in St. Louis with a
8 copy to, among others, Paul Benignus, Dr. Hardy in
9 London, Dr. Emmet Kelly in St. Louis, a
10 Mr. Steenrod in St. Louis, correct?

11 A. And D. S. Cameron in Brussels, too, was
12 the only name you missed.

13 Q. All right. And it is dated January 26,
14 1967?

15 A. You got your finger -- yes, it is 26th
16 January 1967.

17 Q. Have you seen this document before
18 today?

19 A. No, I have not.

20 Q. All right. In this document, well, the
21 first paragraph says:

22 "We recently sent you a translation of a
23 Swedish newspaper article referring to the
24 identification and nature of polychlorinated
25 biphenols. Because some of the uses claimed for

1 the materials fell in line with the uses of our
2 own chlorinated diphenyls, we made a point, during
3 ours are visit, to Sweden, of visiting the
4 research institute involved and discussing their
5 particular programs at work."

6 Did I read that correctly?

7 A. If you want me to determine that you
8 read that correctly, you have to provide me a copy
9 of it so I can see as you read it that you are
10 doing it correctly. Otherwise, I can just look at
11 it and say that, yeah, it sounds like that you
12 did. Do have an extra copy of that?

13 Q. To be honest, I don't have an extra
14 copy, no.

15 A. My memory is not good to say whether,
16 you know, with 100% accuracy you've read it. So i
17 will, you know, if you can get it over here so we
18 can look at it together, I would be happy to --

19 Q. Yeah, we can?

20 A. -- monitor it while you read it.

21 MR. PRAUSE: We would be delighted to,
22 if you want to have any of these photocopied,
23 we can do that, too, if you think it would be
24 helpful.

25 MR. WRIGHT: We can look at it together.

1 THE WITNESS: But I, you know, if the
2 objective is to --

3 MR. WRIGHT: You know, I should have had
4 a copy made, I apologize for not doing it. I
5 have had other things on my mind, to be frank
6 and honest about it.

7 THE WITNESS: Okay. I think you can
8 agree that if you want me to see whether or
9 not you read it objectively I need to go
10 along with you.

11 MR. WRIGHT: Yes.

12 THE WITNESS: Okay.

13 MR. WRIGHT: I can see that.

14 BY MR. WRIGHT:

15 Q. Now let's go about asking questions and
16 giving answers.

17 A. All right. I'll read it first.

18 Q. Yes. You have you had an opportunity to
19 read Exhibit 12, correct, doctor?

20 A. Yes, I have, as I answered earlier.

21 Q. All right. Now the first paragraph
22 talks about a Swedish newspaper article, correct?

23 A. Talks about a translation of a Swedish
24 newspaper article.

25 Q. Second paragraph says, quote:

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1 "To eliminate any earlier confusion that
2 there may have been, I should like to emphasise
3 that there is no doubt that the chemical which is
4 the subject of the investigation and the news
5 release is chlorinated diphenyl i.e. Aroclor."

6 Did I read that correctly?

7 A. You read it correctly.

8 Q. And again this document is dated
9 January 26, 1967. Correct?

10 A. That's correct, as you stated earlier.

11 Q. The next paragraph says:

12 "The company that supplied the mass
13 spectrometer which was used in the research
14 programs -- research programme," he spelled it
15 with an E, "in fact have recently put out a press
16 release on this work. Although I am horrified by
17 some of the headlines in this release it, does
18 basically describe the research programme carried
19 out in Sweden and describes in clear terms how
20 chlorinated diphenyls were identified. I
21 therefore, enclose a copy of your files."

22 Did I read the paragraph correctly?

23 A. You read that photograph accurately.

24 Q. Did you see a copy of the press release
25 by the company that supplied the mass

1 spectrometer?

2 A. I think I did.

3 Q. Do you know when you saw that for the
4 first time?

5 A. Shortly or some time after I began
6 working on the project.

7 Q. All right. The next paragraph reads:

8 "Jensen's only aim in life as an
9 analytical chemist was to identify the substances
10 found in his research work on the occurrence of
11 insecticides in nature. The unfortunate aspect of
12 the situation is the comments which have been
13 added to Jensen's work. He showed what was
14 present and unqualified people have made
15 statements as to the possible effect of what he
16 has found."

17 Did I read that paragraph correctly?

18 A. You read it correctly. And there's no
19 question about that, I'm glad to see this.

20 Q. Let me object --

21 A. I'm sorry.

22 Q. -- nonresponsive to everything after,
23 "Yes."

24 A. It's just this was the clearest
25 statement that I have seen of where we were at.

1 Q. I understand. But I will still object,
2 nonresponsive.

3 A. Can you see that?

4 Q. Then the next paragraph -- yes. And you
5 have just read this. But generally, I'm not going
6 to read every word of the next paragraph; but the
7 next paragraph talks about the press, press
8 releases or the press pick-up of the story in
9 Europe, correct?

10 A. That, that's part of the topic that's
11 associated with that. I, it also kind of brings
12 out that, that you will have seen from D. B. and
13 Hardy's memo the 12th of January that it also has
14 been picked up by the Shell Laboratory. And I
15 think that's the Shell Laboratory where Richards
16 or Richard was.

17 Q. That was my understanding.

18 A. So that is probably what prompted him to
19 begin to think that he was seeing the same thing.

20 Q. I'll object, nonresponsive. But it was
21 my understanding it was the same thing?

22 A. I'm sorry. I am having trouble with
23 your questions and what you want me to answer and
24 don't answer, so I'll try to be -- I will try to
25 ask you to clarify your question better.

1 Q. Okay. Thank you for your clarification.

2 I'll object to that as nonresponsive.

3 A. (Laughter)

4 Q. The first paragraph on the second page
5 is entitled, "Effect in Sweden." And this states,
6 quote:

7 "This matter was raised with us by every
8 capacitor manufacturer in Sweden that we visited.
9 Fortunately there has not been too much adverse
10 comment as yet from plan workers since they have
11 not associated the polychlorinated biphenols
12 mentioned in the article with Aroclor or Pyralene
13 used in Swedish factories. Jensen, however,
14 stated he had been approached by several workers
15 associated with chlorinated diphenyls nor
16 non-electrical uses and these workers were quite
17 worried as to the possible effect on their
18 health."

19 Did I read that correctly?

20 A. You read it accurately.

21 Q. Okay. Then he talks about future
22 research in the next paragraph and -- or the next
23 two paragraphs.

24 A. Is that a question or is that a
25 statement?

1 Q. That's a statement.

2 A. Okay. So you are stating what it says
3 and you don't want my opinion?

4 Q. I'm stating generally what it says.
5 That's right.

6 A. Okay.

7 Q. You can give your opinion later if you
8 think it says something different than that.

9 MR. PRAUSE: Well, I'll object to the
10 extent that this is supposed to be Dr. Tucker
11 testifying and not you testifying; and I
12 would appreciate it if you could attempt to
13 confine your commentary to questions rather
14 than statements.

15 Q. The last paragraph on page two states,
16 quote:

17 "The point that I have made to Jensen is
18 the need for care in any further publication of
19 his work which is made. He accepts that the
20 toxicology of chlorinated diphenyls should only be
21 discussed with detailed information about exposure
22 concentrations and exposure times and that
23 generalized statements out of context can only
24 arouse undue public concern. If any technical
25 journal takes up the press release from the," is

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1 that LKB?

2 A. Yeah. That's the name of the
3 manufacturer of the mass spectrometer that was
4 used by Jensen and Widmark.

5 Q. "from the LKB Productor Company, there
6 is little that Monsanto could, or should do in the
7 way of publishes rebuttal. We do not want,
8 personally as Monsanto to get too involved in this
9 question. I am hopeful we might persuade Jensen
10 himself to write a letter defining the true extent
11 of his own research work and placing his results
12 in the proper perspective. It would certainly be
13 helpful in gaining his further support if we were
14 to make available to him any small quantities of
15 pure isomers."

16 Did I read that paragraph correctly?

17 A. Yeah. And the quotes is your quote.
18 There aren't any quotes in that paragraph.

19 Q. Right. I'm saying --

20 A. Okay. All right, I mean, okay, it
21 wasn't clear to me. Those were your quotes.

22 Yes, you read the paragraph accurately.

23 Q. Okay. The last paragraph of this memo
24 states:

25 "As you will see from the press release,

1 one of the major points that is made is the
2 difficulty in disposing of waste chlorinated
3 diphenyls and again I must mention that
4 constructive recommendations for the safe disposal
5 of our materials would be most helpful."

6 Did I read it correctly?

7 A. Yes, you read it correctly and I would
8 like to note you skipped the second, the paragraph
9 before that for some reason, and the rest I
10 don't --

11 Q. I'll read it. (Simultaneous
12 conversation) no, just because we are limited in
13 time and, frankly, I have some things I am
14 concerned about asking you about --

15 A. You don't have to read it, I just asked
16 you why you --

17 Q. I'll read it just so that the record is
18 clear, and you are concerned obviously. The
19 paragraph --

20 A. No, I'm not. I need to clarify that,
21 I'm not concerned. I just asked you a question.
22 You seemed to be reading every paragraph to me and
23 I wonder why you skipped that one.

24 Q. No. Frankly, I skipped three or four
25 paragraphs in this three-page document because

1 your counsel wanted a break and I want to get
2 through this subject matter before we take a
3 break.

4 A. Well, I think this is more important
5 than the break. But go ahead. Why don't you read
6 the second paragraph --

7 Q. Okay, I'll read the paragraph. And
8 again I've skipped other parts of the paragraph --
9 other parts of this memo as well. But the
10 paragraph that is the second-to-last paragraph
11 says:

12 "Since we are not alone in supplying
13 polychlorinated diphenyls to the Scandinavian
14 market, I have drawn this matter to the attention
15 of the other askarel manufacturers in Europe."

16 A. That's accurately read, too.

17 Q. Okay. Did you ever contact any of the
18 other askarel or PCB manufacturers in Europe?

19 A. In my capacity I would not do that.

20 Q. All right.

21 A. Apparently somebody else did.

22 Q. Okay.

23 MR. PRAUSE: Break time?

24 MR. WRIGHT: No. Two more.

25 MR. PRAUSE: Two more documents?

1 MR. WRIGHT: Yes. Actually one is very
2 short. We'll take up the other one after the
3 break.

4 MR. PRAUSE: Thank you.

5 (Deposition Exhibit No. 13 marked for
6 identification.)

7 Q. What's our next number?

8 A. 13. You might want to skip that one.

9 Q. All right, Exhibit No. 13. Have you had
10 an opportunity to review Exhibit No. 13?

11 A. No, I wasn't -- you didn't indicate
12 whether we were going to read it together or
13 whether I should read it separately.

14 Q. Okay.

15 A. Should I review it? Is that what your
16 indication is? Do you want me to review it?

17 Q. If you, let me just ask you, please --

18 A. It's very short, I can read it very
19 quickly --

20 Q. Why don't you read it very quickly --

21 A. -- and then if I need to reference it
22 again to answer any question I don't think I have
23 the information for, then I can look at it again.

24 Q. Okay, would you look at Exhibit No. 13,
25 please, Dr. Tucker.

1 A. Thank you. (Witness peruses document.)

2 Okay I had a chance to look at it.

3 Q. Fine. Is Exhibit No. 13 apparently a
4 letter from Dr. R. Emmet Kelly in St. Louis to
5 Mr. Gene Wilde, W-I-L-D-E, dated February 21,
6 1967?

7 A. It is a memo from Emmet Kelly to Gene
8 Wild -- Wilde and it is dated February 21, 1967.

9 Q. All right. And a copy shows going to
10 Mr. Buchanan, correct?

11 A. Correct.

12 Q. And a copy to your boss, R. E. Keller,
13 at the Queeny Plant, correct?

14 A. That's correct.

15 Q. And this appears to be Dr. Keller's copy
16 because there's an arrow with a stamp, correct?

17 A. Yes it does, and that would be a
18 convention that might be used.

19 Q. All right. And the first part of the
20 memo that Dr. Kelly wrote to Mr. Wilde says:

21 "I talked to Dave Wood in Brussels this
22 morning and I list below the salient features of
23 our conversation:

24 "1. He has 90% of the information asked
25 for in my letter of February 10th and will have

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1 the rest obtained in the next day or so and will
2 forward the bundle to me. It should arrive within
3 a week."

4 Did I read that correctly?

5 A. You read it accurately, yes.

6 Q. Paragraph 2 or point number two:

7 "His customers in Europe are seemly less
8 concerned than they were, especially since there
9 has been no particular government activity and no
10 increase in the newspaper articles. The customers
11 would like some reassurance on the toxicity of
12 Aroclor. (I explained to Dave that there just was
13 not information available on the action of
14 nanograms of Aroclor in the human body over a
15 lifetime.) There is no toxicological work going
16 on at present in Sweden and it appears there is
17 some likelihood that it will not be able to obtain
18 financing and might not be done. Everybody over
19 there is 100% convinced that what Jensen and
20 Widmark found was Aroclor."

21 Did I read point number two correctly?

22 A. Yes.

23 Q. Point number three:

24 "There is no necessity at present for
25 anyone from St. Louis to contact the Swedish

1 people. In fact, it would be unwise at present."

2 Did I read point number three correctly?

3 A. Yes, you did.

4 Q. The last paragraph says:

5 "I am going to get in touch with

6 Mr. Wood after I receive the bundle of information

7 he is sending me. Unless something unusual

8 happens in the United States, I would be of the

9 opinion that we should do no further action until

10 we have time to evaluate this information."

11 Did I read the last paragraph in this
12 memo correctly?

13 A. Almost.

14 Q. What did I miss?

15 A. "I am to got."

16 Q. You think that's "got" instead of "get"?

17 MR. PRAUSE: Well you just said, you
18 just said you read it as, "I am going to."

19 THE WITNESS: That's what you said.

20 MR. PRAUSE: And the word "going" is not
21 correct.

22 BY MR. WRIGHT:

23 Q. All right. Let me read it again then.

24 A. I'm just answering your question.

25 Q. Let me read it again.

1 A. "I am to get" is what I believe it says.

2 Q. All right. Let me read it again then
3 for the record. The last paragraph of this letter
4 from Dr. Kelly dated February 21, 1967, states:

5 "I am to get in touch with Mr. Wood
6 after I receive the bundle of information he is
7 sending me. Unless something unusual happens in
8 the United States, I would be of the opinion that
9 we should do no further action until we have time
10 to evaluate this information."

11 Did I read the last paragraph in this
12 February 21, 1967, memo from Dr. Kelly correctly?

13 A. You read it accurately, yes.

14 Q. All right. And in fact, you were not
15 asked -- well, there is one other document that I
16 would like to mention and it is a short one.

17 (Deposition Exhibit No. 14 marked for
18 identification.)

19 A. Is that?

20 Q. Exhibit No. 14, yes, sir. Would you
21 look at that very quickly.

22 A. (Witness peruses document.) I have read
23 that, Exhibit 14.

24 Q. All right. Dr. Tucker, Exhibit No. 14
25 appears to be a memo or letter from, again, from

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1 Dr. Emmet Kelly dated February 27, 1967, to David
2 Wood. Correct?

3 A. Yes, sir.

4 Q. And the first paragraph says:

5 "Thank you for the information you sent
6 me. I'm having our analytical people, as well
7 as," can you tell who he is talking about there,
8 "I'm having our analytical people as well as"
9 somebody "here in the States"?

10 A. I think MCR might refer, I think it
11 might be MCR. Although, as you are indicating, it
12 is far from clear.

13 Q. All right. It's three initials.

14 A. And MCR might refer to Monsanto
15 Corporate Research; but I don't know that and
16 certainly you can't derive that conclusion from
17 that necessarily.

18 Q. Okay, let me read this then. Thank you
19 for the information -- the first paragraph says:

20 "Thank you for the information you have
21 sent me. I'm having our analytical people as well
22 as," and there is three initials that may be MCR.
23 And you indicated that "MCR" may be "Monsanto
24 Corporate Research," is that correct?

25 A. It might but that's an unusual way to

1 refer to it.

2 Q. All right. Okay. "here in the States
3 evaluate it." Did I read the first paragraph
4 correctly?

5 A. You read it accurately.

6 Q. All right. The second paragraph said:
7 "As far as the toxicological part of his
8 report is concerned, he has confused and
9 interchanged the experience on chlorinated
10 biphenyl, chlorinated naphthalene and a
11 combination of both. This really is not too
12 important, however, as there is no question but
13 that Aroclor does possess a certain amount of
14 toxicity. All our literature says this, but
15 whether nanogram quantities mean anything is an
16 entirely different matter."

17 Did I read that accurately?

18 A. Yes, you read it accurately.

19 Q. Okay. And then the last paragraph says,
20 well, actually would you read the last paragraph?

21 A. I can, certainly.

22 "I think we should fight the battle of
23 the analytical method first before we get too
24 involved with the toxicology."

25 Q. Okay. And that's dated when, sir?

1 A. And this is dated February 27, 1967.

2 Q. And in fact, it was not until July of
3 1968 or thereabouts that you were asked to begin
4 investigating the analytical validity of
5 Dr. Jensen's work, correct?

6 A. Hum. I'm not -- it would certainly be
7 in the first or second quarter of 1967, there's no
8 question about that; and I think we discussed that
9 earlier.

10 Q. You said '67. You said the summer of?

11 A. I'm sorry, '68.

12 Q. You said the summer of '68, and we had a
13 document dated July of '68 that you thought was
14 probably about the time. Are you changing that
15 testimony now, sir?

16 A. Oh, no, I'm not changing that testimony.
17 I'm trying to remember of the documents you have
18 shown me which one you are attempting to refer to,
19 and I recall the one you have just referred to.

20 Q. Okay. It is in fact I believe
21 Exhibit No. 3.

22 A. That was an exhibit from?

23 Q. July of?

24 A. Well that is not really Exhibit 3, is
25 it? Wasn't the Exhibit 3 the whole stack of

1 things?

2 MR. PRAUSE: That was 4.

3 MR. WRIGHT: That was 4.

4 A. Okay, I'm sorry.

5 Q. Exhibit 3 is the July 18, 1968, memo --

6 A. Correct.

7 Q. -- that set out the jobs, and we went
8 through that yesterday?

9 A. Right, and it does. And you're right,
10 that's right. You say assess the validity of
11 analytical methods --

12 Q. All right.

13 A. -- and that's part of it and you're
14 correct. I just want to be very careful and you
15 seem to want to know that date for sure and I just
16 want to make sure I reflect accurately.

17 Q. All right. And so let me re-ask the
18 question. This document that we just read where
19 Dr. Kelly recommends that we "fight the battle of
20 the analytical methods first before we get too
21 involved with toxicology" is dated February 27,
22 1967, correct?

23 A. Yes.

24 Q. And you were not asked to do your job to
25 validate Dr. Jensen's work until approximately

1 July of 1968, correct?

2 A. Correct.

3 Q. Now going back to Exhibit No. 13,
4 Dr. Kelly's opinion six days earlier had been,
5 quote, "That we should do no further action --"
6 that, quote, "unless something unusual happens in
7 the United States, I would be of the opinion that
8 we should do no further action until we have time
9 to evaluate this information."

10 That was Dr. Kelly's opinion about how
11 Monsanto should proceed, correct?

12 A. Relative to the topic in the memo and
13 things of that sort, yes, you're correct.

14 Q. All right.

15 A. That's what it says.

16 Q. Are you aware of anything unusual that
17 happened in the United States about the time that
18 you were given your task to begin validating the
19 analysis in July of 1968?

20 MR. PRAUSE: Object to the form of the
21 question. There's all kinds of unusual
22 things happening in this country all the
23 time.

24 A. Do you mean -- let me, let me ask for a
25 clarification. Do you mean was I given this

1 assignment on an emergency basis or was it given
2 to me in an orderly manner as part of what I did?

3 Q. That's not my question. My question is
4 relating to Dr. Kelly's comments back in February
5 of '67 where he said, "Unless something unusual
6 happens in the United States, I would be of the
7 opinion that we should do no further action until
8 we have time to evaluate this information."

9 A. I'm not sure what Dr. Kelly was
10 referring to as "unusual" --

11 Q. Okay.

12 A. -- or anything of the sort. But I can
13 tell you that I was asked in a very orderly manner
14 to begin my work.

15 Q. All right.

16 A. So, I mean, it wasn't like a bomb went
17 off or anything like that, particularly.

18 Q. Do you know why, Dr. Tucker, you were
19 not asked to begin your work until about a
20 year-and-a-half after Dr. Kelly says, "We should
21 take no further action unless something unusual
22 happens in the United States"?

23 A. No.

24 Q. You don't know why you were not asked --

25 MR. PRAUSE: Object to the form of the

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1 question.

2 A. I believe that I said no.

3 Q. Okay.

4 A. If you want to repeat the question
5 again, I'll make sure I'm answering the question
6 that you're asking. But -- in fact, repeat the
7 question again because the implication is I missed
8 something that you said.

9 Q. No. You answered it.

10 A. Okay.

11 MR. WRIGHT: We can take our break now.

12 THE VIDEOGRAPHER: We're off the record
13 at 11:36.

14 (Recess taken.)

15 (Deposition Exhibit No. 15 marked for
16 identification.)

17 THE VIDEOGRAPHER: Tape number five of
18 the deposition of Dr. Tucker, we're on the
19 record at 11:55.

20 BY MR. WRIGHT:

21 Q. I have handed you what we have marked as
22 Exhibit number, is that 15?

23 A. Yeah, it's marked 15.

24 Q. And does that appear to be the LKB press
25 release that was referred to in some of the

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 earlier documents we talked about before the
2 break?

3 A. My recollection is, is that it is the
4 LKB press release from their publicity department,
5 yes, that's correct.

6 Q. All right. And have you seen that
7 document before today?

8 A. Yes, I have.

9 Q. Do you remember when you first saw this
10 document?

11 A. I would probably have seen this document
12 some time after I started working for Monsanto and
13 began working on the project PCBs.

14 Q. Do you remember how long after?

15 A. No.

16 Q. Okay. If you could paper clip it back
17 together for us?

18 Now I asked you before we took a break
19 if you were aware of anything happening in the
20 United States that might have fit Dr. Kelly's
21 definition of "something unusual" in Exhibit
22 No. 13.

23 And let me hand you what I'm going to
24 mark as Exhibit No. 16 and ask you if you think
25 that might be -- fit that definition.

1 (Deposition Exhibit No. 16 marked for
2 identification.)

3 A. (Witness peruses document.) I would
4 have to state that it could, but it could not.
5 Because I have no way of intuiting what Dr. Kelly
6 meant by "unusual."

7 Q. Well, let's talk about --

8 A. Did you want me to say what it was or
9 are you going to talk about what it was other than
10 just have a piece of paper?

11 Q. No, you answered the question.

12 A. Okay, you're welcome.

13 Q. I'm going to ask you another question
14 now. Exhibit 16 is a memo or a, some kind of
15 correspondence -- actually it is a memo dated
16 June 18, 1968, from Cumming Paton, P-A-T-O-N, to
17 W. R. Richard, correct?

18 A. Yes.

19 Q. And it has a copy to Dr. R. Emmet Kelly,
20 correct?

21 A. Yes.

22 Q. And appears to be Dr. Kelly's copy
23 because we have the arrow again, correct?

24 A. Somebody has handwritten an arrow this
25 time rather than stamped, but that would be the

1 implication.

2 Q. All right.

3 A. Yes.

4 Q. And then this also has one of those
5 little boxes that we talked about earlier, with
6 "File" and "Destroy" and then a bunch of initials
7 below it?

8 A. Right. And that's the second time I
9 have seen this.

10 Q. All right.

11 A. The box.

12 Q. Again it has the initials EPW, correct?

13 A. At the bottom, correct.

14 Q. And it has --

15 A. It has two checks by EPW versus --

16 Q. Right.

17 A. They all have two checks this time --

18 Q. That's right.

19 A. -- versus one.

20 Q. And my surmise, just for whatever it is
21 worth, is one check is if it goes to them and the
22 second check is if they have reviewed it?

23 A. That's as good a conjecture as I could
24 come up with.

25 Q. All right. And but focusing on the

1 initials, it shows EPW, which is consistent with
2 Elmer Wheeler?

3 A. The initials of Elmer Wheeler's name,
4 yes.

5 Q. REK is consistent with either your boss,
6 Dr. Keller, or R. Emmet Kelly, correct?

7 A. That's the initials of their name, yes.

8 Q. And then there's some other initials
9 that I don't think we were able to identify
10 earlier, correct?

11 A. Yes.

12 Q. Okay. But the essence of Exhibit No. 16
13 that went to Mr. Richard -- around by the way, who
14 was Mr. Richard?

15 A. I believe earlier we established that
16 Dr. Bill Richard was the Director of the
17 Functional Fluids Group. Is that is that the, is
18 that your understanding, too? I mean, so we're
19 talking about the same person?

20 Q. Well that's my question. Because,
21 see --

22 A. Okay. When I see W. R. Richard, what I
23 will be talking about unless I say otherwise will
24 be Dr. Bill Richard.

25 Q. All right.

1 A. Now who you are talking about you'll
2 have to clarify more me.

3 Q. Well, no.

4 A. What was your question? Was your
5 question, was who is W. R. Richard?

6 Q. Yes.

7 A. Okay.

8 Q. So let me rephrase it, take it
9 step-wise. Plaintiffs' Exhibit No. 16 is
10 addressed to a W. R. Richard, correct?

11 A. That is correct.

12 Q. And who was Mr. Richard or Dr. Richard
13 in June of 1968?

14 A. W. R. Richard in the context of this
15 memo would be more than likely Dr. Bill Richard,
16 who was the Director of the Functional Fluids
17 Group in the Organic Division of the Monsanto
18 Company in the United States.

19 Q. And I think we talked at earlier that he
20 was basically over the group that consisted of
21 your department or that your department applied --
22 or the Applied Sciences Department provided
23 technical support to; is that correct?

24 A. Of the statements you made, the last one
25 is the correct one. We were a support group for

1 functional fluids, for plasticizers, for a variety
2 of groups that were headed by people like Bill
3 Richard and other people.

4 Q. All right. And who was Cumming Paton?

5 A. Again, I think Cumming was in technical,
6 the closest he'd come to be in technical would be
7 in a marketing position, so he might be in
8 technical marketing.

9 I'm not sure that he was necessarily in
10 functional fluids; he might have been in one of
11 the other groups that were part of the Organic
12 Division.

13 Q. All right. In any event, on June 18,
14 1968, Mr. Paton wrote to Mr. Richard, quote:

15 "I received a call from a Miss Caroline
16 Chandler of the U.S. Bureau of Commercial
17 Fisheries, 1451 Owen Road," or is that "Green
18 Road, Ann Arbor, Michigan, 48104.

19 "They are studying pollutants in Lake
20 Michigan and believe they have found PCB's. They
21 have also read Jensen and Widmark's paper.

22 "Can you please send them samples of
23 Aroclor 1221, 1232, 1242, 1254 and 1260. Together
24 with a bulletin on Aroclors? The samples should
25 be addressed to Dr. Reinhart at the above address.

1 "Thank you."

2 Did I read the letter correctly?

3 A. You read the memo accurately.

4 Q. All right. And would that have been a
5 matter of concern to Monsanto to know that a
6 bureau of the U.S. government is looking at
7 whether their product is accumulating in fish in
8 Lake Michigan?

9 MR. PRAUSE: Object to the form of the
10 question.

11 A. I think it's time to clarify their
12 product Aroclor and PCBs. PCBs refer to a class
13 of products, of which Aroclors are one. In fact,
14 to be real truthful to you, the LKB press release
15 that we looked at earlier and Jensen's work,
16 initially they only identified an
17 octachlorobiphenyl, which was not a product or an
18 Aroclor, it was a PCB.

19 So I think from a technical viewpoint we
20 need to be careful about using the terms
21 generically and interchangeably, but that's just
22 my opinion.

23 The question on this was?

24 Q. Now first I want to thank you. Second,
25 I want to object, nonresponsive.

1 MR. PRAUSE: Third, I want to object to
2 Dr. Tucker not being allowed to finish his
3 previous answer. I would appreciate it if
4 you give him the chance to finish it and then
5 you can state your objection when he's done.

6 MR. WRIGHT: Oh, I thought he had. He
7 asked me what the question was.

8 MR. PRAUSE: No. He said, "Returning to
9 your question," and he was starting to
10 provide you with additional.

11 BY MR. WRIGHT:

12 Q. Do you want to say anything more or do
13 you want me to ask a question?

14 A. Not as long as it's understood what I
15 said, that it's important to differentiate between
16 PCBs, Aroclors and a multitude of other commercial
17 names including foreign commercial names and
18 manufacturers that were used for PCBs.

19 Q. I understood what you said. It was not
20 responsive to the question that I asked you.

21 A. Good. And I understood what that you
22 said that.

23 Q. Okay. And so let me ask you a question
24 and you can answer it however you think is
25 appropriate.

1 A. Thank you.

2 Q. Okay? And if it is not responsive I'll
3 object nonresponsive and ask another question.

4 A. Okay.

5 Q. Okay? And let me just say that I'm not
6 picking on you, I appreciate you providing as much
7 information as possible. But the way this process
8 works is I ask questions and you answer the
9 questions that I ask to the best of your ability.

10 And it is an unusual process, it is not
11 a conversation. And I know you know that. And
12 every witness kind of strays over into
13 conversational discussions; and I don't blame you
14 for doing that, it is not unusual.

15 MR. PRAUSE: Larry, I appreciate what
16 you are trying to do but it is my job to give
17 Dr. Tucker advice about the deposition --

18 MR. WRIGHT: I'm just trying to say --

19 MR. PRAUSE: -- not your job. And the
20 reason that this deposition is resembling a
21 conversation has just as much to do with the
22 way you are running it as it does the way
23 that Dr. Tucker is responding to the
24 questions.

25 MR. WRIGHT: Thank you, Mr. Prause, I

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 appreciate your input, as well. And I think
2 we're all doing the best we can to do the bes
3 job that we can.

4 All I was trying to say to Dr. Tucker
5 is, is that I'm not criticizing you when I
6 object nonresponsive, I want you to
7 understand that.

8 MR. PRAUSE: That's fair.

9 MR. WRIGHT: And all I was saying is, is
10 that I appreciate you giving me additional
11 information when you do give me additional
12 information, but sometimes I'm going to
13 object that it is nonresponsive.

14 THE WITNESS: Let me state that, since
15 you have really solicited a statement from me
16 with all of that, that I understand
17 nonresponsive and I understand that it is not
18 criticism of me and I'm not taking it that
19 way. And I hope my appearances haven't given
20 you the feeling that I am.

21 MR. WRIGHT: Okay.

22 THE WITNESS: Because I certainly am
23 not. And therefore, you have no reason to
24 feel sensitive about that particular issue.

25 MR. WRIGHT: Okay. And I appreciate

1 that. Now we're all happy and we all like
2 each other.

3 THE WITNESS: Now we can move forward.

4 MR. WRIGHT: We can move forward.

5 THE WITNESS: I never knew we didn't.

6 MR. WRIGHT: No, I didn't either.

7 That's why, as far as I was concerned, we
8 have all liked each other this whole process.

9 BY MR. WRIGHT:

10 Q. Referring to Plaintiffs' Exhibit No. 16,
11 the question that I asked is, do you believe that
12 it was a matter of concern or importance to
13 Monsanto to discover that a Bureau of the U.S.
14 government is investigated pollutants in Lake
15 Michigan and believe they have found PCBs in the
16 lake?

17 MR. PRAUSE: Object to the form of the
18 question.

19 A. I believe that it is important to
20 Monsanto, yes.

21 Q. Now it was approximately a month after
22 that that Exhibit No. 3 reflects you were given
23 your initial assignment, correct?

24 A. The date on Exhibit 3 is approximately a
25 month after this, yes, that's correct.

1 Q. All right. And yesterday we talked
2 about what you did after getting your initial
3 assignment. I'm not going to go back over all of
4 that but I do want to ask you about Exhibit
5 No. 17. And actually, let me break this up into
6 17 and 18.

7 (Deposition Exhibits Nos. 17 and 18
8 marked for identification.)

9 Q. We talked generally that after you got
10 your initial assignment you began performing it,
11 which is to gather information and gather
12 equipment and put the equipment together and begin
13 developing the process generally. Is that a fair
14 shorthand summary?

15 A. I'm not qualified to talk about the
16 fairness, but it is a good, it is a decent
17 summary. It summarizes it --

18 Q. All right.

19 A. -- in a fashion that I don't see a
20 reason to object to.

21 Q. All right. Let me hand you Exhibit
22 No. 17 and let me just state for the record that
23 Exhibit No. 17 appears to me to be a memo from
24 Elmer Wheeler to W. H. Richard?

25 A. W. R.

1 Q. W. R. Richard dated object 21, 1968,
2 with copies to various people, including, again,
3 Dr. Kelly, Scott Tucker, yourself, your boss, R.,
4 is that A. Keller?

5 A. It appears to be A. R. A. Keller, but of
6 course the initials after it say R. E., so.

7 Q. Okay. So it is a typo, apparently.

8 A. Is.

9 Q. Is that Cumming Paton?

10 A. I believe that's Cumming Paton, yes.

11 Q. Howard Bergen?

12 A. Bergen.

13 Q. And W. K. Johnson. Those names are all
14 familiar to you, aren't they?

15 A. Johnson, Bergen, Paton, Keller, Kelly,
16 Hunt. There's also a slash after Hunt --

17 Q. Yes, I didn't see that.

18 A. -- you didn't read. But Hunt is not
19 necessarily familiar to me, although -- hum.

20 Q. Hunt is actually, Hunt is actually in
21 the line where with Dr. Kelly, it says R. E.
22 Kelly, MD/W. H. Hunt. Would you assume from that
23 that Mr. Hunt probably works in Dr. Kelly's
24 office?

25 A. No.

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 Q. Okay, doesn't matter, never mind.

2 A. I mean I doubt had the same -- they
3 shared the same office. Emmet Kelly was Director
4 of medical for the company.

5 Q. All right.

6 A. So I bet he had his own.

7 Q. What did -- let me ask it this way
8 (Simultaneous conversation) they probably were in
9 the same area.

10 THE REPORTER: One at the time,
11 gentlemen, please.

12 Q. Okay. Let me ask the question. From
13 the way this was written, do you assume Mr. Hunt
14 probably worked with Dr. Kelly?

15 A. Yes, sir.

16 Q. Okay. Now this memo memorializes --
17 well, why don't you review Exhibit No. 17, if you
18 would, sir?

19 A. Okay. Am I to review to see if it
20 memorializes something?

21 Q. No. Let me just ask you, Dr. Tucker, if
22 you would review Exhibit No. 17.

23 A. Yes, sir. (Witness peruses document.)

24 MR. WRIGHT: While he's reviewing that,
25 Mr. Prause, what I have handed you that I

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 have marked as Exhibit 18, the first page of
2 Exhibit 18 is what Dr. Tucker is reviewing
3 now. It is the memo that we just referred to
4 and it has an attachment that is not attached
5 to the copy that Dr. Kelly is reviewed -- I
6 mean Dr. Tucker is reviewing right now.

7 MR. PRAUSE: Thank you.

8 A. (Witness peruses document.) I have
9 completed reading the exhibit that you presented
10 me, Mr. Wright.

11 Q. Okay. Exhibit No. 17 refers to a Xerox
12 copy of a technical paper which Scott Tucker and
13 the author, Elmer Wheeler, picked up in Washington
14 recently. Is that the general subject of the
15 memo?

16 A. That's the first sentence of the memo in
17 the first paragraph.

18 Q. Okay. Why don't, why don't I have you
19 read the second sentence and the remainder of the
20 first paragraph, if you would, doctor?

21 A. Okay. Starting with "This was
22 provided," right here?

23 Q. Yeah. Actually, why don't you, let me
24 ask you this way. Dr. Tucker, would you read the
25 first paragraph of Exhibit No. 17, this memo, from

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 October 21, 1968?

2 A. Yes, sir.

3 "Attached is a Xerox copy of a technical
4 paper which Scott Tucker and I picked up in
5 Washington recently. This was provided us by
6 Donald A. Spencer of the National Agricultural
7 Chemicals Association. Mr. Spencer requested that
8 the paper be held confidential until such time as
9 it may be published. Spencer indicated that if
10 this paper were distributed one of his principal
11 sources would refuse to give him prepublication
12 information in the future."

13 Q. First of all, do you remember traveling
14 to Washington to the National Agricultural
15 Chemicals Association with Mr. Wheeler?

16 A. I don't remember specifically going to
17 the National Agricultural Chemicals Association.
18 I do remember traveling to Washington with
19 Mr. Wheeler and I did a number of times, as a
20 matter of fact.

21 Q. All right.

22 A. I don't necessarily believes that this
23 means that we visited the National Agricultural
24 Chemicals Association, we probably visited
25 someplace else.

1 Q. Okay. And I didn't mean to infer that.

2 A. Okay, I'm just -- fine.

3 Q. In any event, you recall traveling to
4 Washington with Mr. Wheeler on several occasions?

5 A. Yes, I do.

6 Q. And do you recall meeting a Donald
7 Spencer or anyone else from the National
8 Agricultural Chemicals Association at some point
9 in time?

10 A. I don't doubt that I probably did, but I
11 don't specifically recall Donald Spencer.

12 Q. All right. Exhibit No. 18 is an exhibit
13 from actually two of your previous depositions and
14 we have now marked it as Exhibit 18 to this
15 deposition. And let me just represent for the
16 record that the highlighting is mine and we can
17 clean that up afterwards if you would like to?

18 A. Doesn't bother me.

19 Q. I highlighted first paragraph that you
20 just read.

21 MR. PRAUSE: When it's Xeroxed it won't
22 come through.

23 MR. WRIGHT: Yeah.

24 A. So the top of this is a --

25 Q. That's right, the top of Exhibit 18 --

1 A. Is the same as Exhibit 17?

2 Q. That's exactly right.

3 A. Okay.

4 Q. And the entirety of Exhibit 18, my
5 understanding is, was an exhibit to two of your
6 previous depositions.

7 A. (Nods head up and down.) It could have
8 been, I don't know, I can't remember that.

9 Q. Let me ask you --

10 A. It is not the same copy that you
11 presented to me originally.

12 Q. That's right. It is a copy of the same
13 memo but there are handwritten things on
14 Exhibit 8, the first page, that are not on the
15 first page of Exhibit 17.

16 A. That is correct.

17 Q. Correct? For example, R. A. Keller is
18 underlined on Exhibit No. 17 and there is
19 something, does that appear to say Aroclor?"

20 A. "It appears to say Aroclor, and then it
21 has "FF" after it, which would mean Functional
22 Fluids, I would assume. That's usually a
23 designation for where to file it, I guess.

24 And the underlining of the R. A., which
25 may or may not be R. E., probably indicates that a

1 copy was intended to go to Keller.

2 Q. Okay. So essentially the sum of all
3 that is, is that what we are probably looking at
4 are two copies of the same document that went to
5 different people within the company?

6 A. Yeah. Well, yes, except there are
7 obviously different sizes and there's other
8 writing on the other and highlighting.

9 I, I don't have any doubt after
10 reviewing it while we were kind of -- while you
11 were kind of talking there that they appear from a
12 content viewpoint to be exactly the same without
13 any alterations. There are just some writing and
14 highlighting. And this one seems to be reduced to
15 me, does it to you, my --

16 Q. Yes -- no, no, the whole thing, the
17 whole thing seems to be reduced to me.

18 A. Okay. All right. And so for us this is
19 basically the same as that.

20 Q. Yeah.

21 A. So Exhibit 17 and the top page of
22 Exhibit 18 are the same --

23 Q. Yeah, I --

24 A. -- I would have to review them to see if
25 they are different for any reason or anything of

1 that sort.

2 Q. Let me ask, let me ask you a question so
3 we can clean it all up so the record is clean.
4 And that's what I'm doing a lot of the time, I
5 want you to understand. Sometimes when I restate
6 or reask things --

7 A. Okay.

8 Q. -- it's not that I'm arguing with you,
9 it's just so there is a clean question and answer
10 on the record.

11 A. Okay.

12 Q. Do Exhibits, do the first page of
13 Exhibit 18 and Exhibit 17 appear to be photocopies
14 of the same memo that probably went to different
15 people?

16 A. Yeah. They do with one minor exception
17 relative to what you said earlier.

18 Q. Okay.

19 A. It appears from my understanding of how
20 they marked these documents that it indeed was
21 Plaintiffs' Exhibit 347, Tucker, which is me. But
22 it appears that Exhibit No. 11 with a date on it
23 has Kelly written on it so that probably wasn't
24 presented to me twice, maybe once --

25 Q. That's right.

1 A. -- and twice is this time. Is that
2 correct.

3 Q. I think you probably picked that up. I
4 apologize, I missed that it was Kelly instead of
5 Tucker.

6 A. Well, I wouldn't say anything but you
7 seemed to make a big point of me seeing this twice
8 before or something of that sort, or at least it
9 appeared to me.

10 Q. Okay. I didn't intend it to be.

11 A. And that's not the case.

12 Q. I understand and I didn't intend it to
13 be a big point.

14 So Exhibit 18 is apparently -- was
15 apparently an exhibit to your deposition and
16 appears to have also been an exhibit to
17 Dr. Kelly's or somebody named Kelly's deposition
18 at another time. Is that fair?

19 A. Yes, it does.

20 Q. All right. In any event, attached to
21 Exhibit 18, this October 21 memo, appears to be an
22 article by Dr. Risebrough. And I know that it is
23 very hard to read so I'm not going to ask you to
24 read the whole thing. I'm just going to ask you
25 to kind of skim through it and see if it appears

1 to be what it purports to be, which is a article
2 by Dr. Risebrough.

3 A. (Witness peruses document.) It appears
4 to me to be a prepublication or a draft copy of an
5 article that I think subsequently was published at
6 some later date by Risebrough.

7 Q. Okay. So the bottom line is it appears
8 to be what is referenced in the first paragraph,
9 i.e., a prepublication copy that was passed along
10 to you and Mr. Wheeler by this fellow from the
11 National Agricultural Chemicals Association?

12 A. Yes.

13 Q. Okay. Now I assume when you received
14 this document you reviewed it, is that a fair
15 assumption?

16 A. In other words, you're asking me if I
17 reviewed the document when I received it? Yes.

18 Q. Yes.

19 A. And it indeed is, is probably not only
20 probably an assumption but a fact.

21 Q. Okay. Do you remember reviewing this
22 prepublication copy in about October of 1968?

23 A. Yes.

24 Q. Okay. Now there is -- there are some
25 references in Dr. Risebrough's paper to some other

1 articles, correct?

2 A. Well, you seem to have some things --
3 well, most all papers have a list of referenced
4 publications that are used in the production of
5 that particular paper or that have salient points
6 that the author uses to, and it is a way of giving
7 credit to other people who have contributed to the
8 area no matter how broad it may be. I mean, these
9 guys may have invented a chromatograph or
10 something like that and they were referenced. So
11 that is common, yes.

12 Q. Is it also a method for scientists to
13 assist them in their research so that if a point
14 is referenced in a paper and documented that
15 another scientist who is interested in that point
16 can go back and pull the references and find out?

17 A. When --

18 Q. More information about that specific
19 point?

20 A. When one writes a paper, one usually
21 goes back through the literature and it is based
22 on other people's work, no matter how directly
23 related or indirectly related it is. And it is a
24 manner in which we give credit to each other and
25 make sure everybody understands the thread of how

1 things are occurring.

2 Q. Okay. And my specific question is, does
3 it also assist researchers who are interested in a
4 specific point in a scientific article like this,
5 assist them to go and do further research on that
6 specific point?

7 A. Yes, it does. And in fact, in most
8 bibliographies, the individual references are
9 numbered and the number or some designation
10 thereof that can be related to that biography
11 appears at the point that it is important and
12 where it is referred to in the article.

13 Q. And that's --

14 A. And that's a common practice in, in the
15 publication or when you are writing a
16 prepublication or a draft format.

17 Q. And that's done in this case also,
18 correct?

19 A. Right. That is done in this draft
20 prepublication copy and it would have to be before
21 anybody would publish it.

22 Q. And I don't -- again, I'm not going to
23 try to go through the whole article at this point,
24 but I am going to try to read a part of it and ask
25 you some questions about it.

1 The essence of the article is about
2 finding polychlorinated biphenyls in wildlife on
3 the West Coast of the United States, correct?

4 A. No, actually that's not correct. And as
5 you have documented earlier, I have reviewed this
6 document.

7 Q. Okay. Does the document discuss
8 Dr. Risebrough's opinions that he is finding
9 evidence of polychlorinated biphenyls accumulated
10 in wildlife on the West Coast of the United
11 States?

12 A. What the article discusses -- rather
13 than you telling me what it discussed, since I
14 have had an opportunity to review it and it's an
15 area I'm familiar with -- what the article
16 discusses is it discusses that Risebrough, who is
17 doing pesticide analysis, not analyzing for PCBs
18 necessarily, had also seen unidentified peaks
19 using electronic capture. And that he concluded
20 based on work by Jensen and Widmark that these
21 peaks were or probably could be polychlorinated
22 biphenyls.

23 And as such, he recalculated information
24 based on that and said that if PCBs were there --
25 and he was quite positive about it -- that they

1 would be there at these concentrations. And
2 that's my recollection and my understanding of
3 what the article represents.

4 Q. Okay. Was this finding -- or, well, let
5 me just ask it this way: Would the publication of
6 an article that discusses finding PCBs in wildlife
7 all along the West Coast of the United States be a
8 matter of importance or concern to Monsanto?

9 MR. PRAUSE: Object to the form of the
10 question.

11 A. The article, as would any article about
12 any product that Monsanto manufactured being found
13 in wildlife, would be of importance. What would
14 be of importance is that one should evaluate it to
15 determine the level of concern to be associated
16 with it.

17 Q. Okay.

18 A. So you asked me two questions; and I'm
19 sorry for doing that --

20 Q. That's all right.

21 A. -- but it is the only way I know how to
22 try to be accurate.

23 Q. Let me turn you to Page 2 of the draft
24 article. It is actually Page 3 of Exhibit No. 18.
25 And I have highlighted a paragraph and I'm going

1 to try to read it. And I would like for you to
2 try to follow me and see if you think I read it
3 accurately. It's barely legible.

4 "The polychlorinated biphenyls (PCB)
5 occurring in fish and other marine organisms are
6 assumed to be industrial pollutants. They are
7 used extensively in industry as plasticizers and
8 in the manufacture of paints, resins, electrical
9 insulators and other products and are available in
10 railway car amounts. Since they are very stable
11 resist degradation, have significant vapor
12 pressures, are poorly soluble in water and highly
13 soluble in lipid, it is inevitable that they
14 should be concentrated in biological systems."

15 Have I read that correctly so far?

16 A. You have read it accurately.

17 Q. Okay. Their chemical structure is in
18 some respects similar to that of several
19 chlorinated hydrocarbon pesticides," I'm not going
20 to read the remainder of the paragraph.

21 A. The part you just read is not something
22 you highlighted.

23 Q. That's right.

24 A. Okay.

25 Q. First of all, that statement fairly

1 accurately describes the kind of PCB products that
2 Monsanto manufactured and sold in the United
3 States, correct?

4 A. I think what you are saying is it
5 reflects the uses to which the PCB products were
6 put to and also reflects that this -- that as
7 Risebrough states, and he states correctly, that
8 he is at this point in time assuming these to be
9 industrial pollutants.

10 Q. All right. And he also states and we
11 know now that it is correct that they accumulate
12 in biological systems, correct?

13 A. Correct, 2000. This is the year 2000
14 versus when was this written.

15 Q. That's right.

16 A. When was this written?

17 Q. Well, you got it in October of '68.

18 A. Okay. So 32 years ago.

19 Q. So he had deduced some time before
20 October of '68 that it accumulates in biological
21 systems, correct?

22 A. No. I think what he was saying is that
23 the materials have, if they get into the
24 biological systems and if they are the source what
25 he has seen and assumes to be PCBs -- even though

1 he didn't for sure identify them -- that they have
2 the properties that would cause them to
3 accumulate.

4 So far, I don't see any information that
5 shows that they are bioaccumulating.

6 Bioaccumulating means to grow with time relative
7 to what something is being exposed to.

8 And so what he is basically saying here
9 is that if these are assumed to be industrial
10 pollutants that they certainly have the physical
11 properties that which would cause them -- like
12 DDT, which we had experience with because it was
13 intentionally spread around and things of that
14 sort and we knew organisms were exposed to it --
15 it would have the properties to do the same.

16 But are you saying that he's, at 32
17 years ago he is saying that this was true? Or are
18 you saying that 32 years ago he is saying this is
19 possible and we need to further investigate the
20 situation? I believe the latter versus the
21 former.

22 Q. So in your opinion his statement that,
23 quote, "It is inevitable that they should be
24 concentrated in biological systems," close quote,
25 is not synonymous in any manner with

1 bioaccumulation?

2 A. I think an inevitability presents the
3 fact that it is going to occur, not necessarily
4 that it has occurred.

5 And it is just semantics. And he's not
6 stating scientific facts there; he is stating his
7 opinion based on if what he's -- the other
8 assumptions he says are true: If all the peaks
9 and the chromatograms that look like the ones in
10 Sweden are indeed PCBs -- and, by the way, in
11 Sweden they only found the ckc octychloryl
12 biphenyls we've discussed earlier -- then perhaps
13 this is true.

14 There's nothing wrong with what he is a
15 saying; but it's 32 years ago and you have gone
16 from that to stating it as a fact as if it were
17 known at that period of time, and it is not, this
18 is research.

19 Q. Well, what I've stated is, is this is an
20 opinion from a researcher in the United States
21 that was passed along to you in October of 1968,
22 correct?

23 A. But we have agreed to that earlier
24 and --

25 Q. Regarding one of Monsanto's products

1 that you were tasked with determining whether or
2 not what he says is happening and what other
3 people say is happening is actually happening,
4 correct?

5 A. I was tasked with determining whether or
6 not peaks of those sort really were coming from
7 the United States Aroclor PCB products
8 manufactured here.

9 Q. Okay.

10 A. I couldn't disagree with him in terms of
11 the properties of the materials because I was
12 aware of what the properties of the materials are,
13 too. But to say that this, you know, is an
14 absolute proof of it or that at this point in time
15 we knew everything we know 32 years later is
16 incorrect. And so what this is, is another brick
17 in the puzzle or another piece of the puzzle that
18 is being put together.

19 And not taking what he says out of
20 context -- and I'm not implying that you do -- he
21 states that he, too, says if, assume, perhaps.
22 And I think he would also at the same time say,
23 "We need to do more work." So that's all I'm
24 trying to get across.

25 Q. I appreciate that. And again, I'm going

1 to object nonresponsive but I appreciate your
2 answer.

3 He references over here on the next
4 page.

5 THE WITNESS: There's a knock on the
6 door. (Interruption in the proceedings.)

7 MR. WRIGHT: Probably a fax for you.

8 Let me re-ask my question again.

9 MR. PRAUSE: Sorry about that.

10 MR. WRIGHT: That's all right.

11 BY MR. WRIGHT:

12 Q. He references on the next page in the
13 paragraph that I've highlighted that, "The PCB
14 peaks have been evident in chromatograms but
15 remained unidentified until late in 1967," he
16 says; although he references the Jensen work which
17 we know was passed on to Monsanto late in 1966,
18 correct?

19 MR. PRAUSE: Object to the form of the
20 question.

21 A. That's probably correct. But if you
22 want to reflect accurately what he says in his
23 paragraph -- which is what I thought we were
24 doing -- he says that they were unidentified until
25 late 1967.

1 Q. Right.

2 A. The reason he probably does that is that
3 he either wasn't, he, if he got a prepublication
4 copy, he wasn't willing to, to state it as being
5 real until it hadn't actually been published and
6 peer-reviewed and things of that sort.

7 And I believe, if I remember, it was
8 published in Octa. Chem. Scand. from something you
9 read earlier in 1967. So he's absolutely correct
10 in the way he is doing it.

11 Q. Right.

12 A. It wasn't real to him or any other bona
13 fide scientist until 1967 when it had really been
14 published and peer-reviewed.

15 Q. So he may not have had the information
16 as early as Monsanto had it?

17 A. I'm sure that he had a prepublication
18 copy. I thought we had saw something earlier that
19 indicated that he might have, but I could be
20 mistaken about that.

21 Q. I don't remember that?

22 A. But I don't think that's the point.

23 Q. Yeah, the point, the question is it's
24 certainly possible if not probable that he did not
25 have the Jensen and Widmark information as early

1 as Monsanto did, which was November, December of
2 1966?

3 A. This is moving on from the last question
4 and a new question --

5 Q. Yes.

6 A. -- that you are asking me? That's a
7 possibility, yes.

8 Q. All right. Then he does reference the,
9 a Sweden publication as reference No. 30 and we'll
10 look at what that is in just a second. Actually,
11 why don't we look at that right now?

12 A. Sure, be great.

13 Q. Just to clarify.

14 A. Well, to determine what it is.

15 Q. Yeah. No. 30 is entitled what?

16 A. It looks like "Widmark." Does not that
17 look like that to you, "Widmark"?

18 Q. Yes, looks like "Widmark" to me.

19 A. And it is a publication, yeah, and it is
20 G. Widmark. And I'm just expressing difficulty to
21 read, it is difficult to read.

22 Q. It is difficult to read, yes.

23 A. It's "G. Widmark," and it's the Journal
24 of the Association of Official Analytical
25 Chemistries, Volume 50, 1967.

1 Q. Right.

2 A. And it's apparently a publication of
3 Widmark but not Jensen.

4 On the other hand, some journal articles
5 don't print all the authors, they only print the
6 senior author; and of course we do know Widmark
7 was Jensen's boss and senior to him and a lot of
8 other people --

9 Q. Yes.

10 A. -- at the institute. Is that accurate?

11 Q. That's accurate.

12 A. Did I read that correctly? (Laughter)

13 Q. You read that correctly. And my
14 assumption is that that, based upon the context in
15 which he refers to it here, is that he was
16 referring to essentially the same information or
17 at least the same kind of information that was
18 transmitted to Monsanto in November and December
19 of '67 as we talked through this morning.

20 Is that a fair assumption?

21 A. That's a, if we are referring to that
22 specific article and to those time frames and all
23 the other conditions that is you set on that
24 particular question, that would be a quantum jump
25 to agree with that.

1 When it was published, I'm sure that
2 after it had been published it was something that
3 Monsanto got, there's no question about that,
4 because everybody has access to the scientific
5 literature once it is published.

6 Q. Okay. But again, and I don't want to, I
7 don't want to spend the time going through this.
8 We walked through at some length this morning the
9 information that Monsanto received from Widmark
10 and Jensen and --

11 A. Okay, then maybe I understand your
12 question better.

13 In other words, you're asking me if what
14 we walked through earlier was every referred as
15 the Journal of Association of Official Analytical
16 Chemistry? And I can answer that no.

17 Q. Okay. No, that wasn't my question.

18 What my question was is, in the context
19 of this article when he says that attempts to
20 identify them were unsuccessful until reports
21 appeared from Sweden and he gives this reference,
22 is it fair to assume -- and you may recall this
23 from your recollection of this reference -- is it
24 fair to assume that the information that's
25 contained in this reference is generally the

1 information that Monsanto received in November of
2 '66 with the prepublication copy of Jensen's work
3 finding polychlorinated biphenyls in wildlife in
4 Sweden?

5 A. The answer to that is, is that
6 Dr. Risebrough refers to what he refers to and it
7 is clear what he refers to. If we would like to
8 get a copy of that particular article and see
9 whether or not we trace it back to unpublished
10 things of that sort that came in earlier, that's
11 fine to do.

12 But I, you know, based on what we are
13 looking at here, I can only say that
14 Dr. Risebrough has done correct. He has
15 referenced a published article; and what's in that
16 published article, as you have indicated earlier,
17 is what researchers do is they go get a copy of
18 that article and they read it and see how it
19 applies.

20 Q. Okay.

21 A. And it's of the same topic; it's of
22 everything we're talking about today. But to know
23 whether or not it the exact information in an
24 article we haven't seen is the same as something
25 earlier, I can't testify to that.

1 Q. Okay. the next reference is to an
2 article from Great Britain.

3 A. You are going to have to push this over
4 so we can --

5 Q. Yes. He references an article from
6 Great Britain that PCBs had been identified in
7 wildlife with the use of mass spectrography, do
8 you see it?

9 A. Well says, Item 22. Did we look up at
10 22?

11 Q. No. What I'm asking you about?

12 A. The next reference is Item 22, isn't
13 that what is in the parentheses, Item 22?

14 Q. No. The next reference after the
15 Swedish reference is Great Britain, which is
16 No. 14. And that's --

17 A. 30 is what we looked at earlier.

18 Q. That's fine.

19 A. So we skipped 22, we looked at 30, now
20 we're looking at Item 14.

21 Q. Well, for the record let me just ask
22 you: The sentence that Item 30 documents is the
23 sentence that generally one that states, "Attempts
24 to identify them," and he is talking about PCBs,
25 "were unsuccessful until reports appeared from

1 Sweden (30)," and we just talked about that, and
2 from Great Britain (14) that PCB had been
3 identified in wildlife with the use of mass
4 spectrography and gas liquid chromatography
5 respectively."

6 First of all, did I read the sentence
7 correctly?

8 A. Yes.

9 Q. Okay. And the "them" that he is talking
10 about that were unidentified are these peaks that
11 were showing up in various places in studies of
12 environmental samples?

13 A. That, and he is referring to the fact
14 that the Swedish researchers saw
15 octachlorobiphenyl in this example via mass spec.

16 Q. Okay. Now the point I would like to
17 talk about now is the Great Britain reference,
18 which is number 14. And can you read what the
19 reference number 14 is?

20 A. Okay, maybe can you help me.

21 Q. Let me see if I can read it.

22 A. The first name, I can get some of it and
23 probably figure it out. The first name --

24 Q. Looks like Holmes or Home, looks like
25 Holmes D. C.

1 A. The second name is.

2 Q. May be Simms?

3 A. Simms or, and the third name I can see

4 is --

5 Q. Tatton?

6 A. Tatton or Taton.

7 Q. Yes?

8 A. Either one, with three initials there --

9 Q. Yes, and the article --

10 A. -- then it says Nature 116, 1967.

11 Q. Now you're familiar with the journal
12 Nature, correct?

13 A. Yes, I am.

14 Q. That is a very distinguished British
15 scientific journal, correct?

16 A. Yes. And distinguished by the fact that
17 it has been around a long time and things of that
18 sort. And but yes.

19 Q. Did you look up the article that was
20 referenced in Item No. 14?

21 A. Yes, I'm sure I probably did.

22 Q. Do you have a recollection of doing so?

23 A. Okay. I have a recollection of getting
24 all of the articles that I could here. As we
25 indicated earlier, that's what you do when you

1 review a publication.

2 And so I don't have a recollection of
3 getting that article specifically. I do remember,
4 though, if I remember correctly, the nature
5 article didn't really refer to PCBs, it referred
6 to pesticides in unknown peaks. But I don't think
7 that it actually said PCBs, but it might have. If
8 you have a copy of that, we can look at it and
9 see.

10 Q. I do not have a copy of it.

11 A. Okay.

12 Q. I would like the best of your
13 recollection as Monsanto's expert --

14 A. Answered.

15 Q. -- of what the article says.

16 A. Answered. Keeping in mind with fairness
17 to me that's 33 years ago.

18 Q. I understand.

19 A. Okay.

20 Q. Now the last sentence of this memo says,
21 "Scott Tucker is going to scrutinize the
22 analytical aspects and particularly the validity
23 of," what is that word there?

24 A. It looks like "soce" but I think it's
25 "some."

1 Q. "The validity of some of the --" that's
2 right, this is much more legible.

3 A. I bet you it is "some," but it looks
4 like S-O-C-E.

5 Q. Scott Tucker --

6 A. "Of some of the assumptions made by the
7 author."

8 Q. Actually, why don't you read the last
9 paragraph?

10 A. The whole paragraph or the last sentence
11 you referred to?

12 Q. No, read the whole last paragraph of
13 this October 21, 1968, memo if you would please
14 sir?

15 A. This memo states, "In a few words,
16 Risebrough has found --"

17 THE REPORTER: I'm sorry.

18 MR. SHIELDS: I'm sorry. Let me start
19 from the beginning to make it clear.

20 BY MR. WRIGHT:

21 Q. If you wouldn't mind saying "quote" when
22 you start and then "close quote" when you end?

23 A. I wouldn't mind doing that. May I
24 understand why?

25 Q. Yeah. Because the way you started to

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 answer the question, you say, "This memo states in
2 a few words," and it may sound like when we read
3 this --

4 A. Oh, okay.

5 Q. -- that you are summarizing it.

6 A. Quote.

7 Q. Let me ask a question and then --

8 A. "In a few words," came from the memo,
9 not from me.

10 (Simultaneous conversation.)

11 Q. That's all right. I'm just saying when
12 somebody reads this it's going to sound like
13 you're summarizing and I want it to be clear that
14 you are quoting --

15 A. I understand what you're saying. I
16 though, "Golly, I didn't say, 'in a few words.'"

17 Q. Okay. Let me ask the question.
18 Dr. Tucker, would you read the last paragraph of
19 this October 21, 1968, memo?

20 A. Yes, sir. Quote:

21 "In a few words, Risebrough has found
22 PCBs along with chlorinated pesticides in a number
23 of species of fish and birds along the California
24 coast as well as in waters off Baja, California
25 and Central America." That does say Central

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 America. "We further reports, we further
2 reports," and it does say reports, "PCB in fish
3 from the Channel Islands and Puget Sound. No PCB
4 was detected in the liver of tuna taken in
5 Galapagos, Archipelago." Something like, that.
6 "Scott Tucker is going to scrutinize the
7 analytical aspects and particularly the validity
8 of some of the assumptions made by the author."

9 Q. Did you do that?

10 A. Did I do that accurately?

11 Q. Yes.

12 A. Okay.

13 Q. Thank you for reading that.

14 A. You're welcome.

15 Q. My question now is, is did you
16 scrutinize the analytical aspects and the validity
17 of some of the assumptions made by the author?

18 A. Yes, I scrutinized the article. And
19 yes, I didn't -- yes, I had an opinion on the
20 validity of the article. I didn't scrutinize the
21 validity. I looked at it.

22 Okay I understand what you are saying.

23 Yes.

24 Q. I'm just asking did you do what he said
25 you were going to do back in October of '68?

1 A. Yes.

2 Q. And what did you find when you did what
3 he said you were going to do in October of '68?

4 A. As I stated earlier, the identification
5 of the PCBs was based on the work done by, if I,
6 this is my recollection, based on the work done by
7 Soren Jensen and Gunnar Widmark where they had
8 taken at least one sample and done a mass spec on
9 it and found octachlorobiphenyl and in turn
10 decided it was a PCB.

11 And that it may or may not be, but they
12 thought it might be all reflective of the other
13 209 PCB isomers that are out there or were out
14 there and could be out there and were
15 manufactured.

16 Now it appeared to me at that time, if I
17 remember correctly, that Risebrough had said, Wow,
18 look at that. I see the same peaks using the same
19 kind of techniques with the exception of the mass
20 spectrometer -- which is, of course, the only way
21 to absolutely identify polychlorinated biphenyls
22 or any other molecule -- and they are probably the
23 same thing. If it was the same thing, then this
24 is what it might be.

25 And so the validity was that he indeed

1 did state what he did and he stated it correctly.

2 He did not state that he had absolutely
3 found PCBs or this. He went into some statements
4 based on that information where he projected and
5 proposed some possibilities. And that's exactly,
6 if I recall, what I told my management. And that
7 on an absolute basis, you know, a lot of what he
8 was saying could be correct and a lot of what he
9 was saying couldn't be.

10 And I have to tell you even today when
11 we run an electronic capture chromatogram on an
12 environmental sample we find unknown peaks. So
13 you, you know, that's where we were.

14 And it was another piece of information;
15 and there were a lot of other people that were
16 finding unknown peaks that were doing the same
17 kind of pesticide analysis.

18 Q. Okay. One quick question to clarify
19 your answer. You said you told your management
20 that a lot of what he was saying could be true and
21 a lot of it couldn't. But saying that it couldn't
22 be true, did you mean it was impossible or did you
23 mean that it might not be true?

24 A. I meant what I said. And I believe I
25 said that it could, that there was a possibility

1 it might not be true.

2 Q. No, that wasn't --

3 A. How did you want to state that now?

4 Q. No. The exact words that you said --

5 A. You have an advantage.

6 Q. That's right, I do --

7 A. -- in the sense that you are rereading
8 the record and I can't do that. But go ahead.

9 Q. That's exactly right and that's why I
10 asked you to clarify it. I could have her read it
11 back, but --

12 A. I think that would be appropriate.

13 Q. Okay. If you will scroll back up I'll
14 show you the part to read back.

15 A. That way I know what I said and not what
16 you said I said.

17 Q. Okay.

18 A. Which I think is the way it should be.

19 MR. WRIGHT: I want us to be accurate.

20 (Discussion off the record.)

21 MR. WRIGHT: Let's go off the record
22 just a second, please.

23 THE VIDEOGRAPHER: We're off the record
24 at 12:53.

25 (Recess taken.)

1 THE VIDEOGRAPHER: We're on the record
2 at 12:54.

3 BY MR. WRIGHT:

4 Q. Doctor, what I heard you say -- and the
5 record will reflect what you actually said. But
6 what I heard you say is that you told your
7 management that, and I'm paraphrasing but I think
8 I'm paraphrasing pretty closely, that a lot of
9 what Dr. Risebrough said could be true and a lot
10 of it couldn't be true.

11 And all I'm asking you now is, did you
12 mean by the use of the word "couldn't be true"
13 that it wasn't possible for a lot of what
14 Dr. Risebrough said to be true and is that what
15 you communicated to your management? Or did you
16 simply communicate to your management that it
17 could be true or it might not be true?

18 MR. PRAUSE: Object to the question.

19 A. I answered that question and I think
20 it's clear on the record how I answered that
21 question. And I don't know how to answer the
22 question you have just asked because it is kind of
23 like taking the question that you asked to begin
24 with and adjusting it slightly. It is kind of
25 like you asking me what I meant by "could" or

1 "could not," and I meant what I said.

2 Q. Let me ask you a different --

3 A. I meant what I said and I speak fairly
4 good English in a clear fashion. If you want me
5 to expand on a portion of what I said earlier, I
6 can probably do that. But if you want me to agree
7 to the way you interpret what I said, I'd have to
8 say that what you have just said isn't clear
9 enough for me to agree with you.

10 Q. Okay. Let me ask you this question.
11 Did you tell your management after reviewing the
12 Risebrough article that what he said about PCBs
13 was not possible to be true?

14 A. No.

15 Q. Okay. Did you tell your management that
16 what he said about PCBs could be true or could not
17 be true but that you were uncertain?

18 A. Yes.

19 MR. WRIGHT: Okay. Why don't we break
20 for lunch?

21 THE VIDEOGRAPHER: We're off the record
22 at 12:56.

23 (Lunch recess 12:56 p.m. to 1:54 p.m.)

24 THE VIDEOGRAPHER: We're on the record
25 at 1:54.

1 BY MR. WRIGHT:

2 Q. All right, Dr. Tucker, I'm going to
3 begin now going through in a somewhat
4 chronological basis, although it won't be entirely
5 chronological, the documents that were provided
6 before your deposition.

7 I believe almost all of the documents
8 that we talked about this morning were not
9 provided to you to review before this deposition
10 and are not part of Exhibit No. 4. There may be a
11 page or two here and there that was.

12 But these documents now that I'm going
13 to go through are primarily from Exhibit No. 4,
14 which you reviewed prior to the deposition with
15 the attorneys for Monsanto.

16 A. If I may, let me understand for sure
17 what you said.

18 Q. Yes, sir.

19 A. What you have said is all the documents
20 you are going to show me in this pile in front of
21 me were from the piles that I had reviewed and
22 that my -- the lawyer that is defending me here
23 provided it to you?

24 Q. Yes. Primarily.

25 A. What does "primarily" mean?

1 Q. There will probably be -- well, I'm
2 saying there may be a couple -- well not maybe,
3 but there will be as we go through this
4 afternoon's session a couple of documents that
5 were not included in Exhibit No. 4. When I ask
6 you about those, I will make clear that --

7 A. Okay.

8 Q. -- to the best of my knowledge they were
9 not included in Exhibit No. 4. And if I'm wrong
10 about it, the record is going to reflect; because
11 if you recall, we went through yesterday and read
12 into the record all of the numbers for the
13 documents that were included in Exhibit No. 4.

14 But I just wanted to let you know
15 generally what we were going to do.

16 A. Okay. The point is if you were to say
17 that these were all I had seen them before in
18 preparation and then you showed me one I wasn't, I
19 might question my sanity and I don't like to do
20 that.

21 Q. Right, I understand --

22 A. Thank you.

23 Q. -- and I appreciate that. And if you
24 think I'm making a mistake along the way, let me
25 know; because I am prone to make mistakes on

1 usually a minute-by-minute basis.

2 The first document that I would like to
3 ask you about is 014582, or DSW 014582. Would you
4 take a brief look at that document, please, sir.

5 A. (Witness peruses document.)

6 Q. Have you had an opportunity to rereview
7 this document?

8 A. Yes.

9 Q. This is a memo dated December 31, 1968,
10 from W. R. Richard to you, correct?

11 A. Yes.

12 Q. And it is reporting that, "Gerry Miller
13 at Anniston says that he has GLC curves for
14 Aroclor in fish tissue."

15 What did you interpret that sentence to
16 mean?

17 A. I interpreted that sentence as to mean
18 that Gerry Miller, who -- I interpreted that
19 sentence to mean that Gerry Miller thought that he
20 might be seeing PCBs in some GLC curves that were
21 generated for another purpose.

22 Q. What are GLCs?

23 A. It is a way that people who are not
24 familiar with or up to date on gas chromatography
25 refer to it; it's called gas liquid chromatography

1 versus gas chromatography.

2 Q. All right.

3 A. And it kind of reflects Gerry's
4 understanding of the subject at the time he wrote
5 that memo.

6 Q. And that's what we were talking about
7 yesterday where before you hooked the electron
8 capture device to the gas chromatography, you
9 still got data from the gas chromatography but the
10 data was not as detailed as it was after you
11 connected the two machines, correct?

12 A. The probability that -- okay. What I
13 said -- that, what you are saying is correct from
14 a layman's viewpoint.

15 Q. Okay.

16 A. What I said from a technical viewpoint
17 or meant from a technical viewpoint was that the
18 detection systems that were being used -- for
19 example, I believe here, too, although you can't
20 tell for sure from the memo -- were of the
21 universal variety that responded to everything.
22 And that if mineral oil had been in the sample
23 that he was analyzing, he would have looked and
24 seen peaks that would be attributable to
25 components in mineral oil that, if you put PCBs in

1 place of the mineral oil, you would see peaks,
2 too.

3 So you would see peaks and you wouldn't
4 really know whether they were PCBs or not; you
5 would just simply know that there were things that
6 were going through the chromatographic that a
7 thermal conductivity detector was responding to.

8 The electron capture detector was more
9 selective. If you put mineral oil through a gas
10 chromatograph attached to an electronic capture
11 detector, it wouldn't see it. And so if this
12 was -- if these peaks were due to mineral oil and
13 you ran it through a GC/ECD, you would see it and
14 you would know that they couldn't be Aroclor.

15 Q. But Gerry Miller at least believed that
16 he had curves for Aroclor in fish tissue,
17 according to this memo from Mr. Richard or
18 Dr. Richard, correct?

19 A. No.

20 Q. Okay. Well, let's look at the second
21 paragraph, quote, "Gerry says that most of the
22 Aroclor isomer peaks are retained in the tissue
23 sample."

24 Did I read that sentence correctly?

25 A. First of all, the equipment that he had

1 was not capable of separating PCBs to the isomer
2 point. So as I'm trying to point out in a nice
3 fashion, Gerry is saying what he believed based on
4 his skill and practice. And he's obviously not
5 seen PCB isomers because he can't get that kind of
6 resolution.

7 And really what Gerry is saying is, I
8 think -- and the reason I'm involved and the
9 reason Richard involved me was because they needed
10 somebody with more practice to really look at it
11 and say, "Gee, is this true or not?"

12 Q. Did you, the second sentence of that
13 paragraph says that he is going to send a copy of
14 the chromatogram to you, correct?

15 A. That's correct.

16 Q. Do you recall receiving a copy of that
17 chromatogram?

18 A. Not specifically. But I have no doubt
19 to believe that I did and I have no doubt to
20 believe that I reviewed it. I do recall what I
21 probably would have said in this particular
22 instance.

23 Q. Well, first of all, do you recall what
24 opinion you came up with if you reviewed the
25 document?

1 A. Yes.

2 Q. Okay. You recall that, or you have an
3 assumption of what you --

4 A. I recall reviewing information that was
5 provided me early on that people felt might be
6 useful in terms of what they had. And I was asked
7 to evaluate whether or not it was really
8 definitive or not definitive and whether or not it
9 was useful.

10 Q. Okay. Let me object, nonresponsive.

11 What I'm asking you right now is, this
12 case is about Anniston and this document reflects
13 an Anniston scientist's belief that he sees
14 Aroclor curves in fish. And it also indicates
15 that the chromatograph that he bases his belief on
16 is going to be sent to you.

17 And what I'm asking you is, do you have
18 a specific recollection of reviewing that
19 chromatograph?

20 A. Yes.

21 Q. Okay. When did you review the
22 chromatograph referred to in this memo?

23 A. I more than likely reviewed -- I don't
24 remember exactly. I do know that it would occur
25 after this memo, so it would be on or about late

1 1968 -- very late 1968, since this is dated
2 December 31 -- or probably the first quarter or
3 even later than that. But whenever they got it to
4 me, I reviewed it.

5 Q. What do you recall seeing when you
6 reviewed this chromatograph?

7 A. My recollection is, is that I saw a
8 chromatogram with a lot of peaks in it and that
9 from my viewpoint were not definitively PCBs or
10 Aroclors. And that the information, while it was
11 instructive and what he said could probably be
12 true, it certainly wasn't definitive from the
13 information I was presented.

14 And I believe that that's why somebody
15 who had more practice and a better understanding
16 was being asked to look at what Gerry thought he
17 had.

18 Q. Okay. The next document that I'm going
19 to ask you about is a handwritten document that I
20 believe you wrote -- well, let me refer to the
21 Bates number, it's 035902 through 035920?

22 MR. PRAUSE: What's the prefix, MONS?

23 MR. WRIGHT: MONS, yes, I'm sorry. It
24 appears to be dated 1/2/69; and it's
25 entitled, "S. Tucker's report to W. Richard."

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1 Do you recall ever seeing that document
2 before?

3 A. Yes.

4 Q. Okay. Does that look like your
5 handwriting?

6 A. Everything on the page that I'm looking
7 at looks like my handwriting with the exception of
8 the date and the comment, "S. Tuckers' report to
9 W. Richard," that's not my handwriting, and the
10 handwriting "FF" over the word "Aroclor."

11 Q. Okay. Again, "FF" probably means
12 "Functional Fluids" in this context?

13 A. Yes. It's a filing reference probably.

14 Q. And the rest of the filing reference is
15 "Aroclor Wildlife"; and that's what you all were
16 calling the project?

17 A. Could be probably "Aroclor: Wildlife."

18 Q. Yeah.

19 A. You can't tell for sure. But yes.

20 Q. That's what you all were calling this
21 general project at that time?

22 A. That's what this document is entitled.

23 Q. Okay.

24 A. I believe I have seen other documents
25 that you have shown me that said

1 electrical-something-or-other part five or things
2 of that sort. So if you are implying that we
3 always or generically called it that, not
4 necessarily.

5 Q. Okay. But that is one of the things the
6 project -- and by "the project" I'm talking about
7 trying to figure out where Monsanto's products
8 were going and where they were staying and what
9 they were doing. That general, one of the things
10 that general project was referred to as was
11 Aroclor Wildlife?

12 A. In this instance. It's not, the project
13 was not called Aroclor Wildlife.

14 Q. Okay. Thank you, doctor.

15 On the fourth page of the document there
16 is an item number, there's a 3 in a circle. And
17 would you read through the end of that page and
18 then I'm going to ask you to read some on the next
19 page, too. But I want to talk about what's on
20 that page.

21 So the question is, would you read
22 what's designated as item number 3 here on Page 4
23 of your report to Mr. Richard in January of '69.

24 A. Item three; and as has been stated, it
25 is on Page 4 of exhibit --

1 Q. Actually you can refer to the Bates
2 numbered page.

3 A. Okay. And we've already done that, it's
4 035902. Okay.

5 Q. Actually, why don't you refer to the
6 page that you are reading from?

7 A. Yeah, great; it's MONS 035905.

8 Q. All right.

9 A. And it starts out, quote, "After closely
10 reviewing the available literature, I find it
11 difficult to dispute the identification of the
12 interfering peaks as PCBs. Still we have not,"
13 and there's a word "actually" crossed out,
14 "demonstrated this on," and there's a word
15 "actual" crossed out again and substituted for it
16 "real samples in our laboratories. For this
17 reason, a letter to the fish and wildlife people
18 at Patuxent is being," and then there's a "dif"
19 crossed out. The next word, "drafted requesting
20 duplicate samples of some of the tissues in which
21 they believe they have," and then there's a
22 crossed out section. And I can read that if you
23 like. But what it means, it says, "found PCBs.
24 These samples would then be subjected to an
25 absolute GC mass identification. If PCBs are

1 found this still doesn't, doesn't not prove," and
2 that's all that's on this page.

3 Q. Go ahead and read, I think the subject
4 continues a little bit on the next page?

5 A. Okay. "that our Aroclors are the source
6 of the contamination. To help us determine if
7 Aroclors are the actual source of the following --
8 the actual source, the following experiments have
9 been planned."

10 Q. Okay. Let's stop right there and we'll
11 talk about the experiments that are planned in a
12 minute.

13 But essentially your opinion by the
14 first of January of 1969 was that you said, " I
15 find it difficult to dispute the identification of
16 the interfering peaks as PCBs." By that, were you
17 referring to the interfering peaks that we have
18 talked about that were set out in the literature
19 as of that time?

20 A. Yes. What I'm indicating is that what I
21 had been provided didn't have enough information
22 to allow me to draw that conclusion.

23 Q. Well, actually what you said is, "I find
24 it difficult to dispute the identification of the
25 interfering peaks as PCBs." Are you not

1 indicating by that that you are agreeing with the
2 analysis of the peaks as PCBs?

3 A. Certainly not. I'm certainly not
4 agreeing that they are PCBs and that's why I'm
5 recommending other things be done.

6 What I'm saying is, is that the
7 information that I have been provided, and to be
8 fair about it, doesn't allow me to say whether
9 there are PCBs for sure or not; and therefore I
10 cannot dispute whether these are PCBs. And that's
11 what it is saying --

12 Q. Well, doctor, --

13 A. -- clearly.

14 Q. -- in all fairness, the way I -- it
15 sounds to me as if you are saying that the
16 identification of the interfering peaks in the
17 literature as PCBs is difficult to dispute but we
18 don't know where -- whether they are our PCBs or
19 not.

20 MR. PRAUSE: Object to the form.

21 Q. Is that not a fair reading of what you
22 wrote?

23 MR. PRAUSE: Object to the form.

24 A. No, it certainly is not. But I would
25 add perhaps if you wrote it that's what you'd

1 meant; but you didn't write that, I did.

2 Q. Okay. And you have a clear recollection
3 of what you met in January 1969 for this sentence?

4 A. Since you showed me the document and I
5 wrote it myself, yes, I certainly do.

6 Q. Okay.

7 A. And I think I told you what that
8 recollection was. Whether it is clear or not is
9 up to you.

10 Q. And then you stated four things to help
11 us to determine if Aroclors are the actual source
12 of. Source of what?

13 A. Is that a question?

14 Q. Yes.

15 A. Yes, I stated four things.

16 Q. Right. You're saying that, "our
17 Aroclors are the source of contamination," I'm
18 sorry, I missed that word.

19 A. Is it okay to look at the full sentence?

20 Q. Yes, if you would. Because that's, I
21 want you to read the full sentence. I just
22 misread it, I believe.

23 A. "If PCBs are found this still doesn't
24 prove that our Aroclors are the source of the
25 contamination."

1 Q. Okay.

2 A. Okay. And you skipped past the fact I
3 think I recommended earlier something that needed
4 to be done to prove that they were PCBs.

5 Q. I didn't intend to skip past anything.
6 Can you tell me what we skipped past?

7 A. "The samples will be then subjected to
8 absolute GC mass identification. That's the only
9 absolute way to determine if PCBs are present."

10 And when you are dealing with altered
11 chromatograms and things of that sort, and even
12 with regular ones. So what I'm saying is, one, I
13 can't say whether these are PCBs or not.

14 Q. Well, actually, what you --

15 A. I certainly can't dispute that they
16 might not be.

17 Q. Yeah.

18 A. Two, I'm recommended that we analyze the
19 sample by GC mass spec, which why we're requesting
20 samples from them, to absolutely identify, one,
21 that PCBs are present. And then if PCBs are
22 present, I'm recommending that in order to try to
23 identify as to whether or not Aroclors are the
24 source versus some other industrial application or
25 something of the sort, which was the understanding

1 at this point in time, that we do four items that
2 you asked me to agree to are here and I have
3 agreed.

4 Q. And what are the four, what are the four
5 items?

6 A. And the four items are experiments. And
7 the first one is, "Water solubility of Aroclors,"
8 or referred to as that in a shorthand form.

9 The second one, "Incineration of Aroclor
10 containing paper."

11 The third one is, "Analysis of air,
12 water and soil samples from around our
13 manufacturing sites."

14 And the fourth one is feeding studies
15 with pesticides that might be metabolized to PCBs.

16 THE REPORTER: Doctor, you got ahead of
17 me.

18 THE WITNESS: I'm sorry.

19 THE REPORTER: "The third one is
20 analysis of Aroclor..."?

21 A. The third one is, "Analysis of air,
22 water and soil samples." And in that sentence is
23 crossed out "environmental samples" which precedes
24 the "air, water and soil. "Especially in the
25 areas of," is crossed out, and then it says, "from

1 around our," and "and" is crossed out,
2 "manufacturing sites."

3 And then the fourth one is, "Feeding
4 studies with pesticides that might be metabolized
5 to polychlorinated biphenyls."

6 Q. Now all four of those things were done,
7 correct, Dr. Tucker?

8 A. All four of these things to one degree
9 or another were eventually done, yes.

10 Q. And all four of these -- those things
11 after they were done led to the conclusion that
12 Monsanto Aroclors were a significant source of PCB
13 contamination, at least in the United States?

14 A. These four items helped verify that what
15 we were seeing -- okay. As far as I'm concerned,
16 we're mixing apples and oranges.

17 These experiments were intended to
18 identify whether or not Aroclors were the source
19 of PCBs, if they were PCBs as established by mass
20 spec. So now --

21 Q. In fact, doctor, PCBs were established
22 beyond anyone's question in environmental samples
23 from around the United States, correct?

24 A. Yes, sir. And we did that, too.

25 Q. All right.

1 A. We participated in that, we were the
2 first laboratory that probably decided that for
3 sure in the United States and proved it
4 unequivocally using absolute techniques.

5 Q. You were the first laboratory that prove
6 it to Monsanto's satisfaction?

7 MR. PRAUSE: Objection to the form of
8 the question.

9 A. No. Our information was shared and
10 published those sorts, so --

11 Q. Well there were certainly other people
12 who had a strong belief that PCBs were
13 contaminating environmental samples long before
14 Monsanto came to the conclusion that PCBs were in
15 fact contaminating environmental samples, correct?

16 MR. PRAUSE: Object to the form of the
17 question.

18 A. There were people that believed that was
19 a possibility, if that's where you are talking
20 "belief," but who hadn't proved it but were in the
21 process of doing that, of trying to prove that
22 belief. And we were also in the process of trying
23 to prove or disprove that belief.

24 Q. When was it ever proved to your
25 satisfaction, Dr. Tucker, that PCBs manufactured

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1 by Monsanto were contaminating air, water, soil
2 and animals in the United States?

3 A. When --

4 MR. PRAUSE: Object to the form of the
5 question.

6 A. When we had established the methods
7 optimized for PCBs, not for pesticides, and proven
8 that they had worked and we had taken the extra
9 step of going to a GC mass spec with real Aroclors
10 as standards and shown that they were there.

11 At that point in time, we had verified
12 beyond a shadow of a doubt that there was no
13 question that in cases where we found PCBs by mass
14 spec that they were there.

15 Q. And I'm asking you when in your mind did
16 that occur?

17 A. That would have to have been after we
18 had established GC mass spec techniques in the
19 United States in the laboratories in St. Louis.
20 And if I remember correctly, it had to be about
21 mid 1969 sticks in my mind as the date at which we
22 had run standards through a system that we had put
23 together to mimic the LKB GC system that the
24 Swedish folks had used.

25 So it would be some time after that that

1 we began to run environmental samples through that
2 and verified that they indeed were PCBs, as well
3 as other things in those samples.

4 Q. And how many samples did you have to run
5 through there before you, Scott Tucker, were
6 convinced that Monsanto PCBs were contaminating
7 the environment in the United States?

8 A. Each sample that was run through there,
9 when you look through the mass spec -- which is
10 the output of the instrument in the system --
11 would tell you if there was a PCB there or not.
12 When you ran the sample through, if you saw the
13 PCBs, then that sample had PCBs in it.

14 To determine whether or not the type of
15 thing you are talking about was widespread
16 required that we begin to look at samples all
17 around the United States; and that's the process
18 that began along with a large number of other
19 researchers.

20 Q. Okay. One of the first places you
21 looked for PCB contamination was in Anniston,
22 Alabama, correct?

23 A. That's correct.

24 Q. And that was logical because PCBs were
25 manufactured in Anniston, Alabama, correct?

1 A. Correct.

2 Q. And in fact, one of the first set of
3 environmental samples that you received was from
4 Anniston in September of 1968, correct?

5 A. Are we through with this other exhibit?

6 Q. Yes, we're through with that and I'm now
7 referring to another document from Exhibit No. 4,
8 DSW 014094. And I'll just represent to you that
9 it is a memo from you to Mr. Richard and Elmer
10 Wheeler reporting your analysis of samples that
11 had been received by you in September of 1968 and
12 your report is February of 1969.

13 A. Did you want me to read it?

14 Q. I would like for you to review it.
15 First, though, just for the record, did I
16 accurately describe what the memo purports to be?

17 A. If you are trying to describe what it
18 purported to be, you did that accurately. The
19 memo is as you said. Is that?

20 Q. Yes.

21 A. Okay. It's February 25, 1969. It's
22 from myself authored by me to W. R. Richard and
23 Elmer Wheeler at the general office; and it is
24 dated 9/6/68, that's when the samples were
25 received; and the memo itself is dated

1 February 25, 1969.

2 Q. And what did you find in your results of
3 the analysis of the Anniston samples that had been
4 received by you in September of '68?

5 A. The memo indicates that, "The results of
6 the analysis are as follows." And then it shows a
7 table with basically three columns; the initial
8 column is, "Sample Designation." And then that's
9 followed by an over-column of Aroclor, "Amount
10 Aroclor Found." And then there are two types of
11 matrixes indicated under that, and they are
12 "Sediment" and "Water."

13 At the plant out fall, we estimated
14 there was 0.20, plus or minus 0.2% of Aroclor
15 found in the sediment taken, that sample
16 designated obviously as plant out fall. In water
17 associated with that, we found there was 58 plus
18 or minus two parts per billion. And that parts
19 per billion has two asterisks associated with it
20 which are used as footnotes; and the asterisks
21 state that, "No less than this amount present."

22 The next sample, which is the second one
23 of the two, says, "Plant out fall (1 blk)". "Blk"
24 being the abbreviation for block that I used.

25 And then the first one says, "Sediment

1 1.64 plus or minus 0.64%."

2 And then the next says a dash or a
3 hyphen, whichever you look at it, a single
4 asterisk, and it says, "Sample broken in transit,"
5 as a footnote. That's what we found.

6 Q. Okay. Now just so that it is clear
7 because we talked about different terms, at the
8 plant out fall, what did you, what do you believe
9 that meant? Where the waste water from the plant
10 leaves the plant property?

11 A. To be real truthful with you, I do not
12 know. As we talked earlier, I have never been to
13 Anniston.

14 Q. All right.

15 A. I knew that the label on the sample said
16 "Plant out fall," --

17 Q. Yes.

18 A. -- and that's what I knew it to be.

19 Q. Okay. And one of the samplings that you
20 analyzed was sediment from the plant outfall and
21 you found .20, is that percent?

22 A. 2/10th of a percent, correct; that would
23 be 2,000 parts per million.

24 Q. 2,000 parts per million?

25 A. Well, 10 to the fourth? Yeah.

1 Q. Now did it take a gas chromatograph
2 coupled with an electron capture device to
3 determine 2,000 parts per million in an
4 environmental sample in 1967?

5 A. Apparently that's what was used here; is
6 that correct?

7 Q. No, yeah --

8 A. Because the next paragraph says, "The
9 EC/GC traces of sediment were unmistakably Aroclor
10 1242."

11 Q. Right. Doctor --

12 A. But there are a number of -- Okay. Ask
13 the question again, please, because this is
14 interesting.

15 Q. You may not have understood my question.
16 My question to you is, had this sample been taken
17 in 1966, let's say, rather than in 1968, would it
18 have been possible to detect Aroclor at a level of
19 2,000 parts per million using the methods
20 available at that time?

21 A. And not using -- now I said '66, we know
22 Jensen and Widmark were using the electron capture
23 device. But I'm saying without using that
24 device --

25 MR. PRAUSE: You mean the mass spec?

1 Q. Without using that device or a similar
2 device, would it have been possible to determine
3 the environmental sample of 2,000 parts per
4 million?

5 A. Parts per million of what?

6 Q. Of PCBs.

7 A. No.

8 Q. Okay. There's no way that anybody in
9 the world that you are aware of, without using
10 either a GC mass spec on a GC electron capture
11 device, could have determined that there were PCBs
12 present in an environmental sample in which 2,000
13 parts per million PCBs were present?

14 A. There's no way in the world that they
15 could identify the materials present as PCBs --

16 Q. All right.

17 A. -- on an absolute basis. There's no
18 question about that. If there was, people
19 wouldn't have gone to the trouble to using gas
20 chromatograph electron capture and they would have
21 been doing those things a long time ago.

22 Q. Now a block away from the plant out fall
23 you said they -- that you found 1.64%, which is a
24 little over one-and-a-half percent PCB in the
25 sediment sample.

1 Is it your testimony, Dr. Tucker, that
2 there is no method available in the world before
3 the development of GC/ED or GC/MS to have
4 identified more than one-and-a-half percent PCBs
5 in an environmental sample?

6 A. No.

7 Q. So they couldn't have identified, in
8 your opinion, 2,000 parts per million but 164,000
9 parts per million could have been identified?

10 A. Correct.

11 Q. All right. Now was there any question
12 in your mind as of February 25, 1969, that
13 Monsanto Aroclors were leaving the Monsanto plant
14 in the out fall and depositing in the environment
15 in significant amounts?

16 A. I think if we just read the next
17 sentence it answers the question. "The amount
18 Aroclor found was calculated as Aroclor 1242. The
19 EC/GC traces of the sediment were unmistakably
20 Aroclor 1242."

21 And what that basically says, that in
22 the samples I was provided as they were labeled I
23 found what I found. And I attested to the fact
24 that in my expert opinion it was Aroclor 1242.
25 Okay?

1 And as far as these being way out in the
2 environment, or something of that sort, I didn't
3 know, as I testified earlier, exactly where those
4 were. But I can answer the question as I have
5 answered it and as I wrote in the memo.

6 Q. Okay. Well, in fact what you did was you
7 recommended that samples be taken further down
8 Snow Creek, down Choccolocco Creek and even from
9 the Coosa River if necessary, correct?

10 A. That is what the memo says and that is
11 correct.

12 Q. And in fact your recommendation was
13 followed and samples were taken eventually from
14 further away from the plant, correct?

15 A. My recommendation was considered and
16 agreed to; and yes, samples were taken further
17 from the plant.

18 Q. And when those samples were taken,
19 Monsanto PCBs were found to be present in
20 environmental samples taken downstream from the
21 Monsanto Anniston plant, correct?

22 A. Are you talking about a document that
23 you have you want to show me?

24 Q. I'm just talking in general right now.
25 There are actually a lot of those documents that

1 we can go through, but I'm asking you a general
2 question right now based on your recollection.

3 A. Yes. The answer to this, yes,
4 eventually PCBs were found to be ubiquitous at
5 levels. And I wouldn't recommend going further
6 away from the plant if I didn't think we were
7 going to find them necessarily. But yes.

8 Q. Now -- okay. You answered -- you, the
9 Monsanto plant, the intention -- and I think we
10 talked about this a little bit yesterday -- the
11 intention was for the Monsanto plant to develop
12 their own capacity to do the kind of analysis that
13 you were doing in St. Louis, correct?

14 A. Yes.

15 Q. And the document that I have just handed
16 you is a memo to you from G. W. Miller in Anniston
17 dated January 7, 1969, and it is DSW 013946,
18 correct?

19 A. Yes, it is. It is a memo from Gerry
20 Miller about when we talked earlier asking us to
21 show him how to do it.

22 Q. All right. And he indicated, the first
23 sentence says -- well, why don't you read the
24 first sentence?

25 A. Okay.

1 Q. Out loud, if you would.

2 A. Just the first sentence or the first
3 paragraph?

4 Q. I would prefer just the first sentence
5 for the time being for the interests of time. But
6 if you want to read the entire paragraph and you
7 feel it is important to do so, please do so.

8 A. Okay, I think it probably is. It
9 probably adds to the context.

10 Q. Okay.

11 A. "The Anniston plant needs to be on
12 stream with trace Aroclor analysis by February 15
13 if at all possible. To meet this target date,
14 there are several actions which must be completed
15 at time intervals one to three weeks in advance.
16 The longest known delivery time is for a Hewlett
17 Packard 5750 with two high nickel 63 detectors.
18 This delivery has been quoted at six to eight
19 weeks; however, there is a fair chance, pending
20 immediate project approval by Bill Kuhn, that we
21 can receive by February 15 - 22."

22 Q. Is that the first paragraph?

23 A. Yes, sir, it is.

24 Q. Do you know when that equipment was
25 ordered?

1 A. No.

2 Q. The next paragraph talks about training
3 the technician and talks about the best way to do
4 that generally is to send a technician to
5 St. Louis to get on-the-job training and
6 experience by working alongside your technician?
7 Do you see that?

8 A. (Witness peruses document.) Yes. It
9 actually says, "by working alongside our
10 technicians," rather than "a technician." But
11 yes.

12 Q. All right. And then he also asks you to
13 provide a list of the equipment necessary to get
14 the lab rolling generally, correct?

15 A. Yes. He asks for us to provide a
16 complete list of the equipment that he will
17 require to do PCB analysis in environmental
18 samples at Anniston.

19 Q. And when does he say the lab needs to be
20 up and rolling?

21 A. He says actually that he wants them on
22 stream --

23 Q. On stream, okay.

24 A. -- rather than up and rolling. But it
25 is by February 15th, and that's in the first

1 sentence.

2 Q. All right. Let me show you another
3 document, and this one is dated February 16, 1970.
4 Which is a little bit more than a year later. And
5 for the record, that is DSW 013804.

6 A. You have shown it to me. Do you want me
7 to read it? I'm happy to do so, but you have been
8 reluctant to have me read things for some reason.

9 Q. No, no, I would rather you read them,
10 frankly.

11 A. Okay, then I'll read it.

12 Q. But sometimes we have problems. What I
13 would like for you to do, Dr. Tucker, is tell me
14 what that document that I have just handed you
15 generally is.

16 A. (Witness peruses document.) Well, it
17 appears to be a progress report for the TSD,
18 Technical Service Department, at Anniston,
19 Alabama. It has a job number on it which is what
20 they charge to. It is report Number 1 and it's
21 dated February 16, 1970. And the title of it is,
22 a, "Work Plan for Identifying and Quantifying PCB
23 Losses at Anniston."

24 Q. All right. And it is written and signed
25 by Mr. E. G. Wright, who I believe you mentioned

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1 yesterday you met at least a few times, correct?

2 A. Yes, Technical Services Department.

3 Q. Okay. Now does it appear to you --
4 well, let me just ask you to read the paragraph
5 where I have my finger here. Beginning with
6 "Equipment."

7 A. That's the fourth paragraph --

8 Q. Yes.

9 A. -- in the summary.

10 Q. Yes.

11 A. One, two, three, four. Okay.

12 "Equipment is presently on order to
13 provide an 'Aroclor-free' lab and also to provide
14 the necessary analytical instrumentation."

15 And I should have started that with a
16 quote; I'm sorry I did not.

17 "Present estimates are that the," quote,
18 "'Aroclor-free,'" end quotation, "lab will be
19 installed by May 31, 1970. In the meantime, an
20 off-site lab will be set up. The technician is
21 presently being trained and will spend full time
22 on this work."

23 End of paragraph, end of quotes.

24 Q. Do you know why it took a full year or
25 more, actually more than a full year, from the

1 projected time in the January 7, 1969, memo to get
2 the Anniston lab on stream?

3 A. No. Perhaps it was difficult.

4 MR. PRAUSE: Object to the form of the
5 question.

6 Q. All right. You don't have a
7 recollection of why it took so long?

8 A. No, I don't have any specific
9 recollection.

10 Q. All right. Now one of the things that
11 we mentioned that you were tasked to do in July of
12 '68 was to gather the literature, correct?
13 Whatever literature existed relating to the
14 analysis of PCBs and the environmental samples?

15 A. The task was to review the literature to
16 see what existed and to put it together and to act
17 as a focal point for other kinds of literature
18 that were important to analytical aspects of it
19 and that other people on the project received.

20 Q. And in order to do that, obviously you
21 had to gather the literature and review it and
22 keep diligent about what literature appeared,
23 correct?

24 A. Absolutely diligent, there's no question
25 about that. Is there a reason?

1 Q. Yes, let me hand you --

2 A. I mean the diligence?

3 Q. -- let me hand you a memo dated
4 January 30, 1969. It is from you to Mr. Dave Wood
5 in Belgium. And would you read the Bates number
6 down there at the bottom?

7 A. It's MONS 097058.

8 Q. All right.

9 A. Do you want me to read it to myself or
10 out loud, or what do you want me to do with it?

11 Q. Let me see it. Yes, would you read it
12 out loud?

13 A. Out loud, okay.

14 Q. It's brief and only two paragraphs --

15 A. It is --

16 Q. What are you asking Mr. Wood to do?

17 A. It is from E. Scott Tucker, Applied
18 Sciences Section, R&D Laboratories. That's me.
19 It's written or at least this memo was produced on
20 January 30, 1969. The title is, "Chlorinated
21 Biphenyl in Wildlife"; and it has carbonated in R.
22 E. Keller, W. R. Richard and E. Wheeler. It's
23 written to Dave Wood, who is in Brussels, Belgium.

24 This is not my copy because I can
25 recognize the "Aroclor FF," which is a file copy.

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1 "Would you please bring us up to date,"
2 this is quote, "Would you please bring us up to
3 date on chlorinated biphenyl in wildlife. More
4 activity is going on in the States. We have some
5 analytical work and some biological work under way
6 to see if Aroclor is really present.

7 "Has Baeyer, Progil and Kuhlman done any
8 identification work? Has Jensen confirmed his
9 initial publication? What chlorinated biphenyl
10 isomers did we actually supply Jensen? Did Jensen
11 ever forward any more analytical data or details
12 to you?

13 "E. Scott Tucker."

14 Q. And what was that dated again?

15 A. January 30, 1969.

16 Q. All right. Let me hand you what I
17 believe is his reply dated February 4, 1969.

18 A. Are these documents that I saw
19 earlier --

20 Q. Yes, sir.

21 A. -- in preparing for this?

22 Q. Yes, sir.

23 A. Okay, because I didn't --

24 Q. These are all from the documents that
25 you reviewed.

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1 A. That's fine, I just wanted to make sure.

2 Okay.

3 Q. This is dated MONS -- I mean Bates
4 numbered MONS 096517. And again it is Mr. Wood's
5 reply to you dated the 4th of February, 1969?

6 A. That's correct. It's D. Wood from
7 Brussels. 4th February, 1969. Again the
8 carbonees are Keller, Richard, Wheeler. Again,
9 it's titled, "chlorinated Biphenyl in Wildlife
10 DW/ec -- DW/ec is a reference which I don't
11 understand.

12 Q. Okay. Would you read the text of his
13 response to your request?

14 A. Okay. The memo is to me.

15 Q. Yes.

16 A. "Thank you for your memo dated
17 January 30th." I'm sorry. Quote:

18 "Thank you for your memo dated
19 January 30th. At the time that Jensen in Sweden
20 first published his assertions about the presence
21 of Aroclor in wildlife we met with him and
22 discussed his work. As a result of these
23 discussions he admitted that possibly some of his
24 conclusions regarding the hazards associated with
25 chlorinated biphenyl that he had found were

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1 published out of proportion. I don't think at
2 that time the question that he had in actual fact
3 found chlorinated biphenyl in the sea eagles'
4 livers but questioned his incorrect quotation of
5 certain medical information. Since he had an
6 appreciation -- Since he had appreciated this
7 point we let the matter rest, not wanting to stir
8 up further agitation in other countries. There
9 was -- There has been little more happening in
10 Europe until about a month ago, when an article
11 appeared in a Danish newspaper discussing Jensen's
12 work. We are trying to find out at the present
13 time whether this covers new work or whether it is
14 merely a rehash of his original paper. As such
15 time as we get further data we will certainly let
16 you have this.

17 "Best wishes, D. Wood."

18 Q. Now I actually got out of chronological
19 sequence. Let me hand you another memo and we'll
20 leave these two here for the moment. This one is
21 dated January 16th, 1969. And it is MONS 097836.

22 And, Dr. Tucker, is that a memo to you
23 from Elmer Wheeler at the Medical Department?

24 A. Yes, it is.

25 Q. Okay. And it references a discussion --

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1 well, would you read the text of the memo, please?

2 A. Yes, I would. Quote:

3 "Yesterday we mentioned again that the
4 Swedish work by Widmark had not, had not been
5 published. I find in the lithograph for the paper
6 which Risebrough is publishing shortly this
7 comment -- 'Considerable effort has been made to
8 identify unknown peaks present in the
9 chromatograms but these attempts were unsuccessful
10 until the reports appeared from Sweden (22,23) and
11 Great Britain (24) identifying polychlorinated
12 biphenyls in European wildlife."

13 The biography shows the references to
14 be, and then it lists, "22. Jensen, S., New
15 Scientist 32, 612, (1966).

16 "23. Widmark, G, General Association
17 Official Analytical Chemists 50, 1069 (1967).

18 "24. Holmes, D. C., and Simmons, J. H.
19 and Tatton, three initials, Nature 216, 227. "

20 I, I can't read this sentence. Can you?

21 Q. I am not sure we have copies of 22 and
22 23. I know I don't.

23 That's the way I read it. Does it
24 appear to be that way to you?

25 A. Yes. I would concur with that.

1 Q. Okay.

2 A. Although the copy is difficult to read.

3 Q. The copy is difficult to read.

4 A. Okay.

5 Q. Let me, I want to put this in context.

6 We talked a while ago about a meeting that you had
7 with Mr. Wheeler in Washington where you received
8 a prepublication copy of Dr. Risebrough's paper?

9 A. That is correct.

10 Q. Correct? And here he is apparently
11 referring to a discussion that you had with him
12 the day before this memo, which would have been
13 January 15, 1969, where you and he mentioned that
14 the Swedish work by Widmark had not been
15 published. Is that a fair interpretation?

16 A. Yes.

17 Q. All right. And he apparently after that
18 conversation reviewed the Risebrough paper and
19 found three references and sets those out,
20 correct?

21 A. That's correct.

22 Q. Okay. And he said he didn't, he said,
23 "I'm not sure we have copies of 22 and 23. I know
24 I don't." And 22 and 23 were, 22 was by Jensen in
25 New Scientist and 23 was Widmark in the Journal

1 of, well, what journal was 23 in?

2 A. JOAC, Journal of the Association of
3 Official Analytical -- well, Analytical -- Journal
4 of the Association of Official Analytical
5 Chemists, yes.

6 Q. All right. And so it was after you
7 received this memo on January 16th you wrote your
8 memo to Dave Wood on January 30th, 1969, asking
9 him for an update on anything that -- after
10 Jensen's -- well, asking him, quote, "Has Jensen
11 confirmed his initial publication what chlorinated
12 biphenyl isomers did we actually supply him," et
13 cetera. Correct?

14 A. That's correct.

15 Q. All right. And then it was in response
16 to that that he wrote back to you in his memo of
17 February 4th, 1969. Correct?

18 A. Yes. That's the --

19 Q. Okay.

20 A. -- an accurate summary representation of
21 the three documents.

22 Q. Okay.

23 A. Is there a question, or?

24 I'll wait.

25 Q. In, let me hand you DSW 147840 and ask

1 you if you can briefly tell me what that is.

2 A. It's a memo; and it is written by me to
3 Elmer Wheeler; and it was written on February 25,
4 1969, which is confirmed in the upper right-hand
5 corner by a date stamp of the 27th, which is I
6 assume when Elmer received it.

7 It's written, "Aroclor - Wildlife
8 Publication of Widmark's Paper." The carbonees
9 are Richard, Bergen, E. Keller, Johnson, Paton,
10 Wells and Kelly. And it's to Elmer, as I said.

11 And it's -- do you want me to read it?

12 Q. Yes.

13 A. Quote: "I finally received Xeroxes of
14 CRC library -- from the CRC," from, excuse me, I'm
15 sorry. Quote: "I finally received Xeroxes from
16 the CRD library of the articles discussed in
17 Risebrough's bibliography. The only thing new was
18 the JAOAC publication and it's just a rehash of
19 the LKB release. Included is a copy of it. They
20 are still making reference to an 'in press'
21 article in Acta. Chem. Scand. I have checked Acta.
22 Chem. Scand. Volumes 1-10, 1967 and our library's
23 most recent issues, Volumes 1-7, 1968 and there
24 are no publications on PCB by Jensen and/or
25 Widmark. I will keep checking as more current

1 issues become available."

2 And it's signed, "E. Scott Tucker." Or
3 it is actually signed "Scott" with "E. Scott
4 Tucker" underneath it.

5 Q. Do you know why it took until
6 February 25, 1969, for you to receive the articles
7 discussed in Dr. Risebrough's biography?

8 A. You're posing your hand on the
9 January 16, 1969, memo and your other hand on the
10 February 25, 1969 memo, which is 24 days?

11 Q. No. What I'm asking you is --

12 A. It didn't take very long according to
13 this, but.

14 Q. Well, we know that you got a version of
15 the Risebrough paper in October of 1968, correct?

16 A. That's correct.

17 Q. And --

18 A. Actually, was it October 1968?

19 Q. Yes, it was October 1968.

20 A. And that's in that memo with regard to
21 Spencer?

22 Q. Yes. And doctor -- or, I say doctor,
23 Mr. Wheeler is indicating that he at least doesn't
24 have the first two of the referenced articles, one
25 of which has a publication date of '66 and the

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1 other has a publication date of '67.

2 And you finally or you write back to him
3 more than a month later and tell him that you
4 finally received the references from the
5 Risebrough article. Correct so far?

6 A. Yes, sir.

7 Q. Okay. Why did you not have a copy of
8 the Jensen and the Widmark published works until
9 February 25, 1969?

10 A. Probably because it was 33 years ago and
11 things didn't happen as fast as they do today.
12 And a lot of times when we wanted copies of
13 something we had to ask our library to make
14 arrangements to get them. And some of the
15 journals that we're talking about here were not
16 necessarily, like New Scientist and things of that
17 sort, weren't widely published outside the
18 countries and/or origins, things of that sort.

19 So things operated on a different -- a
20 rapid for that time but certainly at a different
21 pace than today.

22 Q. When you --

23 A. And so the answer to your question that
24 I could provide, and I'm trying to -- my
25 assumption is, is that we were working as

1 expeditiously as we could 33 years ago.

2 Q. Okay. And you knew in July of 1968
3 about Jensen and Widmark's work first, correct?

4 A. Right. But I don't know the source of
5 how I knew about it. It could have been the LKB
6 press release from the publicity department.

7 Q. And you knew that you needed to scour
8 the scientific literature to find articles about
9 the detection of PCB in wildlife, correct?

10 A. That's correct.

11 Q. And Dr. Risebrough at least found those
12 articles because he referenced them in his paper
13 as early as October of 1968, correct?

14 A. That's incorrect.

15 Q. Okay. Dr. Risebrough found the articles
16 and referenced them in his paper, correct?

17 A. Correct.

18 Q. And you didn't get around to getting a
19 copy of them until February of 1969?

20 MR. PRAUSE: Object to the form of the
21 question.

22 A. Incorrect.

23 Q. Okay.

24 A. I was unable to get a copy until the
25 dates here.

1 Q. All right.

2 A. The prepublication copies or verbal
3 communications and things of that sort that
4 occurred between Risebrough and perhaps between
5 Widmark and Jensen and those kind of folks were
6 not, I wasn't in that particular loop.

7 And again, I'm going to tell that you
8 obtaining original copies of journals in those
9 days was nowhere near like it is today. And so I
10 would remind you that it was 33 years ago; and I
11 indeed did scour the literature and I did indeed
12 do it in a timely fashion 33 years ago.

13 Q. So in your opinion, taking six months to
14 get journal articles that were published in 1966
15 and 1967 -- I said six months, from July 18th to
16 February 25th, that's seven months. In your
17 opinion, taking seven months to get those
18 references was a timely manner?

19 A. I believe that's what I have stated.

20 MR. WRIGHT: All right. We can take a
21 break now if you would like?

22 MR. PRAUSE: That's fine with me.

23 THE VIDEOGRAPHER: Off the record at
24 2:57.

25 (Recess taken.)

1 (Deposition Exhibit No. 19 marked for
2 identification.)

3 THE VIDEOGRAPHER: This is tape number
4 six, deposition of Dr. Tucker. We're on the
5 record at 3:11.

6 BY MR. WRIGHT:

7 Q. Dr. Tucker, I'm going to hand you what
8 we have marked as Plaintiffs' Exhibit No. 19. And
9 again, it is a document that you have seen before
10 but it was not in the materials that were provided
11 to you prior to your deposition in this case.

12 And let me just represent to you that it
13 was Exhibit No. 353 to your deposition in the
14 TransWestern case.

15 Does that appear to be correct?

16 A. It says on the bottom of it,
17 "Plaintiff's Exhibit No. 353 Tucker."

18 Q. All right. And it is a memo from Elmer
19 Wheeler to W. R. Richard dated April 8, 1969,
20 entitled, "Aroclor Degradation in Soil." And a
21 copy shows that it went to you, correct?

22 A. Yes.

23 Q. All right. Now the question of whether
24 Aroclors degrade in the environment was one of the
25 questions that you and others at Monsanto were

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1 trying to answer, correct?

2 A. Yes.

3 Q. And that was an important question to
4 Monsanto because, again, it related to the
5 question of environmental persistence of
6 Monsanto's products, correct?

7 A. Ultimately that was an important reason
8 for it. Initially that was not the important
9 reason for it.

10 Q. Okay. In the '69 time frame was that an
11 important reason for the --

12 A. Not as important --

13 Q. -- inquiry?

14 A. -- as the other reason that I alluded
15 to.

16 Q. Which was what?

17 A. The other reason was is that in
18 environmental samples Aroclors per se were not
19 being seen. As a matter of fact, the fingerprints
20 that were being seen weren't even in any, way,
21 shape or form related to the products.

22 And so the question was, is, "Okay, mass
23 spec wise these are PCBs, where are they coming
24 from?"

25 So one of the things, the suppositions

1 that was put forth, was that perhaps the Aroclors
2 and/or PCBs manufactured by other people in Europe
3 or wherever were being degraded either physically,
4 chemically or biologically in the environment and
5 perhaps this would explain why only certain
6 isomers and certain peaks were being, were being
7 seen and why, if these were really Aroclors, where
8 were the other ones?

9 Q. Okay. One question that you and others
10 at Monsanto and others around the world were
11 trying to determine was the amount to which or the
12 extent to which PCBs persisted in the environment,
13 correct?

14 A. Ultimately that became an objective,
15 yes.

16 Q. All right. In 1969, in April of 1969,
17 was Monsanto interested in finding out whether
18 Aroclors degraded in the natural environment or
19 not?

20 A. Yes. And the reason that I stated --
21 and perhaps I didn't state it well enough for you
22 to understand -- was that what was being seen in
23 environmental samples were not fingerprints and/or
24 duplicates of the products manufactured by the
25 various people in the States.

1 And so what was being asked was why
2 aren't they that way if they are from these
3 products? And so we were interested in finding
4 out what the effects of chemical, physical and
5 biological degradation were on these materials.

6 Q. And so this --

7 A. And I believe that --

8 Q. -- that memo that you have in your hand
9 relates to one of the efforts that was made to
10 determine the fate of Aroclors that were in the
11 environment for a long time, correct?

12 A. No.

13 Q. Okay. Would you read the text of the
14 exhibit that you have in your hand, doctor?

15 A. Your question to me is, was this a
16 experimental and/or scientific effort to establish
17 the degradability of PCBs; is that correct?

18 Q. No, that wasn't my question.

19 A. Okay.

20 Q.

21 Let me ask it again?

22 A. Then state your question in a fashion I
23 can understand it, please.

24 Q. Okay. What this memo generally says is
25 that it came to Elmer Wheeler's attention through

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1 a gentleman named Marsh Magner at Monsanto that
2 several Aroclors were applied to soil in test
3 plots at the University of Florida. And he says,
4 Gainesboro, but we know that's Gainesville,
5 Florida, on the 28th day of June, 1939. And I'm
6 going to read from the memo now, quote:

7 "The application was to determine
8 possible termite proofing value of the Aroclors.
9 Marsh believes that the test plots are still
10 undisturbed and that he can locate them from plot
11 maps which he has in his files."

12 Did I summarize and read the first
13 paragraph correctly?

14 A. Yes.

15 Q. Okay. So it came to your attention in
16 about April of 1969 that there were some
17 30-year-old test plots down in Florida that
18 Monsanto might be able to take samples from and
19 that might give Monsanto information relating to
20 the extent and the fate of -- the extent Aroclors
21 persist in the environment and what happens to
22 them? Is that fair or not fair?

23 A. No, it is unfair.

24 Q. All right. Okay.

25 A. And you yourself stated that the reason

1 the experiment was done was to evaluate termite
2 proofing.

3 Q. Yeah. The reason the experiment --

4 A. And I could explain to you why it is not
5 fair if you want an expert to explain it to you.
6 If you don't want to pursue it any further, that's
7 fine with me, too.

8 Q. Well, there's other documents that we're
9 going to talk about that relate to this subject.

10 The only thing that I'm trying to
11 establish here is that, first of all, you and the
12 others that are listed as recipients on this
13 document became aware in April of 1969 that
14 Aroclors 1242, 1248 and 1254 had been placed in
15 test plots in Florida and might still be there.
16 Is that fair?

17 A. Yes.

18 Q. Okay. And you also knew from the fourth
19 paragraph that Mr. Magner had reason to look at
20 some of these sample plots in June of 1963 and
21 recalls that in some instances there were still
22 visual evidence of the presence of Aroclor,
23 correct?

24 A. That is what the fourth paragraph of
25 this letter states, yes.

1 Q. All right.

2 A. And that's where I knew of that.

3 Q. Okay. And then the fifth paragraph
4 states Mr. Wheeler states that he believes "we
5 should consider asking Marsh to look into the
6 possibility of obtaining samples of these plots
7 for measurement of loss or," quote,
8 "'degradation.'" Close quote.

9 Is that correct?

10 A. That's a correct reading of that
11 paragraph, sir.

12 Q. All right, and --

13 A. Elmer Wheeler believed that.

14 Q. All right. And then Elmer Wheeler said
15 in the final paragraph, "I never would have
16 suspected that we might come across such a
17 situation where we may be able to obtain data on
18 actual aging of Aroclors in soil. Thirty years of
19 exposure might be much more valuable than any
20 accelerated test that could be devised." Correct?

21 A. The reading is correct. The thought and
22 the intent is incorrect from a scientific
23 viewpoint.

24 Q. All right. But nevertheless, samples
25 were gathered, correct?

1 A. Yes.

2 Q. And I don't believe this is an exhibit
3 or this is one part of Exhibit No. 4, so I'm going
4 to go ahead and mark it. But I may be incorrect
5 about that assumption.

6 (Deposition Exhibit No. 20 marked for
7 identification.)

8 Q. Let me hand you Plaintiffs' Exhibit 20
9 and ask you, first of all, to briefly say what it
10 is.

11 A. Monthly summary.

12 Q. Actually, to be honest, before I ask you
13 to do that --

14 A. Okay. (Laughter) But briefly, of
15 course.

16 Q. -- so that we don't get out of
17 chronological order again, I'm going to ask you to
18 look at what I believe is a part of Exhibit No. 4,
19 and it is DSW 006369. And ask you, why don't you
20 take a minute to look at that.

21 A. (Witness peruses document.)

22 Okay I have looked at it. And it is I
23 believe --

24 Q. Yes.

25 A. -- a part of the larger exhibit --

1 Q. I just confirmed it.

2 A. -- I looked at earlier.

3 Q. I have just confirmed that, it is a part
4 of that.

5 A. Well, we agree on that.

6 Q. And basically the gist of that is that
7 samples were taken; they did find the plots; they
8 did take samples; they described how they took the
9 samples, and the samples were sent to you and
10 Dr. Keller at the Queeny Plant, correct?

11 A. That is correct. And it also I believe
12 at that time they also provided information
13 relative to how the, the poison termite test plots
14 were established.

15 Q. Yes.

16 A. And how the Aroclors were put in the, in
17 the test plot. Which is particularly important
18 relative to the question you're asking me.

19 Q. Yes. And in fact, there is attached a
20 handwritten -- actually, let me hand you this.
21 This is one of the ones we have two copies of.

22 There's some handwritten information
23 attached as the third page, and it is numbered DSW
24 006371, correct?

25 A. You're asking me to check the, what is

1 it, the Bates number at the front? 006369 is the
2 front one. What's the other one you want me to
3 check?

4 Q. The page number I want you to look at is
5 71.

6 A. Okay. 006371.

7 Q. Yes. And that's a handwritten page that
8 you alluded to a moment ago is entitled --

9 A. No, I don't think it is. The
10 handwritten page -- or the information or the
11 report was prepared on 6/28/39 by Ira Hatfield.
12 Is that this?

13 Q. That's not handwritten?

14 A. Well, but I mean I'm just looking at the
15 dates.

16 Q. Yeah. What I'm saying is it is
17 attached, at least the way that it was --

18 A. It is attached to this copy, yes.

19 Q. Yeah, the way it was presented to you
20 and the way it was presented to me --

21 A. Okay. There was a report that described
22 how the test plot was prepared initially, not just
23 how it was sampled, and how the Aroclors and other
24 things being tested were introduced into the test
25 plots to prevent termites from or to see how they,

1 how much they inhibited termites. That's what I'm
2 talking about.

3 Q. Okay.

4 A. And the 62839 document you believe is
5 this page here?

6 Q. Oh, I don't know. All I'm saying is --

7 A. Well, I don't know either. That's not a
8 rhetorical question. If I knew the answer, I
9 would just say so.

10 Q. Okay. The handwritten page that we are
11 looking at which is attached to this two-paged
12 memo about taking the samples is entitled, "Soil
13 Poison Plots, Gainesville, Florida." And it says
14 "Installed 9/21 to 10/12/38."

15 A. Correct. And it also states that these
16 is what happened on May 26, 1969.

17 Q. Okay.

18 A. And what I'm saying is, is that the
19 reference in the memo itself is to a report
20 written 6/28/1939. And in the 1939 report it
21 describes in detail how the test plot was prepared
22 and how the Aroclors were put into the test plot.

23 Q. Do you remember seeing that?

24 A. I recall seeing a rendition of it or
25 seeing it, yes.

1 Q. Okay. Then let me turn your attention
2 to --

3 A. So the 6/28/39 report is not attached to
4 this, right?

5 Q. Yeah. If you say so. If you say --

6 A. No, no, not just my opinion.

7 Q. I understand.

8 A. If it is, show it to me, please.

9 Q. No, no, no. All that's there is there.

10 A. Yeah, okay.

11 Q. And I don't know what it is.

12 A. Okay. I do know what it is.

13 Q. Okay.

14 A. And it is a report that showed how the
15 plot was prepared. And it is important to
16 understand that to understand why no degradation
17 was seen.

18 Q. Hang on a second, you're way ahead of me
19 right now, okay? I object, nonresponsive.

20 A. Okay, nonresponsive.

21 Q. Let me walk through --

22 A. But am I right in saying that what you
23 are showing me doesn't have what it says is
24 attached to it?

25 Q. I don't know if the answer --

1 A. Okay.

2 Q. And so I'm going to ask the question and
3 then you can tell me. Okay?

4 A. Okay.

5 Q. What I have shown you, which is what was
6 in the documents that you reviewed in preparation
7 for the deposition --

8 A. And that's the copy that was in the
9 document that I reviewed.

10 Q. This is the copy that was in the
11 documents that you reviewed, okay?

12 A. Okay.

13 Q. And it is a four-, there are four pages
14 stapled together, correct?

15 A. In this document that you are showing
16 me --

17 Q. Yes.

18 A. -- yes, there are four pages stapled
19 together and the Bates numbers are in order, are
20 they not? They are 69, 70, 71, 72.

21 Q. Yes, they are sequential. The Bates
22 numbers on the copies that you and I both have is
23 DSW 006369 through DSW 006372?

24 A. Yes, sir.

25 Q. Okay. The first two pages are a memo to

1 Robert Keller, your boss, from Marsh, well, J. M.
2 Magner, okay?

3 A. Uh-huh, Marsh Magner.

4 Q. And it states how he took samples from
5 the plots that he indicated earlier he thought he
6 could find, and apparently he believes he did
7 find?

8 A. It documents how he took the samples and
9 when he took the samples and that he took the
10 samples and acts as a very good chain of custody.

11 Q. And you have pointed out that this memo
12 references background information on the plots.
13 And he indicates that he is attaching a memo or
14 actually a report prepared in June of 1939 by Ira
15 Hatfield that states in detail the establishment
16 of the test plots from which the soil samples were
17 removed?

18 A. Correct.

19 Q. Okay. And when we turn the pages we see
20 some handwritten -- we see two -- we actually see,
21 well, they are both handwritten. We see two
22 handwritten pages.

23 What you are telling me is, is that
24 these handwritten pages are relating to
25 Mr. Magner's gathering of the samples in 1969 and

1 this is not the report explaining how the poison
2 plots were first put down?

3 A. Yes, sir.

4 Q. Okay. So apparently some time in the
5 past these two documents or the original
6 attachment has gotten separated, apparently.

7 A. Yes, sir.

8 Q. Okay. You recall, however, that you
9 either saw the original attachment or received a
10 explanation of it?

11 A. Yes.

12 Q. That's correct? Okay. Now those
13 samples were gathered in May of '69 and were
14 apparently transmitted to you all in July of '69?
15 Is that about right?

16 A. The time frame established by this memo
17 would -- that would be a scenario that would fit
18 it so it is correct as far as the memo is
19 concerned, I guess.

20 Q. Well, actually I misspoke. I believe
21 the samples were probably provided to you in May
22 or June because we have Exhibit No. 20, which is
23 the monthly summary of Aroclor wildlife May 1969
24 analytical studies. And this is from you to R. E.
25 Keller, correct?

1 A. Yes, sir.

2 Q. And it is dated June 24, 1969, correct?

3 A. Yes.

4 Q. And the last paragraph of this first
5 page references, "Forty-five Aroclor-treated soil
6 samples, from a Florida test plot, have been
7 provided by the Agricultural Division. The
8 Aroclor was placed in these plots in 1938. We
9 will attempt to determine the degradation, if any,
10 which has occurred in the past 30 years."

11 A. And I think --

12 Q. Did I read it correctly, first?

13 A. You read it accurately.

14 Q. Okay. And that's what you wrote back in
15 June of '69, correct?

16 A. It is, yes, sir.

17 Q. Okay. And then at some point you
18 actually ran those samples, correct?

19 A. Yes, sir.

20 Q. Let me hand you what I believe are some
21 of the results, and that's DSW document 006368.

22 And it is another memo from you, this time to W.

23 B. Papageorge; and it is dated September 15, 1970,
24 correct?

25 A. Correct.

1 Q. And it is entitled or the subject of it
2 is, "PCB Analysis of Florida Soil," correct?

3 A. Yes, sir.

4 Q. And would you read -- well, would you
5 read the third and fourth paragraph, which is
6 Mr. Magner's description of how they were put down
7 and then what your results were?

8 A. Sure, I would be happy to. Quote:

9 "Marsh Magner's description of how the
10 material was applied to the soil is as follows. A
11 hole approximately 15 inches in diameter and
12 16 inches deep was dug and after the walls were
13 sprayed with a solution of Aroclor 1242 the soil
14 was then replaced incrementally spraying each
15 layer as it was added. When the hole was
16 completely filled the remaining Aroclor 1242
17 solution was poured on top, a total of 4 ounces of
18 Aroclor being applied."

19 Next paragraph: "From the above
20 dimensions, knowing the specific gravity of the
21 sand (1.6 grams per cubic centimeter) and Aroclor
22 (1.39 grams per cubic centimeter), it can be
23 calculated that the average concentration of the
24 Aroclor in the sand should be roughly 2200 parts
25 per million on a weight/weight basis. The average

1 of the amounts found in the first 6 inches and six
2 through 16-inch samples is approximately 1700
3 which is very close to the original amount applied
4 considering, the variables."

5 Signed, "E. S. Tucker."

6 Q. And that is specifically related to
7 Aroclor 1242, correct?

8 A. Yes.

9 Q. There were other samples that related to
10 the other Aroclors 1254 and 1258 and the other
11 ones that were referenced, correct?

12 A. As indicated by the earlier memo, yes.

13 Q. But do you recall that at this period in
14 time there was a great deal of concern about
15 whether Aroclor 1242 was, quote, "biodegradable,"
16 close quote?

17 A. I think there was concern about whether
18 any and all were biodegradable. We were studying
19 the biodegradability of the materials.

20 Q. Do you remember there being a particular
21 concern about Aroclor 1242?

22 A. No.

23 Q. Okay. In all fairness, Dr. Tucker, do
24 you not recall that you determined pretty quickly
25 that all of the Aroclors above 1242 were not what

1 you would normally call biodegradable, that they
2 had a great deal of persistence in the
3 environment?

4 MR. PRAUSE: Object to the form of the
5 question.

6 Q. Will you agree that that's a fair
7 summary of what was --

8 A. No.

9 Q. -- relatively quickly learned?

10 MR. PRAUSE: Object to the form of the
11 question.

12 A. No.

13 Q. After, after it became determined that
14 the higher chlorinated Aroclors or the Aroclors
15 with predominately higher chlorinated isomers were
16 not biodegradable, there became a question that
17 became of great interest to Monsanto as to whether
18 Aroclor 1242 would fall in the category of the
19 nonbiodegradable Aroclors or that you could show
20 that it degraded in the environment so that it
21 could keep being used? Is that not a fair summary
22 of Monsanto's concern?

23 MR. PRAUSE: Object to the form of the
24 question.

25 A. Boy, repeat the question.

1 Q. Could you read it back, ma'am.

2 (Record read.)

3 MR. PRAUSE: Note my objection again to
4 the form of the question.

5 A. The initial concern was to determine if
6 and what portions of PCBs were or were not
7 biodegradable and to develop the techniques to do
8 so.

9 We did that and did it in a manner that
10 was scientifically acceptable and published the
11 information in peer review journals and everybody
12 agrees to that fact.

13 It did become important at that time as
14 to the fact that some of the lower chlorinated
15 biphenyls isomers were relatively rapidly
16 degraded; and in essence, that information
17 explained to a certain degree why we were only
18 seeing higher chlorinated ones for example,
19 octachlorobiphenyl. And there's only two above
20 that, the 9 and the 10, in environmental samples.

21 So the question did become at some point
22 in time was Aroclor 1242 biodegradable and how
23 much? And that question was answered and the
24 information was published and shared with
25 everybody.

1 Q. And part of the information that was
2 availability regarding whether or not Aroclor 1242
3 degraded in the natural environment was the
4 analysis of the Florida soil that you did in some
5 time before September 15 of 1970?

6 A. Absolutely not.

7 Q. Your testimony --

8 A. And I can explain that.

9 Q. Your testimony is that this memo that we
10 just went through where you said that the amounts
11 found in the first six and 16-inch samples is
12 "fairly close to the original amount applied
13 considering the variables," gave no information on
14 whether Aroclor 1242 persisted in the natural
15 environment over --

16 A. That is correct.

17 Q. -- a long period of time?

18 A. That is correct.

19 Q. Okay.

20 A. That was, one, not a natural
21 environment. And early to everybody concerned in
22 the monthly summary on June 24 I had expressed,
23 "We would attempt the degradation, if any, which
24 has occurred over the past 30 years."

25 It was evident to me with my

1 understanding how the material was applied that
2 there would be no degradation.

3 Q. Okay. Now your testimony is that a
4 forest in Florida that has been undisturbed for 30
5 years is not a natural environment?

6 A. Correct.

7 Q. And gives no data whatsoever --

8 A. With all --

9 Q. -- that --

10 A. -- with all due respect, your statement
11 that the forest had not been disturbed in 30 years
12 is incorrect.

13 The initial preparation of the soil and
14 the total impregnation of the soil with pure
15 Aroclors practically and replacing it in the soil
16 was a disturbance of the soil that lasted for 30
17 years and were conditions under which no
18 degradation would occur nor was it intended to
19 occur.

20 Q. Well, the deposition of pure Aroclors in
21 the soil around the Anniston plant, for example,
22 as you found in the sediment, was exactly the same
23 kind of deposition as was in the Florida forest in
24 1938, correct?

25 A. Is that a question?

1 Q. Yes.

2 A. Yes.

3 Q. Okay. And so if this did nothing else,
4 this told you that Aroclors deposited in the soil
5 around and downstream from the Anniston plant were
6 going to stay there at least 30 years, correct?

7 MR. PRAUSE: Object to the form of the
8 question.

9 A. Not necessarily. It said that you could
10 put Aroclor in an environmental condition pouring
11 it in the hole -- and mineral oil, too -- and 30
12 years later in sand you would find it. That's all
13 it said.

14 Q. Okay.

15 A. Now what you said may be true but you
16 don't make quantum jumps like that.

17 Q. Now just to refresh your recollection
18 regarding the point that we were talking about a
19 moment ago, let me refer you to what I believe is
20 contained in the documents you reviewed prior to
21 this deposition. And it is pages MONS 034612 to
22 034614. And let me ask you to review that, if you
23 would, sir.

24 First of all, is that a document which
25 was authored by you?

1 A. If you don't mind, let me go ahead and
2 review it and I will be able to answer that
3 question at the same time I answer the other
4 questions. Or do you want me to review that
5 document --

6 Q. No.

7 A. -- and try to establish that fact?

8 Q. Go ahead, go ahead and review it and
9 then I'll ask you a series of questions about it.

10 A. (Witness peruses document.)

11 I have finished reviewing the document
12 and I have to answer your earlier question --

13 Q. No.

14 A. You don't want your earlier question
15 answered?

16 Q. No, sir.

17 A. Okay, fine.

18 Q. I want to reask the question.

19 MR. PRAUSE: So you are withdrawing the
20 earlier question?

21 MR. WRIGHT: I'm withdrawing it and I'm
22 reasking it.

23 MR. PRAUSE: Okay.

24 MR. WRIGHT: Because I want the record
25 to be clear.

1 MR. PRAUSE: I just don't want it to
2 look like Dr. Tucker hadn't answered a
3 pending question.

4 BY MR. WRIGHT:

5 Q. Dr. Tucker, I'm handing or I have handed
6 you an excerpt from the documents that you
7 reviewed prior to this deposition, MONS 034612
8 through 034614. And you have had an opportunity
9 to review it, correct?

10 A. I reviewed it right now, as a matter of
11 fact, yes.

12 Q. Yes. So it was in the documents that
13 you reviewed prior to this deposition and you just
14 reviewed it again, correct?

15 A. Yes.

16 Q. Okay. And this is a document that you
17 authored, correct?

18 A. It is a document that I authored.

19 Q. And you authored it in approximately
20 November of 1969, correct?

21 A. 11/10/69, correct.

22 Q. And --

23 A. It is also labeled "Rough Draft" for the
24 record.

25 Q. Yes. And you discussed what -- and it's

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1 entitled, "Aroclor - Wildlife Problem," correct?

2 A. Yes.

3 Q. And the first paragraph reads:

4 "Pollution of our environment by
5 chlorinated hydrocarbons (CHC) has long been a
6 subject of great concern and much attention has
7 been paid to the ecological factors introduced by
8 the wide spread agricultural usage of these
9 chemicals for pest control."

10 That's the end of the first paragraph,
11 right?

12 A. Yes, it is.

13 Q. You talk about environmental samples in
14 the second paragraph and things that are found,
15 correct?

16 A. I talk about the fact that the
17 chlorinated hydrocarbon pesticides appear in the
18 electron capture chromatograms and that, as we
19 have already established, as many as 10 peaks that
20 were unknown also appear, yes.

21 Q. Yes. And then you talk about how in
22 1965 Roburn and co-workers established that these
23 unidentified materials were organo-chlorines,
24 right?

25 A. Organo-chlorine in nature.

1 Q. Yes. And you mentioned that, "In
2 December of 1966 Swedish researchers at the
3 University of Stockholm, Jensen and Widmark,
4 announced that they had succeeded in identifying a
5 series of such peaks as polychlorinated biphenyls,
6 specifically chlorines," or actually you wrote,
7 "C14 - C19, using gas chromatography - mass
8 spectrometric techniques."

9 Did I read that correctly?

10 A. You read it correctly.

11 Q. Okay. Skipping a paragraph, you say, it
12 now, on Page 2 you say, "It now becomes evident
13 that the PCB problem and the CHC pesticide or DDT
14 problem are nearly one and the same."

15 Did you write that?

16 A. I sure did.

17 Q. And then you talk about -- well, why
18 don't you read the next paragraph?

19 A. Quote:

20 "First, it can be said that there is no
21 clear scientific evidence proving that the levels
22 of CHC," which stands for chlorinated
23 hydrocarbons, "being found in our environment can
24 cause a specific amount or kind of harm to human
25 beings. The acute toxicity of these materials is

1 quite clearly defined and documented and is really
2 not the major concern. The major concern is the
3 long range effects of these persistent materials,
4 for it is known that these materials can and do
5 accumulate in increasing quantities in adipose
6 tissues." Adipose means fat, which I'm sure you
7 already know.

8 "Moreover, tests with experimental
9 animals and experience with wildlife in the field
10 have shown that CHC," chlorinated hydrocarbons,
11 "can affect the reproductive systems of birds and
12 that they are probably responsible for the severe
13 decreases in the population of several species of
14 birds of prey. The immediate extrapolation of
15 these affects to other forms of life including
16 human beings has been carried out orally but not
17 scientifically. Here again, there is no
18 experimental evidence to back up this
19 extrapolation."

20 Period, end of paragraph, end of quote.

21 Q. And just for clarification -- and I know
22 you probably will clarify that more than -- well,
23 let me withdraw that question.

24 Just for clarification, PCBs are a form
25 of chlorinated hydrocarbon, correct?

1 A. Yes.

2 Q. All right. Then --

3 A. Did you want me to clarify as you
4 anticipated (Laughter)?

5 Q. I think you're going to, I think you're
6 going to later on. And so the next paragraph,
7 would you read the next paragraph please.

8 A. Quote: "Based upon the data we and
9 other outside works have generated since our
10 confirmation of the Swedish findings, analogous
11 statements can be made about the higher
12 chlorinated biphenyls, Cl5, and above." End of
13 quote.

14 Q. I guess in all fairness, doctor, why
15 don't you just go ahead and just read the rest of
16 the, read the rest of the memo?

17 MR. PRAUSE: To himself or outside loud?

18 MR. WRIGHT: Out loud, please. He's
19 already read it to himself.

20 A. Okay. Quote:

21 "The levels of PCB reported are
22 considerably higher in industrial areas than in
23 the more remote areas so far examined. While the
24 amounts being found (part per trillion, part per
25 billion and part per million) do not represent an

1 acute toxicity problem they do represent long
2 range toxicity problems. Again, this is because
3 of the persistent refractory nature of the higher
4 chlorinated biphenyls (C15 and above) combined
5 with their proven ability to interfere with the
6 reproductive abilities of birds and the oral
7 extrapolation to this affect to other forms of
8 life (with the exception of certain sensitive
9 species).

10 "Unfortunately the solution to the
11 problem will initially involve withdrawal of
12 Aroclor 1254 and 1260 from the marketplace.
13 Followed by a concerted effort to prove that
14 Aroclor 1242 is biodegradable. If we can prove
15 that Aroclor 1242 is biodegradable, then with
16 sufficient care the manufacture and use of this
17 material can continue. The clearance of Aroclor
18 1242 will in turn clear materials such as 1221,
19 1232, et cetera, and possibly even Aroclor 1248.

20 "In order to insure that there is no
21 misunderstanding, it should be stressed that the
22 probability of success of these studies is on the
23 order of 75%. It could possibly be that the C14
24 through C19 PCB isomers being found are what is
25 left after Aroclor 1242 has been biodegraded.

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1 "So far, the Aroclor 5400 series has not
2 been reported as environmental contaminants.

3 "E. S. Tucker."

4 Q. Now, Dr. Tucker, in all fairness isn't
5 that an accurate summary of the statement that I
6 made earlier, which is that at some point Monsanto
7 came to the conclusion that the higher chlorinated
8 hydrocarbons -- the higher chlorinated PCBs were
9 causing the problems of persistence in the
10 environment and that they were going to have to be
11 withdrawn and that the real question was whether
12 Aroclor 1242 could continue to be used by being
13 shown to be biodegradable?

14 MR. PRAUSE: Object to the form of the
15 question.

16 A. Once the information had been obtained
17 that showed that the higher chlorinated materials
18 were persistent and that they slowly biodegraded
19 and exceeded perhaps the capacity for the
20 environment to handle them at production levels,
21 it was then in turn determined that perhaps the
22 lower chlorinated ones might be acceptable if they
23 were controlled and not released.

24 And so yes, at this point in
25 November 1969, which is a fairly rapid pace from

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1 when we started, that was determined.

2 Q. All right. Now moving on to some other
3 studies that you did, I want to ask you, first of
4 all, what are dibenzofurans?

5 A. Dibenzofurans are another group of
6 chlorinated organic -- CHCs, chlorinated
7 hydrocarbons.

8 Q. All right. And are they considered by
9 toxicologists to be far more dangerous even than
10 PCBs?

11 MR. PRAUSE: Object to the form of the
12 question.

13 A. I would say they have toxic properties
14 that are greater than PCBs.

15 Q. All right.

16 A. "Danger" involves a concept that
17 requires a lot more information than you are
18 talking about right now.

19 Q. Okay. You're aware today and you were
20 aware back when you were doing research for
21 Monsanto that furans were of a much greater level
22 of concern toxicologically than PCBs? Is that
23 fair?

24 A. If you are talking about in 1969, no, it
25 is not fair. I was employed with Monsanto until

1 1978; and during that period of time, that
2 information became available to the general
3 scientific community and so I became aware of it
4 while I worked for Monsanto.

5 I'm not sure it was in 1969 that all
6 toxicological information had been generated
7 because there was few if any toxicological
8 information on long-term effects on any of these
9 constituents.

10 Q. Were you aware in 1970 that
11 dibenzofurans were more of a concern than PCBs?

12 A. I don't know, to be specific with you.
13 I do know that when the information was generated
14 I probably was aware of it and became aware of it.
15 When the toxicologists studied the materials and
16 when they made that information available and it
17 also became available that they were perhaps of
18 interest relative to PCBs, then I probably became
19 aware of the toxic effects of these materials,
20 yes.

21 Q. Can furans be created by burning PCB?

22 MR. PRAUSE: Can we get an agreement
23 that when you say "furans," you're talking
24 about polychlorinated dibenzofurans as
25 opposed to a general class of chemicals?

1 MR. WRIGHT: Yes.

2 THE WITNESS: His point is a reasonable
3 one. But your question to me is?

4 BY MR. WRIGHT:

5 Q. Can furans be created by burning PCBs?

6 A. Yes.

7 Q. All right. And was that ever a concern
8 at Monsanto?

9 A. Was it -- okay. Was it a concern that
10 burning PCBs would produce dibenzofurans.

11 Q. Yes.

12 A. Or was it a concern that PCBs contained
13 dibenzofurans? There's a --

14 Q. The first is the one I'm asking you
15 right now. I'm going to ask you the second one
16 later.

17 A. Okay. That's fine.

18 Q. The first question is, did it ever
19 become a concern at Monsanto that burning PCBs
20 could create dibenzofurans?

21 A. Yes.

22 Q. Were you asked to perform studies to
23 determine whether burning PCBs could create
24 dibenzofurans?

25 A. No.

1 Q. Did you ever perform any studies in
2 which you became concerned that dibenzofurans
3 might be created by the burning of PCBs?

4 A. No.

5 Q. Did you ever find PCBs, or I'm sorry,
6 did you ever find furans or the evidence of furans
7 as a result of performing any tests of burning
8 PCB-containing materials?

9 A. No.

10 Q. Let me show you a document that I'm not
11 sure whether it is contained in the ones that you
12 reviewed or not so I'm going to go ahead and mark
13 it as Exhibit No. 21.

14 (Deposition Exhibit No. 21 marked for
15 identification.)

16 Q. And go ahead and look at it quickly, if
17 you would.

18 A. (Witness peruses document.) I looked at
19 it.

20 Q. Is that a document that was authored by
21 you?

22 A. Yes, it is.

23 Q. And it was authored by you in when?

24 A. It is March of 1970.

25 Q. All right. And it reflects a test done

1 by you or someone under your direction burning NCR
2 paper, correct?

3 A. Correct.

4 Q. And NCR paper, for the record, was paper
5 used by National Cash Register as a carbonless
6 carbon paper, correct?

7 A. Yes.

8 Q. And in that process for creating the
9 carbonless carbon paper, NCR used Aroclor 1242,
10 correct?

11 A. Yes.

12 Q. And a question arose as to what occurred
13 when carbonless carbon paper containing Aroclor
14 1242 was burned, correct?

15 A. Was open, burned in the open, yes.

16 Q. Yes. Because it was contemplated and it
17 was just common sense that widely-distributed
18 paper could be burned under many different kinds
19 of circumstances in the United States in 1970,
20 correct?

21 A. Are you saying that that's why this was
22 done or that that was something that could happen?

23 Q. That's something that anybody with
24 common sense knew back in 1970?

25 A. Could happen.

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1 Q. Yes.

2 A. Probably. Because we all did it
3 ourselves.

4 Q. All right.

5 A. You did, too.

6 Q. That's fine. So --

7 A. I just want to make sure the question
8 was as to the common burning of paper or whether
9 or not the specific reason this furan was
10 designed.

11 Q. The first question is, everybody knew
12 that paper including carbonless carbon paper
13 containing PCBs could be and was being burned in
14 the United States, correct?

15 MR. PRAUSE: Object to the form of the
16 question.

17 A. Everybody knew and burned -- everybody
18 knew and did burn paper, yes. So.

19 Q. All right. And this experiment was to
20 study the open area combustion of paper containing
21 Aroclor 1242, correct?

22 A. No.

23 Q. Well, what's the title of this document?

24 A. "Study of the Open Air Combustion of
25 Paper Containing Aroclor 1242."

1 Q. Now and in this experiment you did open
2 air burn NCR paper containing Aroclor 1242,
3 correct?

4 A. Correct.

5 Q. And can you tell me what the results are
6 that you reported?

7 A. I can read the summary.

8 Q. Okay.

9 A. "Summary. Under the conditions of this
10 experiment, Aroclor 12," I'm sorry, "1242," for
11 the court reporter, I'm sorry, I'll go slower.

12 THE REPORTER: Thank you.

13 Q. "Summary. Under the conditions of this
14 experiment:

15 "1. Aroclor 1242 is easily volitized
16 from the NCR paper containing Aroclor under open
17 air combustion conditions using a is a Bunsen
18 burner.

19 "2. Aroclor 1242 undergoes little
20 thermal decomposition at Bunsen burner
21 temperatures.

22 "3. It appears that air pollution could
23 occur via open burning of NCR paper or other
24 Aroclor containing materials."

25 Q. Now the question of furans is not stated

1 in that summary, correct?

2 A. That's correct.

3 Q. Did you have a concern or get a hint
4 from burning that Aroclor 1242 in open combustion
5 that furans were being created?

6 A. No.

7 Q. Is it simply a coincidence that in the
8 same month you sent a telex to Mr. R. A. Lidgett
9 in England asking him to send you "any details you
10 have on the techniques used by TNO to isolate
11 chlorinated dibenzofuran type materials from
12 commercial PCBs. Urgent"?

13 A. Are you asking me if that's coincidental
14 of the experiment?

15 Q. Yes.

16 A. Yes.

17 (Deposition Exhibit No. 22 marked for
18 identification.)

19 Q. And for the record I have marked that
20 urgent communication as Exhibit No. 22.

21 Why did you urgently need any
22 information on isolating chlorinated dibenzofuran
23 type materials from commercial PCBs, if you
24 recall?

25 A. To the best of my ability what I recall

1 is that there was a incident that was called, I
2 believe, the Yusho incident in which Kanachlor, a
3 Japanese PCB product, contaminated rice oil and
4 people ate the rice oil. And there was feeling
5 amongst the people that dibenzofurans were a
6 contaminant of the commercial material, commercial
7 PCBs, and that these could have caused the
8 problems that were seen in the people that
9 ingested these materials.

10 Our intent here was to be proactive and
11 to look at the products we manufactured to see
12 whether or not during the manufacturing process
13 dibenzofurans were produced and could be present
14 in our products at any level.

15 Q. And in fact, Dr. Tucker, that Yusho
16 incident that you are discussing had occurred in
17 December of 1968, more than a year, closing in on
18 a year-and-a-half, before you sent that urgent
19 request, correct?

20 A. That may be correct. But the deal is,
21 is that the presumption that what we're seeing was
22 not due to PCBs but due to perhaps trace
23 constituents was not arrived at and/or concluded
24 until the time frame that we are discussing here.
25 At which time we were appraised of that fact, we

1 said we need to look at our product in a proactive
2 fashion and see whether or not TDF was present.

3 Q. Now one of the looks at your product
4 might have included burning commercial PCBs to see
5 if furans were created by the burning, correct?

6 A. No. The initial research would involve
7 looking at the material as such before it was
8 subjected to conditions which might produce it.

9 We didn't burn the material; we produced
10 it. And we were concerned that the material we
11 produced, that it didn't contain high levels of
12 this stuff or, if it did, what could we do about
13 it or what should we do about it?

14 Q. But as we discussed, you knew and
15 everyone at Monsanto that thought about it knew
16 that Monsanto's customers and the public in
17 general could and probably were burning from time
18 to time PCB-containing materials?

19 MR. PRAUSE: Object to the form of the
20 question.

21 A. No, I don't agree with that whatsoever.

22 Q. Now let me ask you, Dr. Tucker, did you
23 ever find out that the furans that were in the
24 Japanese material were created by cooking or
25 burning that rice oil, PCB-containing rice oil?

1 A. No.

2 Q. That never came to your attention?

3 A. No.

4 Q. To this day you're unaware of any
5 indication of that?

6 A. There could have been conjecture that
7 that was a possibility. But again, we didn't burn
8 the products.

9 Q. Okay. Now you have eaten ham before,
10 haven't you?

11 A. Yes, sir.

12 Q. Okay. You have eaten bacon before?

13 A. Yes.

14 Q. You're aware that people commonly eat
15 and cook hogs, correct?

16 A. I believe that's where bacon and ham
17 comes from, unless there's a subtlety here that
18 you are trying, that's eluding me.

19 Q. And anybody with any common sense at
20 Monsanto knew that, correct?

21 MR. PRAUSE: Object to the form of the
22 question.

23 A. That ham and bacon were derived from
24 pigs?

25 Q. And that ham and bacon are cooked?

1 A. I think that would be worldwide. I
2 don't know why that would be restricted to
3 Monsanto, but I assume that they would know.

4 Q. And you had occasion to sample some hog
5 tissue that was provided to you from Anniston,
6 Alabama, correct?

7 A. Are we still on furans --

8 Q. Yes, sir.

9 A. -- or have we moved on?

10 Q. We're still on furans.

11 A. Yes.

12 Q. And in fact in December of 1970, you
13 issued a report -- and this is again in the
14 materials that you reviewed. For the record, DSW
15 038724. You issued a report on your analysis of
16 that hog tissue that you had analyzed, correct?

17 A. Yes.

18 Q. And that report is in front of you; and
19 it is dated December 21, 1970, from you to W. B.
20 Papageorge, correct?

21 A. Correct.

22 Q. And by this point W. B. Papageorge was
23 in charge of directing the Monsanto PCB, I'm going
24 to call it "defense," you may take issue with the
25 word "defense."

1 A. I wouldn't be presumptuous.

2 MR. PRAUSE: Object to the question.

3 A. Allow me to take issues with what I need
4 to take issues with --

5 Q. Okay.

6 A. -- rather than representing me as taking
7 issues I don't.

8 Q. Okay. Well let me ask you, then. At
9 this time, was W. B. Papageorge in charge of
10 handling or managing the Monsanto PCB issue?

11 A. My understanding is that Bill was in
12 charge of overseeing what was going on and
13 interfacing with government agencies and other
14 customers and clients and things of that sort.

15 Q. All right.

16 A. I think that kind of fits in with what
17 you are implying.

18 Q. Okay. And you sent your results of
19 your -- of the hog analysis to him, correct?

20 A. It was addressed to Bill Papageorge and
21 it was carboned in to Keller, Wheeler and Wright.

22 Q. Okay. And E. G. Wright was the
23 environmental man at Anniston, correct?

24 A. We talked about him earlier. He might
25 have been a chemist from some of the things we

1 talked about, I don't think so. But he may have
2 been -- I don't know what his title was down
3 there.

4 Q. Okay. Were you aware that this hog was
5 found dead on the landfill at the Monsanto
6 Anniston plant?

7 A. No.

8 Q. Were you made aware of where the hog
9 sample that was sent to you from Anniston came
10 from?

11 A. Not specifically. It came from Anniston
12 because it was sent to me from Anniston, and I
13 knew it was dead because it was rotten.

14 Q. Okay. And you analyzed that tissue,
15 correct?

16 A. I analyzed fat and liver as indicated by
17 the memo.

18 Q. And you found .3% Aroclor 1242 -- well
19 why don't you explain what your results were?

20 A. I think it was .03% --

21 Q. I apologize.

22 A. -- versus .3%. That's all right. But
23 you are reading it upside down versus straight up.

24 Q. Let me ask you, Dr. Tucker, if you would
25 tell us what the results were of the analysis of

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 the hog tissue that you did.

2 A. Okay. This sample was submitted to us
3 by Anniston as hog fat and hog liver. And that
4 was the extent of the information that we were
5 provided with the sample.

6 We were asked to analyze the samples for
7 PCBs using the methods that we developed and we
8 analyzed those samples. The fat we estimated that
9 on a wet weight basis after we had analyzed it
10 that it could contain as much as .03% PCBs.

11 Q. Which is how many parts per million?

12 A. 300.

13 Q. All right.

14 A. And that was Aroclor 1242. And that it
15 could contain as much as .05% Aroclor 1254 on a
16 wet weight basis.

17 Q. And that again would be 500 parts per
18 million?

19 A. That's correct.

20 Q. Okay. And in the lipid weight, what
21 were your findings?

22 A. Well the lipid weight, what you find in
23 the lipid weight depends on how much lipid is in
24 the animal and depends on the animal's state at
25 the time the sample was taken.

1 In this particular instance, what we
2 found was that the lipid, which comprised a minor
3 pound of the wet weight material, had one point,
4 when calculated on a lipid basis, had 1.2% PCBs
5 1242.

6 Q. Which is how many parts per million?

7 A. 11,200.

8 Q. And of 1254 you found how many parts per
9 million?

10 A. 19,200.

11 Q. And when you analyzed the liver what did
12 you find?

13 A. .16% 1242, and .14% 1254. If you
14 multiply percent by 10 to the fourth that will
15 convert it into parts per million. Any time you
16 run into that number, if you count the decimal
17 place four places to the right that will give you
18 the number of parts per million. So .16 would be
19 1600, which would be 1600 parts per million.

20 Q. 1600 parts per million?

21 A. Correct. That's the way you convert
22 it.

23 Q. And the wet weight was 69 parts per
24 million?

25 A. Correct.

1 Q. In the liver?

2 A. Correct.

3 Q. Of 1252. And then for 1254, you found
4 1400 parts per million in the lipid weight and 92
5 parts per million in the wet weight of Aroclor
6 1254?

7 A. Yes.

8 Q. Now do you know if Mr. Papageorge ever
9 communicated though results to the citizens of
10 Anniston, Alabama?

11 A. No.

12 Q. Do you know if anybody at Monsanto ever
13 communicated those results to the citizens of
14 Anniston, Alabama?

15 A. No.

16 Q. Do you know if anybody ever told the
17 citizens of Anniston, Alabama that they should
18 stop eating hogs from that local area?

19 MR. PRAUSE: Object to the form of the
20 question.

21 A. No.

22 Q. Do you know of anything that was done
23 with this information that you provided
24 Mr. Papageorge after you sent it to him?

25 A. No.

1 Q. Did you ever hear again about anything
2 relating to analysis of hogs or chickens or any
3 other animals in the Anniston area?

4 A. No.

5 Q. Were you ever asked to sample any other
6 livestock from the Anniston area?

7 A. No. And I tell you that we don't, we
8 didn't do the sampling anyway.

9 Q. I'm sorry.

10 A. But no, we were not asked to sample or
11 analyze, which is what I thought you meant to ask.

12 Q. Yes, that's the point that I was asking.

13 A. No.

14 Q. I know that you sampled fish from the
15 Anniston area, correct?

16 A. No.

17 Q. I, okay. You got me again.

18 A. You want to be accurate, so I'm sorry to
19 be?

20 Q. No, no, no, you're right, that's all
21 right. That was fair. I know that you analyzed
22 samples of fish from the Anniston area?

23 A. Yes.

24 Q. And you did that quite a bit, correct?

25 A. We analyzed a good number of samples in

1 conjunction with some other studies; and we also
2 analyzed I think some other samples, I don't
3 remember exactly but I'm sure you will refresh my
4 memory.

5 Q. By the way, did you ever do any studies
6 to determine whether cooking a hog that has 1900
7 parts per million lipid weight Aroclor 1254
8 creates dibenzofurans?

9 A. Do you mean did I provide support in the
10 form of analysis for any studies like that?

11 Q. Yes, sir.

12 A. Okay. No.

13 Q. Did you ever hear of Monsanto doing any
14 studies like that?

15 A. No.

16 Q. Did it ever occur to Monsanto do a study
17 like that?

18 MR. PRAUSE: Object to the form of the
19 question.

20 A. I'm not qualified to answer that
21 question. Obviously.

22 Q. Now I'm going to move quickly to go
23 through some of these documents that were provided
24 to you before the deposition. I'm not going to go
25 through all of them; and for the sake of time, I'm

1 not going to go through all of all of these
2 documents.

3 If your attorney after I'm through wants
4 to bring up any matters that I have left out, I'll
5 be happy to sit here and let him do it. But I'm
6 only going to bring up certain things; so I'm just
7 giving you fair warning that I'm not going to ask
8 you about everything in all of these documents.

9 DSW 14271 through 275 is a report from
10 Paul Hodges to W. A. Kuhn dated May 12, 1969,
11 correct?

12 A. Did you say it was from Paul to Mr. Kuhn
13 or from Mr. Kuhn to Paul?

14 Q. I think I said it was from Paul Hodges
15 to Mr. Kuhn. But if I didn't, that's what I --

16 A. You're correct. That's fine, that's
17 exactly what it is.

18 Q. And it's dated May 12, 1969?

19 A. That's correct.

20 Q. And it's entitled, "Aroclor's Cleanup
21 From Plant Effluent," correct?

22 A. Correct, "Aroclor Cleanup From Plant
23 Effluents."

24 Q. And it's marked as "Confidential,"
25 correct?

1 A. It is marked as "Confidential."

2 Q. And you are one of the recipients noted,
3 correct?

4 A. I'm one of the 12 recipients noted on
5 the confidential memo (Laughter).

6 Q. All right. And in this, on the third
7 page of this May 12, 1969, memo, is a section that
8 is entitled, "III. Work to Minimize Losses at
9 Anniston. A. Definition of Problem."

10 Do you see that?

11 A. Yes, I do.

12 Q. And?

13 A. It is, "Definition of Problems."

14 Q. "Definition of Problems." All right.

15 And Item one is, "External to plant -- that a

16 problem exists at Anniston is evident because,"

17 quote, "'free,'" close quote, "globules of

18 Aroclors can be seen in Snow Creek. We do not

19 know what problem exists in Choccolocco Creek and

20 the Coosa River. By June 1, 1969, we will

21 determine the limit of visual evidence of Aroclors

22 downstream in Snow Creek."

23 If you can visually see Aroclors in a

24 stream, what part per million would that be? Is

25 that any way to estimate?

1 A. In the sediment? In the water? In the
2 globule? There's three major -- I'm not being
3 smart now. I see by your face you think I'm being
4 smart.

5 Q. No, no --

6 A. I'm not at all.

7 Q. No, no, I think that's actually a very
8 good point. In the globule it would be 100%; is
9 that correct?

10 A. That's correct, that would be what we
11 call "neat."

12 Q. All right. And then the globule would
13 if it got mixed with sediment, then you would have
14 whatever percent globule and whatever percent
15 sediment you had?

16 A. That's correct. So it could range
17 anywhere from 0 to 100% -- well, it couldn't be
18 100% because then it would have to have some
19 sediment --

20 Q. Right. 100% would be a globule;
21 anything less than 100% would be sediment
22 containing PCBs, correct?

23 A. That's correct.

24 Q. All right. When you tested some of the
25 sediment from the plant out fall, you found PCBs

1 in percent levels?

2 A. In the sediment and I believe, if I
3 remember correctly, we found something like 58
4 parts per billion --

5 Q. Yes.

6 A. -- in the water.

7 Q. PCBs are not very soluble but they are
8 soluble to some extent, correct?

9 A. Well, the amount found in the water
10 versus the sediment versus the globule is on the
11 order of about a billion times less, 10 to the
12 ninth times less. So what you say is very
13 correct.

14 Q. Now globules can obviously be
15 transported, correct?

16 A. Yes, sir. And any, in any manner that
17 you carry them home. I mean it just, yes, sir, I
18 mean --

19 Q. And they can be, they can be transported
20 by water, correct?

21 A. There would be two ways in which they
22 could probably be transferred to water that come
23 to mind since is you have asked the question. One
24 would be through the solubility that we talked
25 about if you are in a quiescent area where it was

1 moving slow and it had time to equilibrate. The
2 other would be as if you had water rolling along
3 fast enough that it could have enough energy to
4 actually roll it, if it's an insoluble globule.

5 So I mean, yes, certainly it could
6 transport it.

7 Q. All right. And PCBs bind to sediment.
8 They like to bind to dirt, don't they?

9 A. It's what is called hydrophobic, they
10 abhor water, that's what hydrophobic means.

11 Q. Okay. So they abhor it. They don't
12 abhor it completely because they solubilize
13 somewhat?

14 A. Right.

15 Q. But they like binding to solid
16 objects --

17 A. They like sediment better than they do
18 water, that's correct.

19 Q. Okay. And you found, and I think
20 through your reading, you found that sediment can
21 be transported away from its original source by
22 environmental conditions?

23 A. It can and it can't be; so yes, you are
24 correct.

25 Q. And PCBs can be disseminated through

1 binding to sediment that then becomes dust that
2 then becomes transported by wind, for example?

3 A. At this -- correct. And all of these
4 things were a part of an ongoing effort to find
5 out how transportation of materials that weren't
6 intentionally spread throughout the environment --
7 like pesticides when they were sprayed -- how that
8 happened.

9 Depending upon when you are talking
10 about, you know, that, in, say, 1967 and '68, in
11 that region, that knowledge was not pervasive and
12 it was not understood.

13 Q. By '69 and '70 it was understood that at
14 least for the higher chlorinated isomers those
15 facts that I just stated were just true, i.e.,
16 that PCBs persisted in the environment; that they
17 bound to sediment; that they were transported away
18 from their source by various environmental means?

19 A. By the 1970s it certainly was being
20 beginning to understand and be part of
21 understanding why people were seeing what they
22 were seeing, including us. So yes, the answer to
23 the question is yes.

24 Q. Now I want to return briefly to an area
25 that we talked about yesterday, I believe. And

1 I'm not going to have the court reporter read back
2 the record; whatever was said was said. But I
3 believe that you said that Drs. Jensen and Widmark
4 were the first to use a gas chromatograph and
5 electron capture detection technology. Do you
6 recall saying that?

7 A. No.

8 Q. Okay. If you said that, you were
9 incorrect, right?

10 A. What I'm going to do is correct you.

11 I believe you meant to say mass
12 spectrometry versus electron capture.

13 Q. Actually what I was saying was what you
14 told me all day yesterday, which I believe -- and
15 I may be wrong -- but I believe you told me that
16 your understanding was that Drs. Jensen and
17 Widmark had used gas chromatography and joined it
18 with electron capture in order to perform their
19 work.

20 MR. PRAUSE: Object to the form of the
21 question.

22 Q. And first of all, do you recall telling
23 me that yesterday?

24 A. Jensen and Widmark used a gas
25 chromatograph with an electron capture, yes. I

1 did not say that they were the first to do it. I
2 said that they were the first to combine a mass
3 spectrometer with a gas chromatograph and apply it
4 to the analysis of environmental sample extracts.
5 That's what I said.

6 Q. In fact, Jensen and Widmark's work that
7 Monsanto became aware of prior to the time that
8 you started your project was using a gas
9 chromatograph and a mass spectrometer, not an
10 electron capture device?

11 A. That's what I just said.

12 Q. So that is true what I just said?

13 A. Yes.

14 Q. Okay. And if you said yesterday that
15 Jensen and Widmark used an electron capture device
16 with a gas chromatograph and not a mass
17 spectrometer with a gas chromatograph, you were
18 incorrect yesterday if that's what you said?

19 A. No, I was not. And I don't -- let me --
20 I'm not sure where you are going with this and I'm
21 not sure why you wouldn't have the record read if
22 you thought there was a mistake made. But let me
23 say this.

24 Jensen and Widmark used gas
25 chromatograph electron capture. They were the

1 first people in combination with the mass
2 spectrometers, the people that manufactured the
3 LKB mass spectrometer, that combined the two and
4 actually used it to look at an extract of an
5 environmental sample and establish that PCBs were
6 present. That's what I said.

7 Q. Okay.

8 A. And I have been saying that for a long
9 time. And so, I would be very surprised if the
10 record reflects what you don't want to go back and
11 see if it reflects.

12 MR. PRAUSE: Can we go --

13 MR. WRIGHT: I would liking to back, I'd
14 like to go back and see what it reflects.
15 But the problem is, is that was yesterday and
16 I don't think we can do that right now.

17 And what will happen is, is on Friday
18 our court reporter says she will have a typed
19 transcript and you'll have an opportunity to
20 review that and see whether you in fact said
21 electron capture or whether you said mass
22 spectrometry?

23 A. Mass spec, MS versus EC.

24 Q. Okay.

25 A. And that's fine is there. Now is

1 there --

2 MR. PRAUSE: Could we go off the record
3 for a second?

4 MR. WRIGHT: No, I would like to finish
5 this point if we can.

6 MR. PRAUSE: Okay.

7 BY MR. WRIGHT:

8 Q. The reason I bring it up, Dr. Tucker, is
9 you'll agree with me as a scientist that there is
10 a difference in the analytical method of using a
11 gas chromatography with electron capture, as you
12 did in your process, and using gas chromatography
13 and mass spectrometry?

14 A. Yes. We used both, as a matter of fact.

15 Q. All right. But you'll agree that
16 there's a difference in those processes?

17 A. There's a difference in the detection
18 system. There's not difference much difference in
19 the chromatography.

20 Q. But those are two different analysis
21 techniques that are used to detect PCBs, correct?

22 A. That can be used to detect PCBs, that's
23 correct.

24 Q. And you know today that Drs. Jensen and
25 Widmark in the time frame before you got your

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 assignment used gas chromatography mass
2 spectrometry, correct?

3 A. In 1966, as the press release from LKB
4 states, they with LKB combined a GC with a mass
5 spec and analyzed the sample and verified on a
6 qualitative basis that PCBs were some of the
7 unknown peaks there. That's correct. I don't
8 think we have ever argued that point.

9 Q. Okay. So if you stated yesterday that
10 the information that you got was that they used a
11 gas chromatograph in conjunction with an electron
12 capture system, you were simply wrong yesterday if
13 that's what you said?

14 MR. PRAUSE: Object to the form of the
15 question.

16 A. No, that's not correct. Because you
17 yourself showed me a copy of a prepublication from
18 Jensen and Widmark that talked about an electron
19 capture GC detector. They used both systems and
20 I'm very much aware of that.

21 Q. Okay. So if you said that that was the
22 first system that you were aware of in July of
23 1968 and that they were the first ones that you
24 were aware of to do that and that you were
25 modeling your technique on theirs, that would have

1 been incorrect?

2 MR. PRAUSE: Object to the form of the
3 question and to this badgering of the
4 witness.

5 A. What would have been incorrect?

6 Q. Never mind.

7 When did Drs. Jensen and Widmark use a
8 electron capture device?

9 A. They had been using them for a long
10 period of time.

11 Q. How did they accomplish their initial
12 analysis of PCBs or their initial detection of
13 PCBs?

14 A. With a mass spectrometer.

15 Q. Had you ever used a mass spectrometer
16 before you were asked by Monsanto to validate the
17 detection of PCBs in environmental samples?

18 A. No.

19 Q. Had you ever used an electron capture
20 device before you were asked by Monsanto to
21 validate the analysis of environmental samples for
22 PCBs?

23 A. No.

24 Q. Had you ever even used a gas
25 chromatograph before you were asked by Monsanto to

1 detect or to devise a method for detecting PCBs in
2 environmental samples?

3 A. Yes.

4 Q. Okay. Do you recall ever being asked
5 that question before?

6 A. There were three questions there.

7 Q. Okay. The question that I'm asking --

8 A. Which of the three questions do you want
9 me to recall first?

10 Q. The question that I'm asking is, before
11 Dr. Keller gave you your assignment to validate
12 the findings of PCBs in environmental samples, had
13 you ever used a gas chromatograph?

14 A. Yes.

15 Q. Do you recall giving a deposition in
16 Greenville, South Carolina, on the 23rd day of
17 June, 1992?

18 A. Yes --

19 Q. Do you --

20 A. -- I think so.

21 Q. Do you recall being asked the following
22 question, and I'm reading from Page 33, Line 24:
23 "Have you personally done any of this sort of work
24 or work similar to what Jensen and Widmark had
25 done prior to your conversation with Dr. Keller?"

1 And what was your answer then?

2 A. "No."

3 Q. The next question was, "Have you ever
4 used the gas chromatograph?"

5 And what was your answer?

6 A. "No."

7 Q. The next question is, "What about a mass
8 spectrometer?"

9 And what was your answer?

10 A. "No."

11 Q. And the next question was, "How about
12 the electron capture device?"

13 And what was your answer?

14 A. "No." And those were correct and as is
15 correct what you asked me. In graduate school I
16 used a gas chromatograph but I didn't use it for
17 this purpose.

18 Q. Now, in fact, in graduate school mass
19 spectrometers were available, correct, when you
20 were in graduate school?

21 MR. PRAUSE: Object to the form of the
22 question.

23 A. Mass spectrometers, we had mass
24 spectrometers at the schools that I went to, yes.

25 Q. And that includes when you were at

1 Michigan State, which was I believe from '61 to
2 '63?

3 A. Correct.

4 Q. And when you were at Iowa, which was
5 from '63 to '67?

6 A. Correct.

7 Q. But you never used the mass spectrometer
8 at either of those institutions?

9 A. I never used a mass spectrometer to
10 analyze a sample at either one of those
11 institutions. And they weren't used for that
12 purpose, very basically.

13 Q. Now mass spectrometers had been around
14 for at least several years before 1966, correct?

15 A. Correct.

16 Q. And gas chromatographs had been around
17 for several years before 1966?

18 A. Correct.

19 Q. What is the difference between, well,
20 what does a mass spectrometer do? We talked about
21 electron capture yesterday?

22 A. That's correct.

23 Q. What does a mass spectrometer do?

24 A. Okay. A mass spectrometer operates in a
25 vacuum and the sample is introduced to the mass

1 spectrometer under low pressure. It passes into
2 an area where there is usually a tungsten filament
3 that is emitting an electron beam.

4 The molecules go through that electron
5 beam and are fragmented into charged fragments.
6 Those fragments then pass into a separator where
7 magnetically, because of the current applied and
8 their weight and charge, they are separated into
9 discrete atomic mass units.

10 Those units then hit a detector; and
11 where they hit that detector is proportional to
12 the charge and the mass of the fragment.

13 And that's the way they work.

14 Q. And that's the way they worked back in
15 1966, correct?

16 A. Correct.

17 Q. And that's the way they worked back in
18 1961, correct?

19 A. That's the basis for mass spectrometry,
20 yes.

21 Q. All right. Now with relation to PCB
22 detection, my understanding of your testimony
23 yesterday is that you focused on the gas
24 chromatograph electron detection technology at
25 least first, is that fair?

1 A. That's correct.

2 Q. And my understanding is, is that
3 Monsanto at the time that you were asked to get
4 involved in this project had one, and I think you
5 said sitting on the shelf that had not been used
6 that you had to set up?

7 A. Now you're saying that I said that --
8 let me make sure that I understand you, just to be
9 sure. You're saying that I said that Monsanto had
10 a mass spec sitting on the shelf that they hadn't
11 used that was waiting for me to set it up?

12 Q. That they had one, that they had one --
13 that you believe when you were first given this
14 project that they had one that had not been used.
15 And I think you used the term "on the shelf," I
16 may be wrong about that.

17 A. I did say that, but I said it about -- I
18 said electron capture, not mass spec.

19 Q. Okay. I apologize.

20 A. Well, no, this is the mistake you have
21 been making all along.

22 Q. Well, frankly, my question is -- well,
23 that is my question. Did Monsanto have a mass
24 spectrometer?

25 A. No.

1 Q. Okay. Did Monsanto have an electron
2 capture device when you were asked to begin the
3 process?

4 A. Yes, and that's what I testified to
5 earlier --

6 Q. Okay.

7 A. -- that they had -- you let me finish,
8 please, or I just --

9 Q. I didn't say a word, doctor.

10 A. No, but I can tell you are getting ready
11 to jump in again before I finish.

12 Monsanto had a electron capture detector
13 and I said it was on the shelf and that it hadn't
14 really been used for much. And that we used that,
15 I used that, to initially set it up and see how
16 they went together and how they worked.

17 I did not say that they had a mass
18 spectrometer on the shelf.

19 I don't know whether you know it or not,
20 but mass spectrometers in those days were probably
21 close to half the side of this table and six foot
22 tall. It's very doubtful that it would have been
23 sitting on a shelf somewhere not being used if
24 they had one in the Applied Sciences.

25 So somehow or another there has been a

1 disconnect; and I hate to say it, but you don't
2 seem to be making much sense.

3 Q. Okay. Let me object to responsiveness
4 of the answer and specifically object to the
5 portions of the answer where the doctor is
6 characterizing me or what I'm doing.

7 Doctor, my question simply is, or simply
8 was -- and I believe you have answered it but I'll
9 ask it again just in case you don't feel like you
10 have answered it completely: When you were asked
11 to begin your project in the summer of 1968, did
12 Monsanto have a mass spectrometer to your
13 knowledge?

14 A. In the division I was working in in
15 Applied Sciences we did not have a mass
16 spectrometer.

17 Q. Did they have an electron capture
18 device?

19 A. As I testified earlier, yes.

20 Q. Okay. But that electron capture device
21 was not being used?

22 A. It was not being used, that is correct,
23 as I testified earlier.

24 Q. And you were the first Monsanto employee
25 to your knowledge to use the electron capture

1 device ever, correct?

2 A. No.

3 Q. Who else had used the electron capture
4 device before you?

5 A. You're asking me if I know if I was the
6 first.

7 Q. No, I'm saying to the best of your
8 knowledge. Let me ask it a different way.

9 Are you aware of anyone else at Monsanto
10 who had used that electron capture device before
11 you?

12 A. The one that we had on the shelf?

13 Q. Yes, sir.

14 A. Yes.

15 Q. Okay. Who had used the one that was on
16 the shelf?

17 A. When it was purchased by Ed Emery and
18 his group I'm certain they make may have used it
19 for whatever reason they purchased it. I do know
20 that if they did use it, they quit using it and
21 put it on the shelf, which is why it was there
22 when I went and asked them if they had one.

23 And they said to me, "Yeah, we've one."

24 It was at that point in time that I said
25 it's on the shelf and, you know, we began to look

1 at it. So I'm sure that if they bought it --
2 although they might not have -- that they might
3 have used it.

4 I'm also sure that in the 56,000
5 employees that Monsanto had worldwide there is a
6 probability that there might have been an electron
7 capture somewhere being used for something. And
8 so I'm not -- I'm smart enough not to say "never
9 ever" and things of that sort.

10 Q. Let me --

11 A. I was the first one at Monsanto that
12 used the electron capture detector and optimized
13 it and set it up for the analysis of environmental
14 samples for polychlorinated biphenyls.

15 Q. Let me object to the responsiveness of
16 the answer.

17 And my question, doctor, was not what
18 you believe occurred or what you think occurred
19 but whether you are specifically aware of anyone
20 at Monsanto using an electron capture device
21 before you began your project in the summer of
22 1968?

23 MR. PRAUSE: Object to the form of the
24 question, asked and answered.

25 A. No, I'm not specifically aware of

1 anyone.

2 Q. Okay. Now, doctor, in the summer of
3 1968 when you were given your assignment you had
4 had your Ph.D. for approximately six months,
5 correct?

6 A. As the curriculum vitae states, I
7 believe I was officially given a Ph.D. on
8 February 3, 1968. Now what month were you talking
9 about? February, would be March, April, May,
10 June, July, so in August of that year I would have
11 had my Ph.D. for six years -- for six months, yes,
12 sir.

13 Q. All right. And you had only been with
14 Monsanto for about nine months when you were given
15 that project, correct?

16 A. Correct.

17 Q. And Monsanto had had information
18 relating to Dr. Jensen and Dr. Widmark's work for
19 at least 18 months before you were given your
20 assignment, correct?

21 A. The record reflects that they had at
22 places in Monsanto that information before I even
23 came to be employed there.

24 MR. WRIGHT: All right.

25 MR. PRAUSE: Let's take a break.

1 MR. WRIGHT: Okay.

2 THE VIDEOGRAPHER: We're off the record
3 at 4:45.

4 (Recess taken.)

5 THE VIDEOGRAPHER: We're on the record
6 at 4:54.

7 BY MR. WRIGHT:

8 Q. Back on the record, doctor. The court
9 reporter asked a question and it was a good
10 questions because it was one that I had intended
11 to ask you earlier.

12 When we were talking about gathering the
13 scientific literature, you mentioned the CRD
14 library was a source. What did you mean by CRD
15 library?

16 A. I don't believe I mentioned that it was
17 a source, I believe it was in the document that we
18 were discussing. And you had asked me if I knew
19 what CRD stood for and I made a guess that CRD, in
20 a document written by somebody else, might stand
21 for Central Research Department or it could even
22 stand for Crevecoeur, which is where the big
23 library was located.

24 So I don't know what it stands for and
25 had only made a guess earlier. And it is in part

1 of the record, I'm sure you can look it up.

2 Q. Yeah. And actually, doctor, I think
3 that was in the document that you authored. But
4 I'm just asking: If it was CRD, what would that
5 have meant to you, the initials C. R. D. Library,
6 what would that have meant to you?

7 A. I believe I stated earlier that the
8 acronym could have meant Central Research
9 Department.

10 Q. All right. Now did Monsanto maintain a
11 library of scientific articles?

12 A. Yes.

13 Q. And was that available to you throughout
14 your entire employment at Monsanto?

15 A. Yes.

16 Q. Did Monsanto employ librarians who could
17 gather scientific articles so that you didn't have
18 to do it yourself?

19 A. Yes.

20 Q. And did you utilize those facilities on
21 other occasions?

22 A. What other occasions?

23 Q. Any other occasions.

24 A. Beside which occasion?

25 Q. Besides PCB research.

1 A. Yes.

2 Q. Now I'm going to show you another
3 document from the documents that you reviewed, and
4 it is MONS 096605 through 606. It is a memo from
5 you to E. G. Wright in Anniston dated October 8,
6 1969. Is that correct?

7 A. That's correct. The memo is from me and
8 the copy here is dated October 8, 1969.

9 Q. Does it reflect sampling from a location
10 outside the plant --

11 A. Do you have an extra copy or do you need
12 to look at it?

13 Q. No, I don't. I just need to look at it
14 real quickly.

15 A. We have an extra copy.

16 Q. Okay, good.

17 A. Do you agree those are the same?

18 Q. Looks like it.

19 A. Okay, good. Yeah, there's some,
20 actually, there's some handwriting on that.

21 Q. But this is not from the documents
22 earlier, that's from your copy, right?

23 A. I think -- well, it doesn't make any
24 difference. That's all right.

25 Q. I think it's from the documents earlier,

1 but I may be mistaken about that. There may have
2 been two copies in those documents, one with
3 handwriting and one without.

4 A. I just want to make sure you're
5 satisfied that I'm looking at the same document
6 you are.

7 Q. Essentially --

8 MR. PRAUSE: With the exception of the
9 annotations.

10 Q. -- with the exception of the
11 annotations.

12 What I wanted to ask you about was, the
13 first sample, the first two sample descriptions,
14 Snow Creek, Glen Addie, are you aware that Glen
15 Addie is a street near the Anniston plant?

16 A. No.

17 Q. Okay. What did you find for the water
18 from Snow Creek, Glen Addie?

19 A. As it shows in the, in the memo here,
20 the sample description Snow Creek, Glen Addie
21 water shows that there was in this particular
22 sample, that we -- not necessarily I -- but that
23 the samples analyzed and found to contain 23.3
24 parts per billion as Aroclor 1242.

25 Q. And in the sediment that was sampled

1 there at Snow Creek, Glen Addie, what was found?

2 A. 2.36% 1242.

3 Q. So that would be 23,600 parts per
4 million?

5 A. That's correct. Just moving the decimal
6 point four places to the right, so it is 23,600.
7 And it is like we discussed earlier.

8 Q. What's like we discussed earlier?

9 A. The level in water is related to
10 solubility which is in the part-per-billion level.

11 Q. Okay. And the sediment, would you agree
12 that 23,600 parts per million in an environmental
13 sample is an awful lot?

14 MR. PRAUSE: Object to the form of the
15 question.

16 Q. Never mind.

17 A. I'm sorry. Okay, you don't want me to
18 answer that question? That's fine.

19 Q. Okay, go ahead and answer it.

20 A. No, that's perfectly all right. We're
21 trying to do what you want.

22 Q. Well, your attorney objected and --

23 MR. PRAUSE: Ordinary the questions
24 answered subject to objections. Now if you
25 want to withdraw your question, then that's

1 fine.

2 MR. WRIGHT: No, I'll --

3 THE WITNESS: That's been my

4 understanding, too.

5 MR. WRIGHT: Because we're going to
6 spend so much time on it, I intend to re-ask
7 the question.

8 BY MR. WRIGHT:

9 Q. So 23,600 parts per million in an
10 environmental sample is whole lot, isn't it,
11 Dr. Tucker?

12 A. Of this particular constituent, yes.

13 Q. Again, do you know if the people in
14 Anniston that lived around Snow Creek and Glen
15 Addie were told that the sediment near where they
16 lived contained 23,600 parts per million Aroclor
17 1242?

18 A. No. As I testified earlier, I didn't
19 even know Glenn Eddie was a street; so no, I don't
20 know.

21 Q. Were you ever involved -- let me just
22 ask this: In your role in this entire Aroclor
23 project, were you ever involved in any discussions
24 of whether or not to tell the people that lived
25 near the Monsanto Anniston plant about the

Tucker, E. Scott (deft's analyt chem expert) in OWENS

1 contamination either in the soil, the water, the
2 air, the livestock, or any other substance they
3 might come in contact with?

4 A. No.

5 Q. You never heard that subject discussed?

6 A. I believe I said, "No."

7 Q. Okay. Now the Monsanto Anniston plant
8 stopped producing PCBs some time in 1971 or '72,
9 correct? Are you aware of that?

10 A. Yes.

11 Q. Okay. After the Monsanto plant ceased
12 producing PCBs did they continue to produce
13 biphenyl, to your knowledge?

14 A. I don't know.

15 Q. All right. Biphenyl is simply two
16 benzene rings stuck together, correct?

17 A. That's correct, at one carbon versus
18 multiple carbons.

19 Q. Okay. Is there any way to make biphenyl
20 without making PCBs?

21 A. Yes.

22 Q. Okay. In fact, would the standard
23 manufacturing process for biphenyl normally create
24 PCBs?

25 A. No.

1 Q. Okay. Would PCBs need to be separated
2 from production biphenyl?

3 A. No.

4 Q. Now were you aware that the Monsanto
5 Anniston plant sewers were contaminated with
6 Aroclors?

7 A. No.

8 Q. Were you ever made aware of the fact
9 that the out fall from the sewers after the
10 production continued to show PCB -- after the
11 production was stopped continued to show PCBs?

12 A. If we analyzed samples that were labeled
13 as such I would be aware of it.

14 Q. You are not generally aware of that?

15 A. No, sir.

16 Q. Okay. You did analyze samples for
17 Industrial Biotest research projects, correct?

18 A. Not for research projects, no.

19 Q. Okay. Well, did Industrial Biotest do
20 research projects for Monsanto concerning PCBs?

21 A. No, they primarily did toxicity studies
22 and feeding studies to generate samples for what
23 we were doing.

24 Q. You don't consider that a research
25 project, just out of curiosity?

1 A. No. It was standard procedure, it
2 wasn't any research at all on their part. They
3 simply fed the animals and observed the -- well, I
4 don't, we can argue about that if you like, but
5 it's not.

6 Q. My only, I just want to establish that
7 you were involved with analyzing samples that were
8 produced pursuant to studies that IBT assisted
9 with, correct?

10 A. IBT did feeding studies and toxicity
11 studies for Monsanto, and I designed what was
12 needed to provide the additional samples from
13 those studies for tissue analysis. And yes.

14 Q. Okay. Did you -- and by "you," I don't
15 mean you personally, I mean you and your staff at
16 Monsanto -- ever have to redo samples for
17 Industrial Biotest because they were confused
18 about what samples they had provided to Monsanto?

19 MR. PRAUSE: I'm sorry, could you
20 repeat? I lost that one.

21 Q. Okay. Do you ever remember having to
22 redo analysis for IBT tests because IBT had
23 confused samples?

24 A. Yes.

25 Q. Okay. Did that happen on more than one

1 occasion?

2 A. It could have.

3 Q. Did you -- and by "you," I mean
4 Monsanto -- have an on-site overseer to guarantee
5 IBT's quality control in their either feeding or
6 sampling procedures?

7 A. No.

8 Q. Did Monsanto have any role in the IBT
9 feeding procedures or the IBT sampling procedures
10 after you showed them how it should be done?

11 A. First of all, I wouldn't show them how
12 to do feeding.

13 Q. All right.

14 A. Okay? And which is I think part of your
15 question.

16 In the terms of the actual sampling, how
17 they excised tissues and things of that sort, I
18 wouldn't tell them that either because that was
19 their bailiwick. So I guess the answer to that
20 question would have to be no.

21 Q. All right. Now did you ever do any air
22 sampling -- and I'm asking you sampling
23 specifically -- or analysis for samples of air
24 around the Anniston plant?

25 A. No, sir, I don't believe I did.

1 Q. You don't recall doing any analysis for
2 Anniston air samples?

3 A. The question you asked me initially I
4 think was, did I do sampling? I certainly didn't
5 do sampling, air sampling.

6 Q. Well, the question --

7 A. I believe -- I'm asking for a
8 clarification. Do you understand what I'm saying?

9 Q. Yeah. I'm just saying I'm agreeing with
10 you the first question I asked was compound so let
11 me, let me ask you one question and see if you
12 answer this.

13 The question simply is, is did you
14 perform any analysis of air samples from around
15 the Anniston plant?

16 A. Not to my recollection.

17 Q. So if I were to ask you what was found
18 in any air samples that were analyzed, you
19 couldn't give me any answer?

20 A. That is correct.

21 Q. Well, doctor, let me just represent to
22 you that there was air sampling analyzed and we
23 have got it in the documents in front of us but I
24 don't have the time right now to go through and
25 find it to refresh your recollection.

1 You're aware that -- well, what is your
2 understanding of what Montar is?

3 A. I don't have an understanding of what
4 Montar is.

5 Q. In the PCB process, PCB production
6 process, are you aware that such a thing as still
7 bottoms were created? Does that sound familiar to
8 you?

9 A. It sound like, what I know of the
10 organic chemistry associated with the process,
11 that you would create still bottoms, yes.

12 Q. Would still bottoms contain a
13 predominance of heavier chlorinated PCBs?

14 A. It could. "Still bottoms" implies some
15 sort of distillation. I'm not sure if
16 distillation is commonly employed in the
17 production of Aroclors. But the process itself
18 selectively separates the lighter boiling
19 materials from the higher boiling materials; so
20 depend be where you cut it, if distillation were
21 involved, you would anticipate if there were still
22 bottoms, which is the remains from distillation,
23 that they would contain the higher boiling
24 materials. Which, if they were chlorinated
25 biphenyls, they would be the chlorinated, the

1 higher chlorinated ones.

2 MR. WRIGHT: All right. And let's go
3 off the record for a second.

4 THE VIDEOGRAPHER: We're off the record
5 at 5:10.

6 (Discussion off the record.)

7 THE VIDEOGRAPHER: We're back on the
8 record at 5:11.

9 MR. WRIGHT: Mr. Prause, I've got a
10 significant amount of additional questions.
11 I've got a stack of the documents that were
12 brought to the deposition that I have my
13 yellow stickies on that we haven't got to
14 yet.

15 I don't have the time to stay; I have to
16 rush right now to catch a plane. I stayed a
17 whole day longer than I had originally
18 anticipated.

19 I'm just advising you that I may request
20 to continue this deposition and continue to
21 ask Dr. Tucker questions about matters that
22 have not been and documents that have not
23 been discussed so far. I understand you may
24 object if I do that, but I'm just telling you
25 right now that I have a lot more questions

1 and I can't stay any longer.

2 It's 5:00-something now and I have to go
3 catch a plane, so.

4 MR. PRAUSE: I appreciate that,
5 Mr. Wright. We do object to your failure to
6 complete the deposition of Scott Tucker after
7 two full days of deposition. And we will,
8 obviously, entertain requests for additional
9 time with him but we would like to note our
10 objection on the record.

11 MR. WRIGHT: Okay, thank you.

12 THE VIDEOGRAPHER: Is that it?

13 MR. WRIGHT: Let's go off the record,
14 yes.

15 THE VIDEOGRAPHER: We're off the record
16 at 5:12.

17
18 (Whereupon, at 5:12 p.m. the taking of
19 the instant deposition was recessed.)
20

21 Signature of the Witness
22
23
24
25

Tucker, E. Scott (deft's analyt chem expert) in OWENS

STATE OF

COUNTY OF

SUBSCRIBED and SWORN TO before me this

day of , 20 .

NOTARY PUBLIC

My Commission expires:

Tucker, E. Scott (deft's analyt chem expert) in OWENS

E R R A T A S H E E T

RE: OWENS V. MONSANTO

DEPOSITION OF: E. SCOTT TUCKER, PH.D.

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1 CERTIFICATE OF REPORTER

2 STATE OF NORTH CAROLINA)

3 COUNTY OF MECKLENBURG)

4 I, Sydney C. Silva, the officer before
5 whom the foregoing deposition was taken, do hereby
6 certify that the witness whose testimony appears
7 in the foregoing deposition was duly sworn by me;
8 that the testimony of said witness was taken by me
9 to the best of my ability and thereafter reduced
10 to typewriting under my direction; that I am
11 neither counsel for, related to, nor employed by
12 any of the parties to the action in which this
13 deposition was taken, and further that I am not a
14 relative or employee of any attorney or counsel
15 employed by the parties thereto, nor financially
16 or otherwise interested in the outcome of the
17 action.

18 SYDNEY C. SILVA
19 Registered Professional Reporter
20 Notary Public in and for the
21 County of Mecklenburg
22 State of North Carolina

23 My Commission expires May 16, 2001.
24
25

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