

2009-08-19 Tucker, Scott Depo in Appleton

Video Deposition of E. SCOTT TUCKER, Ph.D., 8/19/0 1

1 IN THE UNITED STATES DISTRICT COURT  
2 FOR THE EASTERN DISTRICT OF WISCONSIN  
3 GREEN BAY DIVISION  
-----

4 APPLETON PAPERS, INC., and  
5 NCR CORPORATION,

6 Plaintiffs,

7 vs. Case No. 2:08-CV-00016-WCG

8 GEORGE A. WHITING PAPER COMPANY, et al.,  
9 Defendants.  
-----

10 NCR CORPORATION,

11 Plaintiff,

12 vs. Case No. 08-CV-0895-WCG

13 KIMBERLY-CLARK CORPORATION,  
14 et al.,  
15 Defendants.  
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17  
18 Videotape Deposition of E. SCOTT TUCKER, Ph.D.  
19 Wednesday, August 19th, 2009

20 9:00 a.m.

21 at

22 HUSCH BLACKWELL SANDERS, LLP  
23 190 Carondelet Plaza  
24 Clayton, Missouri

25 Reported by Rosanne E. Pezze, RPR/CRR

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Ph.D., a witness in the above-entitled action, taken  
at the instance of the Defendants, pursuant to the  
Federal Rules of Civil Procedure, pursuant to  
Subpoena, before Rosanne E. Pezze, RPR/CRR and Notary  
Public, State of Wisconsin, at 190 Carondelet Plaza,  
Clayton, Missouri, on the 19th day of August, 2009,  
commencing at 9:00 a.m. and concluding at 2:09 p.m.

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

DewITT ROSS & STEVENS, S.C., by  
Mr. Dennis P. Birke  
Capitol Square Office  
Two East Mifflin Street, Suite 600  
Madison, Wisconsin 53703-2865  
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Appleton Papers, Inc.

SIDLEY AUSTIN, LLP, by  
Mr. Eric W. Ha  
One South Dearborn Street  
Chicago, Illinois 60603  
Appeared on behalf of the Plaintiff NCR  
Corporation.

ROBINS, KAPLAN, MILLER & CIRESI, LLP, by  
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2800 LaSalle Plaza  
800 LaSalle Avenue  
Minneapolis, Minnesota 55402-2015  
Appeared on behalf of Defendants  
Georgia-Pacific Consumer Products LP,  
Georgia-Pacific LLC, Fort James Operating  
Company and Fort James Corporation.

GEORGIA-PACIFIC,  
Mr. John C. Childs  
133 Peachtree Street, NE  
P.O. Box 105605  
Atlanta, Georgia 30303-5605

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HUSCH BLACKWELL SANDERS, LLP, by  
Mr. Adam E. Miller  
190 Carondelet Plaza, Suite 600  
St. Louis, Missouri 63105  
Appeared on behalf of Dr. E. Scott Tucker  
and Monsanto Company.

2009-08-19 Tucker, Scott Depo in Appleton  
 5 DAVIS & KUELTHAU, S.C., by  
 Mr. Kevin J. Lyons  
 111 East Kilbourn Avenue, Suite 1400  
 6 Milwaukee, Wisconsin 53202  
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 7 Neenah-Menasha Sewerage Commission.

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 9 5335 Wisconsin Avenue N.W., Suite 360  
 Washington, DC 20015  
 10 Appeared by phone on behalf of the  
 Defendant and Third-Party Plaintiff Menasha  
 11 Corporation.

12 von BRIESEN & ROPER, S.C., by  
 Ms. Susan E. Lovern  
 13 411 East Wisconsin Avenue, Suite 700  
 Milwaukee, Wisconsin 53202  
 14 Appeared by phone on behalf of Defendant  
 CBC Coating, Inc.

15 BALLARD SPAHR ANDREWS & INGERSOLL, LLP, by  
 Mr. Ronald M. Varnum  
 16 1735 Market Street, 51st Floor  
 Philadelphia, PA 19103-7599  
 17 Appeared by phone on behalf of Defendant  
 P.H. Glatfelter Company.

18 HAYNSWORTH SINKLER BOYD, PA, by  
 Mr. John P. Boyd  
 19 1201 Main Street, Suite 2200  
 P.O. Box 11889  
 20 Columbia, South Carolina 29211-1889  
 Appeared by phone on behalf of Third-Party  
 21 Defendant U.S. Paper Mills Corporation.

22 ALSO PRESENT: Mr. John Niehaus -  
 23 Videographer, Midwest Litigation Services  
 24  
 25

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| 13 | No. 895-F | National Cash Register Customer Visit, June 1, 1970 (Bates PHGNCR-2003397 to 398).               | 29 |
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(Original exhibits attached to Original. Copies of  
exhibits are attached.)

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1 TRANSCRIPT OF PROCEEDINGS  
2 VIDEOGRAPHER: We're on the record.  
3 Today's date is August 19th, 2009, and the time is  
4 9:00 a.m. This is the videotape deposition of Dr. E.  
5 Scott Tucker in the matter of Appleton Papers, Inc.  
6 versus George A. Whiting Paper Company, Case  
7 No. 2:08-CV-00016-WCG in the U.S. District Court for  
8 the Eastern District of Wisconsin, Green Bay  
9 Division.  
10 This deposition is being held at Husch  
11 Blackwell Sanders in St. Louis, Missouri. The  
12 reporter's name is Rosanne Pezze. My name is John  
13 Niehaus.

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14 will counsel please identify  
15 themselves for the record.

16 MS. CONLIN: Jan Conlin from Robins Kaplan  
17 Miller & Ciresi, counsel for Georgia-Pacific.

18 MR. CHILDS: John Childs from  
19 Georgia-Pacific.

20 MR. LYONS: Kevin Lyons, Davis & Kuelthau,  
21 for the Neenah-Menasha Sewerage Commission.

22 MR. HA: Eric Ha from Sidley & Austin for  
23 NCR Corporation.

24 MR. BIRKE: Dennis Birke of DeWitt Ross &  
25 Stevens for Appleton Papers.

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1 MR. MILLER: Adam Miller from the law firm  
2 of Husch Blackwell Sanders on behalf of Dr. Tucker  
3 and Monsanto Company.

4 VIDEOGRAPHER: And if there's anyone on the  
5 phone.

6 MR. VARNUM: Ron Varnum from Ballard Spahr  
7 for P.H. Glatfelter Company.

8 MS. LYNCH: Anne Lynch from Hunsucker  
9 Goodstein & Nelson on behalf of Menasha Corporation.

10 VIDEOGRAPHER: If you could please swear in  
11 the witness.

12 E. SCOTT TUCKER, having been first duly  
13 sworn on oath, was examined and testified as follows:

14 E X A M I N A T I O N

15 BY MS. CONLIN:

16 Q Good morning, Doctor. Could you state your full name  
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17 for the record.

18 A Yes. My full name is Earl Scott Tucker, III.

19 Q And where do you currently reside?

20 A I live in -- near Greenville, South Carolina in a  
21 town called Liberty.

22 Q And are you currently employed, sir?

23 A I have a real estate business and I have a consulting  
24 business, but I'm self-employed in both of those.

25 And I should have mentioned that I also have a hay

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1 and horse farm that is also a commercial operation.

2 (Deposition Exhibit No. 895-A marked for  
3 identification.)

4 BY MS. CONLIN:

5 Q Thank you, Doctor. If you could pass those down.  
6 One more.

7 Dr. Tucker, I've handed you what's  
8 been marked as Exhibit 895-A, which is a Notice of  
9 Videotape Deposition of E. Scott Tucker and attached  
10 is a subpoena. Do you see that, sir?

11 A Yes, sir. Yes, ma'am. I'm sorry.

12 Q And you understand that you are appearing today  
13 pursuant to a subpoena that's been issued?

14 A Yes, which I received.

15 Q And this involves a case in Wisconsin involving the  
16 Fox River. Are you aware of that?

17 A Yes.

18 Q Are you represented by counsel here today?

19 A Yes.

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20 Q And who is that?

21 A My counsel is Adam Miller.

22 Q And did you speak with me prior to your deposition?

23 A Yes.

24 Q Did you speak with plaintiffs' counsel prior to your  
25 deposition? Counsel for NCR --

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1 A Yes.

2 Q -- or Appleton Paper.

3 A Yes.

4 Q And with whom did you speak?

5 A At NCR?

6 Q Yes.

7 A I don't recall the names. It was a teleconference  
8 call yesterday, and I'm sure the names can be made  
9 available. Adam, do you know?

10 MR. MILLER: Dennis and --

11 THE WITNESS: Okay. It was the gentlemen  
12 who are at the table. Okay, excellent.

13 BY MS. CONLIN:

14 Q And, could you describe your educational background,  
15 Dr. Tucker.

16 A Yes, ma'am, I can. I received an associate's degree  
17 from the University of Michigan Extension in 1961 in  
18 chemistry and mathematics, and I went from there to  
19 Michigan State University in East Lansing, Michigan  
20 where I received a bachelor's degree in analytical  
21 chemistry.

22 From there I went to the University of  
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23 Iowa in Iowa City, Iowa where I received a Ph.D. in  
24 analytical organic chemistry. The dates on those  
25 degrees were 1961, 1963 and 1968 when the degrees

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1 were awarded.

2 Q And what was the subject of your Ph.D. dissertation?

3 A My Ph.D. dissertation was entitled "An Analytical  
4 Investigation of Some Mono-2-Aza Aerial Hydrazones."

5 Q What did you do once you obtained your Ph.D.?

6 A Well, just prior to obtaining the Ph.D., I  
7 interviewed and looked for a job, and I also thought  
8 about doing postdoctoral work, and I decided I wanted  
9 to go into industry and really begin working.

10 During the interviews I met with a  
11 Dr. Robert E. Keller at Monsanto and eventually I  
12 accepted a job with Monsanto here in St. Louis.

13 Q And when was that?

14 A That would be in 1967.

15 Q And to which division of Monsanto were you assigned  
16 when you joined in 1967?

17 A Dr. Robert Keller was the manager of the applied  
18 sciences section, which provided analytical support  
19 for the -- Monsanto's organic division.

20 Q And what type -- what do you mean by organic  
21 division?

22 A It was the division that was primarily responsible  
23 for all organic products, except for the agricultural  
24 and -- well, that's good enough.

25 Q And where was that located?

1 A It was located on South 2nd Street in St. Louis,  
2 Missouri, at the Queeny plant, by the way. I'm  
3 sorry.

4 Q And did there come a time, Dr. Tucker, when you  
5 became aware of certain PCB research of Jensen and  
6 Widmark --

7 A Yes.

8 Q -- out of Sweden. When was that?

9 A I believe it was in probably late 1967 after I had  
10 joined Monsanto and I had sort of completed the first  
11 assignment that I was given.

12 Q Let me back up a second. What was your first  
13 assignment when you joined Monsanto?

14 A When I joined Monsanto, I was assigned as a senior  
15 research chemist to a Dr. Martin Dedric who was the  
16 group leader of the spectroscopy group. And my first  
17 assignment was to establish a technique called atomic  
18 absorption spectroscopy in their laboratories by  
19 purchasing the equipment, setting it up and teaching  
20 everybody, including myself, how to operate it.

21 Q Okay. And shortly after you completed that work you  
22 became aware of the Jensen and Widmark work out of  
23 Sweden?

24 A That's correct.

25 MS. CONLIN: If you could mark this, Ms.

1 Court Reporter.

2 (Deposition Exhibit No. 895-B marked for  
3 identification.)

4 BY MS. CONLIN:

5 Q I've handed you, Dr. Tucker, what's been marked as  
6 deposition Exhibit 895-B, which is a February 27,  
7 1967 letter from R. Emmet Kelly to a Dr. M.J. Thomas  
8 at National Cash Register, and it comprises MONSFOX  
9 Bates Nos. 88 through 114.

10 If you could take a look, Dr. Tucker,  
11 at the second page and subsequent pages. Is that the  
12 Jensen and widmark original paper?

13 A Yes. I think it's actually a rendition of a lecture  
14 that was given, but it's the basis for the  
15 original -- for the original paper which was  
16 eventually published.

17 Q And what did you understand Jensen and widmark to be  
18 studying and concluding?

19 A My understanding was that widmark, who I believe was  
20 the director of the institute, and Soren Jensen, who  
21 was a chemist or a person like myself at that  
22 institute, were looking at environmental samples for  
23 chlorinated hydrocarbons in general, and that this  
24 particular specific paper dealt with the fact that  
25 they had identified some unidentified peaks in gas

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1 chromatographs with electron capture detectors that  
2 had been seen by residue analysts for a long period

3           2009-08-19 Tucker, Scott Depo in Appleton  
4           of time, and nobody knew what they were, and they had  
5           identified them tentatively as being polychlorinated  
6           biphenyls.  
7           Q     Is that also known as PCBs?  
8           A     Yes, ma'am.  
9           Q     And why was this of interest to Monsanto?  
10          A     It was explained to me at that time that Monsanto  
11                manufactured some products called Aroclors, which was  
12                the primary name that was used for them, and that  
13                those Aroclors were mixtures of isomers that were  
14                known as polychlorinated biphenyls from a chemistry  
15                viewpoint.  
16          Q     And what were you asked or tasked to do when  
17                presented or learned about the work by Jensen and  
18                widmark?  
19          A     Dr. Keller asked me to review the work and to offer  
20                him what I thought about the work after -- from an  
21                analytical chemistry viewpoint, obviously -- after I  
22                had reviewed it, and that there was interest in it  
23                and that we may -- might be asked to duplicate the  
24                work in our laboratories to validate it.  
25          Q     And did you undertake that work, Dr. Tucker?  
            A     I was assigned that assignment, and yes, I did

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1           undertake that work.  
2           Q     And based on your work in that assignment, what did  
3                you conclude?  
4           A     My conclusion was -- is that what Soren Jensen and  
5                Gunther Widmark did at their institute was done in a

6 2009-08-19 Tucker, Scott Depo in Appleton  
7 valid way and that the information that they produced  
8 was real.

9 Q Now, this letter is addressed to National Cash  
10 Register, and you'll see there is a blind cc to R.E.  
11 keller?

12 A Yes.

13 Q Was that your boss at the time?

14 A Yes. At that point in time -- shortly after that, I  
15 moved out of the spectroscopy group and became a  
16 group leader of the analytical chemistry group and I  
17 reported directly to Dr. Keller.

18 Q Now, the letter addressed to National Cash Register,  
19 which has been marked as Exhibit 895-B, is enclosing  
20 the Jensen and Widmark work.

21 In your estimation was that unusual  
22 for Monsanto to be communicating with its customers?

23 MR. BIRKE: Object to form.

24 THE WITNESS: Not really at all, no. Not  
25 unusual.

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1 BY MS. CONLIN:

2 Q Now, you indicated that you had concluded based on  
3 your research that the findings of Jensen and Widmark  
4 were valid.

5 Did you communicate that to Dr. Keller  
6 or others at Monsanto?

7 A Yes, I did. And when I talk about findings, what I'm  
8 talking about is the analysis they performed was

9 2009-08-19 Tucker, Scott Depo in Appleton  
valid. Many of their conclusions that they drew were  
10 really conjecture or viewpoint and were hypothesis  
11 and that kind of stuff. So that wasn't what I  
12 addressed. I addressed whether or not the analytical  
13 methodology was correct, whether or not we were able  
14 to reproduce it and get the same results they did on  
15 similar samples.

16 Q And you were able to do so?

17 A Yes.

18 Q Now, you said you conveyed your conclusions to the  
19 folks at Monsanto. With whom would you have  
20 communicated?

21 A Well, in the beginning I communicated directly with  
22 Dr. Keller, who was my boss, and he, in turn, then  
23 communicated with the other people involved that had  
24 interest in that particular project.

25 As time went on, I began to

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1 communicate directly with a lot of the directors of  
2 the different divisions in Monsanto relative to the  
3 results that we were generating, as well as to Dr.  
4 Keller.

5 Q And were people surprised when you had replicated the  
6 Jensen and Widmark findings?

7 A I don't think they were actually surprised that I was  
8 able to replicate the analytical procedures that they  
9 used and things of that sort, because basically  
10 that's what I did.

11 I think they were -- the verification

12 2009-08-19 Tucker, Scott Depo in Appleton  
13 of the preliminary results by those folks brought up  
14 a lot of questions that nobody understood what was  
15 going on. So, I wouldn't call it surprise. I would  
16 call it interest as to finding out what was going on  
17 with those materials since we obviously manufactured  
18 them; we being Monsanto.  
19 Q The Aroclors?  
20 A Yes.  
21 Q Okay. And did you undertake additional analysis then  
22 once you had replicated the Jensen and Widmark  
23 findings?  
24 A Yes.  
25 Q Could you describe some of the additional work that  
you did.

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1 A There were two techniques that we had set up -- get  
2 the equipment, set up, verify, and become practiced  
3 at in the laboratory. One was used to -- gas  
4 chromatography associated with electron capture  
5 detectors.  
6 Q Can I ask you just to slow down a bit, Doctor.  
7 A Well, I can try. I will try. I'm used to talking  
8 fast and I apologize to the reporter.  
9 There were two basic techniques that  
10 were required for the detection and for the  
11 verification of the work. Both of the techniques  
12 involved the use of an instrument called a gas  
13 chromatograph, and in one case the detection system  
14 associated with the gas chromatograph was an electron

15 2009-08-19 Tucker, Scott Depo in Appleton  
16 capture detector, and in the other case it was a mass  
17 spectrometer.

18 So, we set those up first, and then in  
19 addition to that, we had to develop the procedures  
20 for isolating the materials that we were after from  
21 the environmental samples and the other kinds of  
22 samples that we looked at, get them in a form that  
23 they could be delivered to the instrument, and then  
24 in turn, looking at the results from the instrument  
25 and verifying that they were correct.

Q Now, turning back for a moment to this February 27th

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1 letter from Dr. Kelly to M.J. Thomas at National Cash  
2 Register. The letter concludes, "At any rate, I  
3 believe before we worry about the toxicological part  
4 of the problem, we should settle the analytical  
5 part."

6 Do you see that?

7 A Yes, I do.

8 Q Were you the person who was tasked with that  
9 analytical part?

10 A Yes, I was.

11 Q Now, as you undertook some additional research in the  
12 PCB area, was there ever a time where you were told  
13 to withhold information from customers, such as NCR,  
14 in connection with the findings that you were  
15 arriving at?

16 A No.

17 Q Did you ever instruct anyone --

18 A 2009-08-19 Tucker, Scott Depo in Appleton  
No.  
19 Q -- to withhold information from customers such as NCR  
20 as you were looking at the issue as it relates to  
21 Aroclors and PCBs?  
22 A No, I did not. Never.  
23 Q Now, when you first started your work, were you  
24 looking at all Aroclors, or were you limiting your  
25 work to those that are considered higher chlorinated

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1 Aroclors such as 1254, 1260?  
2 A No. Initially the work was to look at all of our  
3 products, the Aroclor products, the lower chlorinated  
4 ones as well as the higher chlorinated ones.  
5 Q Now, did you undertake tests with respect to each of  
6 the Aroclor products to determine their presence in  
7 the environment?  
8 A Yes. That's what the project was about, yes.  
9 Q And what types of sampling did you do to determine  
10 whether various Aroclors were being found or  
11 discharged into the environment?  
12 A The first thing we did, of course, was to analyze  
13 standards. And when we were able to satisfactorily  
14 reproduce the results on standard materials that we  
15 knew what we were going to get, and it was within the  
16 precision, accuracy and, of course, it behaved the  
17 way it was supposed to, then the next step was to  
18 move into samples where we mimicked environmental  
19 media and -- like soil and like water and like air  
20 and things of that sort, and then began to develop

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21 the isolation -- the isolation, concentration and  
22 analysis techniques for those.

23 So -- and in those samples, once we  
24 established that there weren't matrix interference --  
25 matrix interferences, we would then spike those

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1 samples with the PCBs in question, known amounts and  
2 known ones, and then run those through the  
3 instrumentation to make sure they worked on that  
4 particular media, which mimicked the environmental  
5 samples we would probably be getting into.

6 When we were satisfied that we could  
7 do those types of things, then we felt ready to do  
8 laboratory studies on the mimicked environment, to  
9 answer certain questions, and we began to go out into  
10 the environment and actually get environmental  
11 samples to analyze.

12 We also, at the same time, initiated  
13 animal feeding studies with Industrial Bio Tests  
14 in -- I believe it was in Chicago, if I remember  
15 correctly -- and the results of those -- the reason  
16 for those studies were to generate different kinds of  
17 matrices that were clear of PCBs and that had been  
18 exposed to PCBs so we could see what was going on  
19 with those two and verify our analytical techniques.

20 Q Now, as part of the work that you were undertaking on  
21 looking at PCBs and their possible presence in the  
22 environment, did you undertake any experiments  
23 involving burning of NCR paper?

24 A 2009-08-19 Tucker, Scott Depo in Appleton  
Yes.

25 (Deposition Exhibit No. 895-C marked for

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1 identification.)

2 BY MS. CONLIN:

3 Q I've handed you, Dr. Tucker, what's been marked as  
4 Exhibit 895-C, which is a two-page memorandum dated  
5 December 9th, 1968 from Elmer Wheeler to a W.R.  
6 Richard. Do you see that?

7 A Yes, I do.

8 Q And it's entitled "Aroclors - Minutes of Our  
9 Discussion with Dr. Calandre." Do you see that?

10 A Calandre.

11 Q Calandre.

12 VIDEOGRAPHER: One moment.

13 (Brief pause.)

14 BY MS. CONLIN:

15 Q Who is Dr. Calandre?

16 A Dr. Calandre was the director of industrial bio  
17 tests.

18 Q And is it reporting on discussions of a meeting on  
19 Friday?

20 A Yes. Okay. I see it. I was making sure the  
21 December 9th was Friday.

22 Q Okay. You would agree this is --

23 A No. It's Friday. It says in the opening line that I  
24 finally got to that it was Friday.

25 Q And did you receive a copy of this document?

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1 A I'm sure I did. In fact, I know I did. My name's in  
2 it.

3 Q And if you take a look at No. 5 on this document of  
4 December 9th, 1968, it reads, "The advisability of  
5 determining the character and possibility of  
6 isolating the major fraction in each of the Aroclors  
7 to be studied and to be explored." Do you see that?

8 A Yes, I do.

9 Q What's that a reference to?

10 A There probably are multiple interpretations that I  
11 could make at this point in time. I don't remember  
12 specifically. There might have been some thought  
13 that they would isolate those fractions that they  
14 found in the environment in weathered and aged  
15 samples from the Aroclors in question and look at  
16 them, but I don't remember.

17 Q But, in any event, you're looking at each of the  
18 Aroclors, correct?

19 A Yes. No question about that. Each of the products,  
20 as I said earlier, we studied.

21 Q And does this memo also reflect some additional work  
22 that you're to do?

23 A Yes.

24 Q And what does that include?

25 A The additional work that was going to be done that

1 went along and in parallel with the animal toxicology  
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2 studies was to generate extra tissue samples and add  
3 extra animals to the study that were exposed in the  
4 same way such that the tissues could be excised and  
5 provided at our laboratory so that we could analyze  
6 them for the PCBs that we would find, if we found  
7 them.

8 Q Now, if you could take a look at page 2 on Item 7 of  
9 Exhibit 895-C. It's written, "Analytical work should  
10 be initiated to determine the decomposition products  
11 when representative materials (paper) containing  
12 Aroclor are burned."

13 Do you see that?

14 A Yes, ma'am, I do.

15 Q And why was Monsanto interested in performing this  
16 investigation?

17 A I don't know the specific reason that the author in  
18 question did it, but it's obvious that paper is kind  
19 of an open use. And if the open use contained  
20 PCBs -- and, of course, paper's obviously burned a  
21 lot, it was one of the areas where it could be easily  
22 distributed to the environment.

23 Q Have you ever heard of the terms open application and  
24 closed applications?

25 A Yes.

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1 Q And when you referred to open use, what were you  
2 referencing?

3 A An open application is where the product is used by  
4 whoever we sold the product to, and it's just

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♀

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5 distributed openly, without any attempt to control it  
6 or recycle it or contain it during its use.

7 Q Would NCR paper be an example of an open application  
8 or open use?

9 A Absolutely.

10 Q And is that one of the reasons why you were looking  
11 at it?

12 A Yes.

13 Q And what's an example of a closed application?

14 A A -- closed applications were things like  
15 transformers, capacitors, hydraulic fluid systems,  
16 heat transfer systems; things where the product was  
17 not intentionally distributed outside of its intended  
18 use, and the use was closed, obviously.

19 Q Now, following this meeting of Friday before  
20 December 9th, then, did you undertake to perform  
21 incineration or burning tests on NCR paper?

22 A Yes.

23 (Deposition Exhibit No. 895-D marked for  
24 identification.)  
25

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1 BY MS. CONLIN:  
2 Q I've handed you, Dr. Tucker, what's been marked as  
3 895-D, which is a two-page memorandum. Did you  
4 author this?

5 A Yes.

6 Q And it's dated March 4th of 1969?

7 A Yes.

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- 8 Q And it's entitled "Aroclor - Wildlife: Incineration  
9 of NCR Paper."  
10 A Yes.  
11 Q And it states in the first paragraph, "It has been  
12 proposed from the observed distribution of  
13 polychlorinated biphenyls in tissue samples taken  
14 from marine organisms that global eco-distribution of  
15 these materials occurs via aerial transport (winds,  
16 currents, airborne particulate matter, et cetera.)"  
17 Do you see that?  
18 A Yes, ma'am.  
19 Q And what was that conclusion based on?  
20 A The conclusion was based on information that was  
21 being generated by other analysts and scientists who  
22 were looking at the environment and environmental  
23 samples as well as ourselves.  
24 Q And would that be Jensen and Widmark as an example?  
25 A Yes.

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- 1 Q And would that have been a Mr. Risebrough as well?  
2 A Yes.  
3 Q The next paragraph reads, "A qualitative experiment  
4 has been performed with the objective of determining  
5 if Aroclor in NCR paper is destroyed or volatilized  
6 when the paper is disposed of by burning."  
7 Do you see that?  
8 A Yes.  
9 Q And below is it setting forth the apparatus and  
10 methods by which you were going to perform your test?

Page 23

11 A Right. Yes.

12 Q Okay. If we could direct your attention, Dr. Tucker,  
13 then to page 2 under your Conclusions. Under No. 1  
14 you wrote, "Under the conditions of this experiment,  
15 Aroclor is easily volatilized when NCR paper is  
16 burned." Do you see that?

17 A Yes.

18 Q And what do you mean by that, Dr. Tucker?

19 A Well, I meant when you put the PCB-containing paper  
20 in the chamber and you ignited it, and then collected  
21 the vapors by pulling the air through the chamber,  
22 that the materials that you collected were Aroclors  
23 and that they were easily volatilized from the paper  
24 by simple burning.

25 Q And the second conclusion is "Aroclor undergoes

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1 little, if any, decomposition when burned."

2 what did you mean by that?

3 A Well, I meant that the fingerprint associated with  
4 the Aroclor that was in the paper was relatively  
5 unchanged.

6 Q Meaning what by "unchanged"?

7 A Unchanged meaning it was the same as what was in  
8 there.

9 Q And then you conclude under the third point,  
10 "Unfortunately, it appears that significant air  
11 pollution can occur via burning of NCR paper or other  
12 Aroclor-containing materials even under more  
13 strenuous conditions." Do you see that?

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14 A Yes.

15 Q And was that something that you reported to  
16 Dr. Richard, Dr. -- or Mr. Kelly and Dr. Wheeler and  
17 others?

18 A Yes. Yes.

19 Q Is this -- I want you to assume, Dr. Tucker, that  
20 NCR's made an allegation in the case that Monsanto  
21 never told them about the results of its paper  
22 burning experiments and others. Would that be  
23 consistent or inconsistent with your view of  
24 Monsanto's practices and the facts as you saw them?

25 MR. HA: Object to form.

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1 THE WITNESS: It would be very  
2 inconsistent.

3 BY MS. CONLIN:

4 Q Was it your understanding, based on your personal  
5 knowledge and involvement, that Monsanto was  
6 attempting to keep customers as NCR up to date with  
7 the status of your analytical investigations?

8 A Yes.

9 (Deposition Exhibit No. 895-E marked for  
10 identification.)

11 BY MS. CONLIN:

12 Q I'm handing you, Dr. Tucker, what's been marked as  
13 Exhibit 895-E, which is a one-page memorandum from  
14 Elmer Wheeler to Mr. Richards with a copy to yourself  
15 dated October 21st, 1968.

16 Do you recall seeing this document?  
Page 25

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17 A Yes.

18 Q Okay. And in the last paragraph Mr. Wheeler writes,  
19 "In a few words, Risebrough has found PCBs along with  
20 chlorinated pesticides in a number of species of fish  
21 and birds along the California coast as well as in  
22 the waters off of Baja California and Central  
23 America. He further reports PCB in fish from the  
24 Channel Islands and Puget Sound. No PCB was detected  
25 in the liver of tuna taken in the Galapagos. Scott

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1 Tucker is going to scrutinize the analytical aspects  
2 and particularly the validity of some of the  
3 assumptions made by the author." Do you see that?

4 A Yes.

5 Q And did you, in fact, along with the other work that  
6 you were doing, undertake to look at what Risebrough  
7 was reporting?

8 A Yes.

9 Q Did anyone ever instruct you to keep what you were  
10 learning about Risebrough from NCR or any of  
11 Monsanto's customers?

12 A No.

13 Q Did you ever instruct anyone under your control to  
14 keep information that you were learning about the  
15 Jensen/Widmark research, the Risebrough research or  
16 others from customers such as NCR?

17 A No.

18 (Deposition Exhibit No. 895-F marked for  
19 identification.)

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20 BY MS. CONLIN:

21 Q I've handed you, Dr. Tucker, what's been marked as  
22 Exhibit 895-F, which is a two-page document bearing  
23 Bates PHGNCR-2003397 through 398. And it is entitled  
24 "National Cash Register Customer Visit, June 1, 1970"  
25 and lists representatives from NCR as well as

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1 representatives from Monsanto.

2 Do you see that, Doctor?

3 A Yes, I do.

4 Q For NCR, Gordon Taylor, Gerry Taylor, Ned Thacker are  
5 present, and for Monsanto, yourself and others are  
6 listed?

7 A Yes.

8 Q And if you direct your attention to the meeting  
9 agenda, it looks to be a little over a half-day  
10 meeting, is that right, Dr. Tucker?

11 A That's correct.

12 Q Okay. And at 9:00 to noon when you're to leave for  
13 lunch, it's listed, "Meeting on Toxicology,  
14 Biodegradation, Analytical work as it relates to  
15 MIPB, HB-40, and Aroclor 1242." Do you see that?

16 A Yes.

17 Q And would this be consistent or inconsistent with the  
18 notion that you were communicating with NCR regarding  
19 what was being found with respect to 1242?

20 MR. BIRKE: Object to form.

21 THE WITNESS: It is consistent with the  
22 fact that we would be communicating that to NCR.

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23 BY MS. CONLIN:

24 Q Now Aroclor 1242, what is that?

25 A It's a 42 percent chlorinated biphenyl product

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1 prepared by direct chlorination of biphenyl, and it's  
2 one of the PCB products that were manufactured by  
3 Monsanto.

4 Q And is 1242 the particular Aroclor that was used in  
5 NCR paper?

6 A Yes.

7 Q And there's a reference here to HB-40 and MIPB. What  
8 are those, Doctor?

9 A HB-40 is hydrogenated biphenyl, and the 40 indicates  
10 that it's been hydrogenated to the 40 percent level.  
11 And MIB -- MIPK (sic) refers to mono-isopropyl  
12 biphenyl, if I'm interpreting these correctly, and I  
13 think I am.

14 Q Were those solutions or possible substitutes that  
15 Monsanto and NCR were exploring as a substitute to  
16 Aroclor 1242, if you know?

17 A Yes.

18 Q Now, you had indicated previously, Dr. Tucker, that  
19 part of your work after you determined the  
20 appropriate methodology were to begin to look at  
21 various samples from the environment to see whether  
22 Aroclors were present?

23 A Yes.

24 (Deposition Exhibit No. 895-G marked for  
25 identification.)

1 BY MS. CONLIN:

2 Q I've handed you, Dr. Tucker, a two-page memorandum.

3 Did you author this?

4 A Yes, I did.

5 Q Okay. And it's the Bates No. MONSFOX97017 through  
6 97018. Do you see that?

7 A Yes.

8 Q And is the date of this memorandum that you prepared  
9 March 28, 1969?

10 A Yes.

11 Q And what is the subject matter?

12 A The subject matter is a monthly summary of what they  
13 were calling the project "Aroclor - wildlife" at that  
14 time for March 1969, specifically dealing with  
15 analytical studies.

16 Q I'd like to direct your attention first, Dr. Tucker,  
17 to the third paragraph from the bottom which reads,  
18 "Incineration experiments with NCR paper indicates  
19 that the Aroclor present is easily volatilized,  
20 undergoes little, if any, significant decomposition,  
21 and that air pollution could occur via this route."  
22 Do you see that?

23 A Yes, I do.

24 Q Is that consistent with the incineration test which  
25 we previously discussed?

- 1 A Yes. It's very consistent with the burn test that we  
2 discussed.
- 3 Q And this memo followed that burn test?
- 4 A Yes.
- 5 Q Now, it also suggests that you had undertaken to take  
6 Aroclor analysis of Snow Creek --
- 7 A Yes.
- 8 Q -- samples. And what is Snow Creek?
- 9 A Snow Creek and Choccolocco Creek are creeks in the --  
10 and the Coosa River are associated with the Anniston,  
11 Alabama plant where PCBs were manufactured.
- 12 Q And what did you determine, based on exhibit -- or as  
13 reported in Exhibit 895-E?
- 14 A Relative to the creeks and the samples from them?
- 15 Q Correct.
- 16 A In a lot of cases, we determined that there were PCBs  
17 present.
- 18 Q And so, for example, if we take a look at plant  
19 outfall and amount of Aroclor sediment, and you've  
20 got some figures there. Could you describe those?
- 21 A Yes, I can. There were two categories, plant  
22 outfall, and plant outfall one block from the plant.
- 23 There were two types of matrices or  
24 samples taken. The first that's shown here is  
25 sediment, which of course would be the soil and that

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- 1 kind of stuff from the bottom of the stream. And the  
2 second was water.

3                   2009-08-19 Tucker, Scott Depo in Appleton  
4                                 And what's reported on those is the  
5                   amount of Aroclor found in those samples when we  
6                   analyzed them in our laboratory.  
7           Q       Now, in addition to taking samples at Snow Creek, did  
8                   you also take other environmental samples as a result  
9                   of your work to ascertain the presence of PBCs in the  
10                  environment?  
11          A       PCBs, yes.  
12          Q       PCBs. Thank you.  
13          A       I'm sorry.  
14          Q       And what types of other samples did you take?  
15          A       Well, the actual types of samples were pretty much  
16                  dictated by the environment; in other words, soils  
17                  and sediments in air and whatever else, could be  
18                  fish, could be any other kind of wildlife or things  
19                  of that sort. So -- but they were all analyzed for  
20                  PCBs. Have I answered your question?  
21          Q       It did. I'll follow-up. Thank you.  
22          A       Thank you.  
23                                 (Deposition Exhibit No. 895-H marked for  
24                                 identification.)  
25          BY MS. CONLIN:  
26          Q       I've handed you, Dr. Tucker, what's been marked as

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1                   Exhibit 895-H, which is a multipage document from  
2                   R.E. Keller to W.B. Papageorge comprising Bates  
3                   GPFOX45395 through 45400. And you see that you're  
4                   listed as having received a copy of this?  
5          A       Yes, I do.

6 Q 2009-08-19 Tucker, Scott Depo in Appleton  
And do you recall receiving it?

7 A Yes, I do.

8 Q And it's dated April 17th, 1970; is that right?

9 A That's correct.

10 Q And the subject line is "Environmental Materials  
11 Analyzed by Monsanto for PCBs"?

12 A Yes.

13 Q Who is W.B. Papageorge?

14 A Bill Papageorge was the gentleman who became the  
15 point person for PCBs and all inquiries and all work  
16 and things of that sort associated with it for  
17 Monsanto.

18 Q Okay. And the first paragraph of this document  
19 indicates, "This note summarizes work we have done to  
20 date on the detection of PCBs in environmental  
21 materials. The attached table covers a total of 167  
22 samples which have been analyzed." Do you see that?

23 A Yes, I do.

24 Q And, in fact, are those results contained on the  
25 following pages?

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1 A Yes, they are.

2 Q Okay. And it goes on to say, "PCBs typical of our  
3 Aroclor products have been found in" -- and then it  
4 indicates water and sediment from nine U.S. rivers,  
5 one U.K. river and Lake Michigan. Do you see that?

6 A Yes, I do.

7 Q Is that consistent with the work that you had done in  
8 analyzing these samples?

9 A 2009-08-19 Tucker, Scott Depo in Appleton  
Yes.

10 Q And it also indicates that PCBs typical of Monsanto's  
11 Aroclor products have been found in the air at the  
12 Anniston plant. Do you see that?

13 A Yes, I do.

14 Q And is that consistent with the work and analysis  
15 that you were doing?

16 A Yes, it is.

17 Q And what is the Anniston plant?

18 A It's Anniston, Alabama. It's one of the primary  
19 locations at which PCBs were manufactured by  
20 Monsanto.

21 Q And then it also indicates here that PCBs typical of  
22 our Aroclor products have been found in "fish from  
23 Lake Michigan and three midwest rivers." Do you see  
24 that?

25 A Yes, I do.

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1 Q And was that consistent with the work that you had  
2 been undertaking up to this point?

3 A Yes, it is, and was.

4 Q And then the last two are human fat from a midwest  
5 biopsy specimen and milk from Maryland and Ohio dairy  
6 farms. Do you see that?

7 A Yes, I do.

8 Q And, again, was that consistent with the work and the  
9 conclusions that you had arrived at, Dr. Tucker?

10 A Yes, it was, and is.

11 Q And then it says, "The water, sediment and air

12 2009-08-19 Tucker, Scott Depo in Appleton  
13 samples contain PCBs typical of Aroclor 1242, 1248,  
14 1254 and/or 1260."

15 would that suggest that you were  
16 looking at all those types of Aroclors for their  
17 presence in the environment?

18 A Yeah. Not only suggests it; we were.

19 Q At any point in time were you restricting your work  
20 and analysis to higher chlorinated Aroclors such as  
21 1254 or 1260?

22 A No.

23 Q Then it says, concludes, "The milk, human fat and  
24 fish samples contain PCBs most typical of Aroclor  
25 1254." Do you see that?

26 A Yes, I do.

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1 Q Now, if we take a look at the page 2 of  
2 Exhibit 895-H, does it list the environmental  
3 materials analyzed by Monsanto?

4 A Correct. Under -- about five or six columns list  
5 information with regard to those samples.

6 Q Okay. So on the left-hand side is the manufacturer  
7 or user and site location, right?

8 A Correct.

9 Q And then you've listed any associated waterways  
10 beside that, right?

11 A Correct.

12 Q And then you looked at a matrix and number of samples  
13 analyzed such as air, water, or the like, right?

14 A Yes.

2009-08-19 Tucker, Scott Depo in Appleton  
15 Q And does that -- by the way, does that indicate that  
16 you -- that you -- did you test in each case listed  
17 here, air, water, sediment and fish, or is it listed  
18 here only those areas that you sampled?  
19 A The samples were undoubtedly provided to me and, for  
20 example, in the first one where it says Monsanto,  
21 United States, Anniston, Alabama, Snow Creek and  
22 Choccolocco Creek, which we referred to earlier, it  
23 lists four matrices; air, water, sediment and fish,  
24 which means that I was provided three air samples, 23  
25 water samples, 12 sediment samples, and two fish

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1 samples to look at for the spectrum of PCBs which  
2 included all of our products 1242 through 1260.  
3 The next column, PCBs found, indicates  
4 by an X whether or not -- what the -- what the PCBs  
5 in the sample were most relative to the product we  
6 manufactured.  
7 Q And listed there you've got 1242, 1248, 1254 and  
8 1260?  
9 A Yes.  
10 Q And those are various types of Monsanto Aroclors?  
11 A Correct, those are -- yes.  
12 Q And next to that you have PCB levels?  
13 A Yes.  
14 Q And you've got certain designations, PPB and PPM.  
15 what do those indicate?  
16 A The PPB means parts per billion and the PPM means  
17 parts per million.

2009-08-19 Tucker, Scott Depo in Appleton  
18 Q Now, I'd like to direct your attention down about  
19 five lines to entry "National Cash Register, Portage,  
20 Wisconsin." Do you see that?  
21 A Yes, I do.  
22 Q And then the associated waterway listed there is the  
23 Fox River and the Wisconsin River?  
24 A Yes.  
25 Q Okay. Did you undertake to sample waterways from --

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1 or water from National Cash Register in Portage,  
2 Wisconsin?  
3 A We received samples from those waterways and we  
4 analyzed them. I didn't take them myself. They  
5 might have been taken by the people who were  
6 operating the plant and their technical folks.  
7 Q NCR sent you those samples?  
8 A Yes.  
9 Q Would that suggest to you, Doctor, that NCR was aware  
10 that you were taking samples or analyzing their water  
11 around their Portage plant for possible PCB --  
12 A Yes.  
13 Q -- presence?  
14 MR. BIRKE: Object to form.  
15 MR. HA: And foundation.  
16 BY MS. CONLIN:  
17 Q Now, if you take a look at the next column, you've  
18 got 1242 identified as having been found in the water  
19 samples --  
20 A Correct.

2009-08-19 Tucker, Scott Depo in Appleton  
21 Q -- from National Cash Register's Portage, Wisconsin  
22 plant; is that right?

23 A Yes.

24 Q Okay. And it says PCB levels, PPM. What's the  
25 significance of that relative to the, for example,

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1 PPB that you've got listed here?

2 A Well, parts per million is a thousand times greater  
3 than parts per billion. So, what it means is that  
4 there's 1,000 more -- the levels found were a  
5 thousand above the part per billion level. So there  
6 were significant levels there. That was a  
7 significant level of PCBs.

8 Q And then you've got an analysis technique, EC/GC.  
9 What does that stand for, Doctor?

10 A Stands for electron capture/gas chromatograph.

11 Q And was that the analytical tool that you were  
12 employing?

13 A Yes.

14 Q Now, the work that is reflected in 895-H had been  
15 completed, obviously, prior to this April 17th, 1970  
16 summary?

17 A Yes. Actually, this was a summary that I prepared  
18 for Dr. Keller, who Dr. Keller then distributed as  
19 the author to the principals that were interested in  
20 this within the company and elsewhere.

21 (Deposition Exhibit No. 895-I marked for  
22 identification.)

23 BY MS. CONLIN:

2009-08-19 Tucker, Scott Depo in Appleton  
24 Q I've handed you, Dr. Tucker, what's been marked as  
25 Exhibit 895-I, which is a one-page memorandum bearing

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1 Bates No. MONSFOX97076. Is this something that you  
2 prepared on February 25th of 1969?

3 A Yes.

4 Q And what is the subject?

5 A "Aroclor - wildlife," which I had mentioned earlier,  
6 was the nomenclature being used to refer to what I  
7 was doing.

8 Q Okay. And does this, in fact, talk about some  
9 samples that you had received from the Snow Creek  
10 plant?

11 A Yes.

12 Q Now --

13 A It was actually the Anniston, Alabama plant that was  
14 on the Snow Creek.

15 Q Okay. Thank you for that correction.

16 A I'm sorry.

17 Q That's fine. And if you take a look at -- it  
18 describes, basically, the sample designation and then  
19 the amount of Aroclor found; is that right?

20 A Yes.

21 Q Okay. And would this be Aroclor that was being found  
22 in the effluent?

23 A Yes.

24 Q Okay. Now, you write in the second full paragraph,  
25 "The amount of Aroclor found was calculated as

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1 Aroclor 1242." Do you see that?

2 A Yes, I do.

3 Q Okay. Would that be consistent or inconsistent with  
4 the view that you were only looking at higher  
5 chlorinated Aroclors in February of 1969?

6 MR. HA: Object to form.

7 THE WITNESS: It would demonstrate that we  
8 were looking at other than higher chlorinated  
9 biphenyls. Is that -- I would guess -- well, I made  
10 the statement.

11 BY MS. CONLIN:

12 Q Fair enough. Now, you also indicate that perhaps  
13 "samples should be taken further down Snow Creek,  
14 down Choccolocco Creek and even the Coosa River if  
15 necessary." Do you see that?

16 A Yes, I do.

17 Q Okay. And do you know if you ever performed that  
18 additional work?

19 A I don't recall it specifically, but I'm quite sure we  
20 probably did.

21 Q At the bottom of this page it says, "Start new file.  
22 Aroclor pollution." Is that your handwriting?

23 A Yes, it is.

24 Q And did you in fact --

25 A Time out. Time out. Let me look at it more

1 carefully. You know, I don't think it is.

2009-08-19 Tucker, Scott Depo in Appleton

2 Q Do you know whose handwriting it might be?

3 A No, but I -- I know it's not mine, now that I'm  
4 looking at it a little bit more closely.

5 Q Now, this is cc'd to Messrs. Keller, Garrett and  
6 Hodges. Who are those individuals?

7 A Well, Keller, as I mentioned earlier, was Dr. Keller,  
8 and he was my initial boss and the manager of the  
9 applied sciences section of Monsanto. Jack Garrett  
10 worked for Elmer Wheeler, and he was in the -- kind  
11 of like the toxicology, environmental type area. And  
12 Paul Hodges had to do with the Krummrich plant or  
13 some other operation within Monsanto. I'm not sure  
14 what it was specifically, but I met him a fair number  
15 of times.

16 Q And was it your practice to routinely apprise your  
17 supervisors or Mr. Richard or Wheeler of what you  
18 were finding?

19 A Yes.

20 (Deposition Exhibit No. 895-J marked for  
21 identification.)

22 BY MS. CONLIN:

23 Q I've handed you, Dr. Tucker, what's been marked as  
24 Exhibit 895-J, which is a multipage document bearing  
25 Bates GPF0X37924 through 37926. Do you recognize

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1 this document?

2 A Yes, I do.

3 Q Is this something that you prepared on or about  
4 November 20th, 1969?

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2009-08-19 Tucker, Scott Depo in Appleton

- 5 A Yes, it is.
- 6 Q And to whom is it addressed?
- 7 A It's addressed to Dr. Robert Keller.
- 8 Q And to whom is it copied?
- 9 A It's copied to Bryant, Farrar, Richard and Wheeler.
- 10 Jim Bryant, I think, would be having something to do
- 11 with the plants, the manufacturing materials. Farrar
- 12 was the director of the plasticizers for organics
- 13 division. Bill Richards was the functional fluid
- 14 director, and Emmet -- Wheeler worked for Emmet Kelly
- 15 in the medical department next to the toxicology lab.
- 16 Q And was this -- did you undertake monthly wildlife
- 17 summaries to or by -- I guess every couple months to
- 18 apprise your supervisors as to the progress of your
- 19 research?
- 20 A Yes.
- 21 Q Okay. Now, you indicate three paragraphs down
- 22 that -- four paragraphs down, "A review and
- 23 comparison of the PCB analytical methodology
- 24 developed here and independently in the Wisconsin
- 25 Research Alumni Foundation laboratories was held in

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- 1 Madison, Wisconsin." Do you see that?
- 2 A Yes, I do.
- 3 Q And what was concluded with respect to what the
- 4 Wisconsin Research Alumni Foundation methodologies
- 5 were relative to what you were doing at Monsanto?
- 6 A The methodologies that I reviewed with WARF, I
- 7 believe they called it -- that was the acronym that

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8 was called for, were consistent with what we were  
9 doing and were applicable to being able to analyze  
10 PCB samples.

11 It was my understanding that they were  
12 undertaking a large sampling of Lake Michigan and  
13 that they were going to be beginning to analyze those  
14 samples and they were soliciting our participation.

15 Q Okay. Now, in the next paragraph you write,  
16 "Analysis of estuary mud samples from around the" --  
17 is it the "Uskmouth area (Newport, U.K.) have been  
18 completed."

19 A Yes.

20 Q Why were you doing sampling over there or having  
21 sampling done over there?

22 A Well, PCBs weren't the only place that -- PCBs were  
23 manufactured other places than in the United States.  
24 And so that was our facility in Europe, in Great  
25 Britain, if I remember correctly, UK obviously, and

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1 they were asking us to analyze those samples to  
2 confirm probably what they had done themselves.

3 Q And what is the conclusion as reflected in  
4 Exhibit 895-J in the next sentence?

5 A The conclusion is we found significant levels of  
6 Aroclor 1242 in all the samples, and that they ranged  
7 from half a part per million to two parts per  
8 million. And that there were also indications of  
9 some more higher chlorinated PCBs, 1254 through 1260,  
10 but at much more lower levels. And that's consistent  
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11 with outfalls from plants that manufacture and/or use  
12 PCBs at that time.

13 Q And what was the results reflected in this exhibit  
14 from the Anniston plant as reflected in the next  
15 paragraph?

16 A The paragraph that says "the EC/GC analysis"?

17 Q Yes.

18 A It simply states that we had completed the analysis  
19 of all the samples provided to us from the Anniston,  
20 Alabama plant and that the levels found ranged from  
21 as low as two parts per billion to as high as  
22 2 percent.

23 Q Okay. I'd like to direct your attention now to  
24 page 2 of Exhibit 895-J, and I'd like to direct your  
25 attention to the paragraph right above Future Plans

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1 where you write, "The area percent of each homologue  
2 and isomer distribution of Aroclor 1242 was  
3 determined by gas chromatography-mass spectrometry."

4 And then you write, "At least 46  
5 chlorinated biphenyls were detected. Homologues  
6 containing five to ten chlorines per molecule  
7 accounted for," and it looks like originally it said  
8 8-point -- or 9.68, but then there's a handwritten  
9 correction, "7.69 of the Aroclor." Do you see that?

10 A Yes, I do.

11 Q What's that referencing?

12 A It was obvious that all of the polychlorinated  
13 biphenyl of the Aroclors contained each of the

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14 chlorinated isomers to some amount, because of the  
15 way the products were manufactured. And so what we  
16 were interested in, since the initial problem seemed  
17 to be and still seems to be, in aged, weathered  
18 samples, we were seeing pentachloro- and above,  
19 pentachloro- and hexachlorobiphenyls in them.

20 And so what we were trying to  
21 determine is how much of Aroclor 1242 were -- could  
22 we account for by looking to see how much five to ten  
23 chlorines per molecule accounted for. I'm not sure I  
24 stated that very clearly, but --

25 Q Let me ask it this way. So -- is this a reference to

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1 the fact that in Aroclor 1242, at least according to  
2 this document, 7.69 percent of it would be comprised  
3 of the five chlorine and higher?

4 A Right. What it basically says is that less than 10  
5 percent of Aroclor 1242 was what everybody was  
6 concerned about.

7 Q 10 percent it was concerned about?

8 A There was concern about 10 percent and 90 percent was  
9 not of concern.

10 Q Because those were the tetrachlorinated isomers --

11 A There was less than five chlorines per molecule and  
12 they didn't appear in the aged, weathered samples.

13 MS. CONLIN: Why don't we take a break  
14 here.

15 VIDEOGRAPHER: We're going off the record  
16 at 9:55 a.m.

2009-08-19 Tucker, Scott Depo in Appleton

17 (Brief recess taken from 9:55 a.m. to 10:05  
18 a.m.)

19 VIDEOGRAPHER: We're back on the record on  
20 tape two at 10:05 a.m.

21 BY MS. CONLIN:

22 Q Dr. Tucker, before we broke we were discussing  
23 Exhibit 895-J and we were on page 2.

24 Now, in your memorandum to Keller  
25 dated November 20th, 1969, did you outline future

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1 plans?

2 A Yes.

3 Q And direct your attention to the second paragraph  
4 under Future Plans. What were you going to  
5 undertake?

6 A It says here, I was going to undertake "River water  
7 biodegradation experiments with Aroclors 1221, 1242,  
8 1248 and 1254," and that we were going to start them  
9 within five days.

10 Q It goes on to say, "These experiments are in  
11 cooperative effort with Dr. R.A. Swisher of the  
12 Inorganic Division." who was that individual?

13 A Dr. Swisher was a -- one of the mentors in the area  
14 of studying biodegradation with river die-away  
15 studies and some of the continuous activated sludge  
16 studies, and in fact, he really kind of almost  
17 invented and extended those kinds of studies for  
18 linear alkylbenzene sulfonates, which are of  
19 course --

2009-08-19 Tucker, Scott Depo in Appleton

20 Q You've got to talk a littler slower.

21 A I am sorry. I started doing it again. All right. I  
22 will slow down, and I appreciate you letting me know.

23 He was the father of biodegradation  
24 techniques that were used to study soaps and that  
25 were -- got into the environment. If you remember, a

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1 long time ago we used to have bubbles from the soaps  
2 in the environment, and of course they -- that came  
3 from the fact that the alkylbenzene sulfonates that  
4 they were using were not biodegradable, and they were  
5 getting into the water, so they continued to foam the  
6 water.

7 well, they came up with a thing called  
8 linear alkylbenzene sulfonates which undergo  
9 bacterial degradation very quickly so we don't have  
10 that problem anymore. And Dr. Bob Swisher, who was a  
11 friend, was also the author of that kind of a  
12 technique, and he wrote a book on the subject and he,  
13 fortunately, happened to be working for us.

14 So I used him as an expert resource to  
15 develop the same kinds of techniques for studying the  
16 biodegradation of water insoluble compounds.

17 Q And did you undertake, then, to look at the  
18 biodegradation of certain Aroclors such as 1221,  
19 1242, 1256 and 1260?

20 A And 1248, 1254, 1260. Yes, I did.

21 (Deposition Exhibit No. 895-K marked for  
22 identification.)

23 BY MS. CONLIN:

24 Q I've handed you, Dr. Keller (sic), what's been marked  
25 as Exhibit 895-K.

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1 A would you repeat that question for me, please.

2 Q Sure. I said I've handed you, Dr. Tucker, a document  
3 which has been marked as Exhibit 895-K. Do you have  
4 K?

5 A Yes.

6 Q Okay. Which comprises a two-page document comprising  
7 MONSFOX98648 through 98649. Do you recognize this  
8 document?

9 A Yes, I do.

10 Q Is it something that you authored on or about  
11 December 23rd of 1969?

12 A Yes, it is.

13 Q Okay. And is this addressed to your boss, Mr.  
14 Keller?

15 A Yes, it is.

16 Q And to whom is it copied?

17 A It's copied to Martin Farrar, Bill Richard and Elmer  
18 Wheeler.

19 Q And what's the title of this?

20 A Again, the title is -- the general title is "Aroclor  
21 - wildlife" and it gives a monthly summary.

22 Q Is that consistent with the monthly summary we looked  
23 at previously?

24 A Correct. This kind of report was produced on a  
25 monthly basis.

1 Q I'd like to direct your attention down to the second  
2 to the last paragraph on page 1. And could you just  
3 read what you've written here.

4 A Yes. "Water samples from a NCR plant in Wisconsin  
5 have been analyzed. The Aroclor being discharged,  
6 Aroclor 1242, was easily detected at all sampling  
7 points and ranged from approximately 1,000 parts per  
8 million at the plant to approximately one part per  
9 million in the effluent from the sewerage treatment  
10 facilities. The electron capture/gas chromatograph  
11 indicated that no biodegradation was occurring. A  
12 memo discussing the subject was issued."

13 Q Okay. And this NCR plant, is that the one in Portage  
14 that we looked at in connection with the summary work  
15 that you had done in 1970?

16 A Yes.

17 Q And with reference to the Aroclor 1242 being "easily  
18 detected at all sampling points and ranged from  
19 approximately 1,000 parts per million at the plant to  
20 approximately one part per million in the effluent,"  
21 do you see that?

22 A Yes, I do.

23 Q How does that compare with the Anniston and Snow  
24 Creek results that we looked at previously?

25 A It's consistent. The thousand parts per million is

1 consistent with the types of levels we saw at plant  
2 outfalls for plants that were using the Aroclors.  
3 And the one part per million coming out of a sewerage  
4 treatment facility is also consistent with the  
5 absorption that might occur in the facility that  
6 would drop the content, plus dilution.

7 Q And now, you indicated here the EC/GC "indicated that  
8 no biodegradation was occurring." Do you see that?

9 A That's correct. Yes, I do.

10 Q And what did you mean by that as written on  
11 Exhibit 895-K?

12 A I meant that the fingerprint that was observed with  
13 the instrumentation was equivalent to the virgin  
14 product, which usually meant that the material was  
15 fresh and continuously being put in, at that point,  
16 at a fairly high level.

17 Q And I believe you mentioned before, these were  
18 samples that were sent to you by NCR?

19 A Yes.

20 Q Now, it says in the last sentence of this paragraph,  
21 "A memo discussing the subject was issued." And, in  
22 fact, did you issue a previous memorandum on the  
23 subject?

24 A I'm certain I did if I said so.

25 (Deposition Exhibit No. 895-L marked for

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1 identification.)

2 BY MS. CONLIN:

2009-08-19 Tucker, Scott Depo in Appleton

3 Q I've handed you, Dr. Tucker, what's been marked as

4 Exhibit 895-L, which is a one-page document bearing

5 Bates GPFOX144003. Can you identify this document?

6 A Yes. It's a document that I wrote, and I sent it

7 directly to Cumming Paton and Jack Garrett, with

8 carbon copies to Martin Farrar, Bill Richards,

9 Dr. Keller, and Elmer Wheeler.

10 Q And what's the date of this memorandum?

11 A The date is December 3rd, 1969.

12 Q So a few weeks before the December 23rd memorandum,

13 Exhibit 895-K?

14 A Yes. Which was the 23rd, right. Day before

15 Christmas.

16 Q And what is the subject?

17 A The subject, again, is "Aroclor - wildlife" and then

18 specifically this time "NCR Water Samples."

19 Q Okay. And do you then set forth the various samples

20 and the parts per million Aroclor 1242 found?

21 A Yes.

22 Q Okay. In sample one, you've got 1063. Do you see

23 that?

24 A Yeah. Oh, the concentration. Yes.

25 Q The concentration is --

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1 A 1,063 parts per million Aroclor 1242 found.

2 Q Okay. And would that be considered a high number

3 from an effluent standpoint?

4 MR. BIRKE: Object to form.

5 THE WITNESS: Yes.

2009-08-19 Tucker, Scott Depo in Appleton  
6 BY MS. CONLIN:  
7 Q Now, if you take a look at the first paragraph, it  
8 says, "The electron capture fingerprints of the  
9 extracts from each sample do not show any indication  
10 of biodegradation." Do you see that?  
11 A Yes, I do.  
12 Q Is that consistent with what you reflected and  
13 reported in your December 23rd memorandum to your  
14 supervisors, Exhibit 895-K?  
15 A Yes, it's consistent.  
16 (Deposition Exhibit No. 895-M marked for  
17 identification.)  
18 BY MS. CONLIN:  
19 Q Dr. Tucker, you've been handed what's been marked as  
20 deposition Exhibit 895-M, which is a one-page  
21 document bearing Bates MONSFOX96416.  
22 You received a copy of this document  
23 on or about October 28th, 1969?  
24 A Yes.  
25 Q Okay. And what's the subject?

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1 A subject is "Aroclors in wildlife."  
2 Q And who authored this?  
3 A The author, as witnessed by the signature at the  
4 bottom, is F. McDonald.  
5 Q And there's a slash there, Newport. What is Newport?  
6 A Newport is a location in the United Kingdom.  
7 Q I'd like to direct your attention to the second  
8 paragraph of this document where it's written, "We

9                   2009-08-19 Tucker, Scott Depo in Appleton  
10                   have recently collected samples of mud from the  
11                   estuary in the Uskmouth" -- how do you pronounce  
12                   that?  
13           A       I haven't the faintest. I would call it Uskmouth.  
14           Q       -- "Uskmouth area. Analysis of these samples and the  
15                   method of analysis used were carried out by E.S.  
16                   Tucker at the R&D laboratories, South 2nd Street.  
17                   The results of these analysis are given, but there's  
18                   no indication as to the toxicity of these levels of  
19                   concentration." Do you see that?  
20           A       Yes, I do.  
21           Q       Is that a reference to the fact that you were doing  
22                   work to identify the presence as opposed to the  
23                   toxicological issues at that point?  
24           A       That's correct. I'm an analytical chemist, not a  
25                   toxicologist.  
26           Q       Now, if you direct your attention down to the last

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1                   paragraph, it says, "Perhaps we should also check on  
2                   the effluent coming from the Thames Board Paper Mills  
3                   at Warrington which discharges into the River Mersey  
4                   after repulping considerable quantities of  
5                   wastepaper. This could be a source of chlorinated  
6                   carbons which would certainly finish up in the Irish  
7                   sea which is an area highlighted in the Times  
8                   article." Do you see that?  
9           A       Yes, I do.  
10           Q       First of all, do you recall the Times article  
11                   directed to this issue?

12           A       2009-08-19 Tucker, Scott Depo in Appleton  
                  No, I don't, specifically.

13           Q       Okay. And what about paperboard mills, was that a --  
14                   was that an operation that did repulping?  
15           A       Yes.

16                   MR. MILLER: Objection, foundation.

17                   MR. BIRKE: Foundation.

18                   THE WITNESS: When I say yes, I mean that  
19                   that's the way they were typically referred to at  
20                   times.

21       BY MS. CONLIN:

22           Q       Now, as of October 28th of '69, at least some within  
23                   Monsanto were looking at the issue or at least  
24                   raising the issue of whether repulping could be a  
25                   cause of potential PCB discharge; is that right?

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1           A       That's correct.

2                   MR. MILLER: Object to the form.

3       BY MS. CONLIN:

4           Q       Did you continue to do work regarding samples of --  
5                   coming from overseas?  
6           A       Yes.

7           Q       And what types of places did you collect samples  
8                   from?  
9           A       I don't remember specifically. We did not make the  
10                   choices, at least we certainly didn't at my level,  
11                   but samples intermittently would come from our  
12                   European operations for us to analyze.

13           Q       would that involve places such as Wiggins Teape?  
14           A       It could.

2009-08-19 Tucker, Scott Depo in Appleton  
15 Q So based on the documents that we've reviewed today,  
16 is it fair to state, Dr. Tucker, that you were  
17 finding 1242 in the water effluent of various plants?  
18 A Yes.  
19 Q And to the extent that you were involved, do you  
20 recall Monsanto ever telling NCR that 1242 was not an  
21 environmental contaminant?  
22 A No.  
23 Q Do you recall Monsanto ever telling NCR that it  
24 viewed 1242 as completely biodegradable?  
25 A No.

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1 MR. HA: Object to form.  
2 BY MS. CONLIN:  
3 Q Do you recall Monsanto ever telling NCR that 1242 was  
4 not environmentally persistent?  
5 MR. BIRKE: Object to form.  
6 THE WITNESS: No.  
7 BY MS. CONLIN:  
8 Q Now, you've mentioned previously that at least a  
9 portion, 7 to 10 percent of 1242, is comprised of  
10 these higher chlorinated isomers. Do you recall that  
11 testimony --  
12 A Yes.  
13 Q -- Doctor? And what is the significance of that, if  
14 any, as it relates to biodegradation?  
15 A The significance that we determined was that the  
16 lower chlorinated materials, the ones tetra- and  
17 less, were biodegraded at a measurable rate in the

18 2009-08-19 Tucker, Scott Depo in Appleton  
19 environment. And the higher ones, starting with the  
20 pentas and above, did not seem to degrade under a  
detectable.

21 Q And what do you mean by biodegrade?

22 A Biotransformation. Biodegrade means that the  
23 original molecular structure of the compound in  
24 question is changed to the extent that the compound  
25 is no longer what it was. And the reason that

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1 transformation can occur from the biodegradation  
2 viewpoint at the lowest level, for example, with  
3 bacteria, would be that the bacteria used those  
4 constituents as sources of food and energy. And they  
5 degrade them basically, in a lot of cases, down to  
6 carbon dioxide, water and mineral salts. And of  
7 course that means that the compound itself degrades  
8 completely.

9 on the other hand, they can undergo  
10 what's called primary biodegradation, which just  
11 means it changes from one kind of molecule to another  
12 during the process of using it as a food source,  
13 carbon source --

14 Q So, would it be fair to state, based on what you  
15 said, that at least a portion, 10 percent or less of  
16 the 1242 Aroclor isomer mixture, was more  
17 biologically persistent than the other portions of  
18 it?

19 A Yeah. And the word that was used that's kind of a  
20 nice word, I think, is recalcitrant. To answer your

21 2009-08-19 Tucker, Scott Depo in Appleton  
question specifically, is yes.

22 Q So -- do you ever recall there being discussions or  
23 inquiries regarding whether what was being -- shown  
24 up or said was shown up in the environment as 1254 or  
25 1260 was, in fact, a degraded 1242?

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1 A I think there were a lot of discussions with respect  
2 to that, and there was a lot of information that  
3 showed that that was the case.

4 (Deposition Exhibit No. 895-N marked for  
5 identification.)

6 BY MS. CONLIN:

7 Q I've handed you, Dr. Tucker, what's been marked as  
8 Exhibit 895-N, which is a one-page document bearing  
9 MONSFOX99147, which is a one-page memorandum from  
10 R.A. Lidgett to you, I believe. Is that right?

11 A Yes.

12 Q Dated December 24th of 1969?

13 A Yes.

14 Q Okay. I'd like to direct your attention down to the  
15 last paragraph where Mr. Lidgett writes to you, "I  
16 have noticed that there's little evidence for 1242 in  
17 chromatograms obtained in the UK on extracts from  
18 wildlife residues, et cetera, possibly because it is  
19 degraded and most people are quoting the PCBs found  
20 as 1254 and occasionally 1260. Do you find a similar  
21 situation in the United States?"

22 Do you see that?

23 A Yes, I do.

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24 Q And is that a reference to what you just described?  
25 A Yes, it is.

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1 (Deposition Exhibit No. 895-0 marked for  
2 identification.)

3 BY MS. CONLIN:

4 Q I've handed you, Dr. Tucker, what's been marked as  
5 Exhibit 895-0, which is a one-page document bearing  
6 Bates GPF0X54309, and is dated January 30th, 1970,  
7 and is authored by a Mr. Lidgett and addressed to a  
8 Baxter and Vodden. Do you see that, Doctor?

9 A Yes, I do.

10 Q If you could take a look to the last -- Item 3 in the  
11 last paragraph. Lidgett writes, "Aroclor 1242 has  
12 not been observed in extracts and it again appears  
13 that Aroclor 1254 or higher chlorinated biphenyls are  
14 being suspected as the main environmental  
15 contaminants." Do you see that?

16 A Yes, I do.

17 Q Then he writes down in his last paragraph, "I am  
18 convinced that many of the measurements of PCBs,  
19 which have so far been identified as Aroclor 1254 (or  
20 equivalent) or above are, in fact, degraded 1242 and  
21 that it is only a matter of time before this  
22 conclusion is reached by Unilever and other  
23 organizations." Do you see that?

24 A Yes, I do.

25 Q So what -- could you explain to me what similarities

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1 exist between 1242 and 1254 and -60 on the isomer  
2 side?

3 A I can do my best to attempt to do that from a  
4 chemist's viewpoint.

5 As I said earlier, the chlorinated  
6 hydrocarbons are produced by the direct chlorination  
7 of biphenyl, and each product contains by weight a  
8 certain percentage of chlorine that has utility as a  
9 product, because of its physical properties.

10 The products that were generally  
11 manufactured were Aroclor 1221, Aroclor 1242, Aroclor  
12 1254 and Aroclor 1260, and 1248 sometimes. There was  
13 an initial product called Aroclor 1232, but it was a  
14 mixture of Aroclor 1221 and Aroclor 1242, because  
15 when you tried to make it directly, some of the  
16 isomers were insoluble in the media and they would  
17 crystalize, which was not useful in a functional  
18 fluid.

19 So, based on the way that they were  
20 made, each of the products contained a little bit of  
21 every one of the PCBs, and depending upon what  
22 percentage chlorine was present, for example, if it  
23 was a 42 percent chlorinated biphenyl product, it  
24 would contain predominantly di-, tri- and tetra-  
25 materials, which is right around centroid, around the

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1 42 percent level in terms of the chlorine content.  
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2                   If it was 54, it would be around the  
3                   penta-. If it was 60, it would be around a hexa-.  
4                   And that's why the products are referred to as  
5                   pentachloro-, hexachloro-, tetrachloro-, trichloro-,  
6                   dichloro-, when in reality they're isomeric mixtures  
7                   that are chlorinated to a certain percent.

8                   So the point I'm trying to make is  
9                   that each of the products to one degree or another  
10                  contained a certain percentage of the penta- and  
11                  hexa- level materials that were being looked at and  
12                  found to be recalcitrant to degradation in the  
13                  environment.

14                  Aroclors were used as the standards in  
15                  the analytical methodology because there were not  
16                  specific isomer standards that were available. There  
17                  were 209 different isomers that were chlorinated, and  
18                  so it would be kind of difficult to use 209  
19                  individual isomers as standards. They simply didn't  
20                  exist in a lot of cases. They'd never been prepared  
21                  or isolated.

22                  So it's common to use the two terms,  
23                  Aroclor and pentachlorobiphenyl, hexachlorobiphenyl,  
24                  trichlorobiphenyl as equivalent when, indeed, they're  
25                  not. I hope I haven't confused the situation.

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1           Q    No. Let me -- let me approach it this way. We had  
2                previously discussed the fact that Aroclor 1242  
3                contained -- was an isomer mixture, correct, Doctor?

4           A    Correct.

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- 5 Q And contained a certain percentage, 10 percent or  
6 around there, of the penta- and hexa-chlorinate,  
7 right?
- 8 A That's correct.
- 9 Q And by hexa- or penta-, does that simply mean that  
10 there are five or six chlorine atoms that are  
11 attached to the biphenyl ring?
- 12 A That's what it means, yes.
- 13 Q And if we're looking at 1254 and 1260, by way of  
14 example, those would also contain penta- and  
15 hexa-chlorinates, correct?
- 16 A Correct. 54 percent chlorination was equivalent to a  
17 pentachlorobiphenyl, and of course, the other two.
- 18 Q So it would have an overlap with 1242 on the penta-  
19 and hexa- and above, but that the 1254 would have a  
20 much larger percentage than the 1242?
- 21 A Correct, of the pentachloro-, that's correct.
- 22 Q Now, turning back to Exhibit 895-M for a moment --  
23 I'm sorry, 895-N and O. Was this understanding to  
24 your knowledge that 12 -- what was showing up as 1254  
25 and 1260 could actually be 1242, was that something

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- 1 that Monsanto was sharing with customers such as NCR?
- 2 A Yes.
- 3 MR. BIRKE: Object to form.
- 4 MR. HA: And foundation.
- 5 THE WITNESS: Yes, it was.
- 6 BY MS. CONLIN:
- 7 Q Did anyone ever instruct you to keep that information

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8 from customers such as NCR?

9 A No.

10 Q Did you instruct anybody within your control and  
11 responsibility to withhold information such as that  
12 from NCR?

13 A No, I never did.

14 Q Now, did you also undertake to test air samples for  
15 various customers?

16 A Yes.

17 Q And did you in fact -- what was the purpose of, and  
18 your reasoning, for testing air samples?

19 A Well, my purpose for testing air samples was that the  
20 samples were submitted to me, and I had the ability  
21 to test them for it. So that was the primary purpose  
22 that I did it.

23 The objective of what the information  
24 was going to be used for was, of course, up to the  
25 person that was submitting the samples to me if they

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1 came from the outside. Air obviously is one of the  
2 matrices in our environment and obviously one source  
3 for the transportation of environmental pollutants  
4 throughout the world, so it's an important matrix.

5 Q So when you're measuring air samples -- let me back  
6 up and ask the question a different way.

7 You tested air samples for the  
8 presence of Aroclor, right?

9 A Yes. PCBs at the same time. I was using those terms  
10 synonymously, too.

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11 Q Sure, sure. And one of the reasons you were doing  
12 that was because you understood that the air was  
13 going out into the environment, right?

14 MR. MILLER: Object to the form.

15 THE WITNESS: I understood that the air  
16 that was associated with PCBs was being released to  
17 the environment.

18 BY MS. CONLIN:

19 Q Now, did you undertake to test samples, air samples,  
20 from Appleton Coated Paper?

21 A Yes.

22 Q Okay. And did they send you air samples to test?

23 A Yes.

24 (Deposition Exhibit Nos. 895-P and Q marked  
25 for identification.)

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1 BY MS. CONLIN:

2 Q I've handed you two documents, sir. One which has  
3 been marked as 895-P, which is a multipage document  
4 comprising MONSFOX88213 through 216, and the second,  
5 895-Q, a one-page document bearing Bates MONSFOX134.  
6 Turning first to Exhibit 895-Q.

7 Could you identify this document for  
8 the record?

9 A Well, it's dated March 17th, 1970. It's to a Dr. Ron  
10 Jococo (ph)? Is that decent? Well, it doesn't  
11 matter. J-E-V-E-R, looks like an O or A, at Appleton  
12 Coated Paper Company, Appleton, Wisconsin, 54911.  
13 Dear Dr. -- which we spelled earlier.

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- 14 Q Is it a document written by you?
- 15 A Oh, yeah. Yes, it is.
- 16 Q Okay. Dated March 17th of 1970?
- 17 A Yes, it is.
- 18 Q Okay. And in this, do you offer to analyze air
- 19 samples for Appleton Coated Paper Company?
- 20 A Yes, I do, and I include an article showing about the
- 21 vaporization, vapor pressures and things of that sort
- 22 of Aroclor that I thought might be helpful.
- 23 Q Vapor tolerance levels?
- 24 A That's what it says, yes, vapor tolerance levels.
- 25 Q Do you recall off the top of your head what those

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- 1 tolerance levels were?
- 2 A Not specifically. It's available. The information
- 3 is available.
- 4 Q If you'd take a look at 895-P, then. Is this a
- 5 letter you sent to Dr. Jezerc on May 12th of 1970?
- 6 A Yes, it is.
- 7 Q And in this do you report the results of air samples
- 8 that you tested for Appleton Coated Paper Company?
- 9 A Correct. It's a memo to him reporting, directly to
- 10 him, reporting the results that I found on the
- 11 samples that were submitted and written, of course,
- 12 by me and then copied in to the principals at
- 13 Monsanto who had interest, and Gordon Taylor at NCR.
- 14 Q Now, at the bottom of the first page you write,
- 15 "Assuming that 6 cubic feet of air was scrubbed
- 16 through 500 milliliters of toluene, and that the

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- 17 efficiency of the scrubber was 100 percent, then the  
18 calculated amounts of Aroclor 1242 present in the air  
19 samples 11 and 12 are 4.1 to 7.5 and 4.8 to  
20 8.8 micrograms per cubic meter." Do you see that?  
21 A Yes, I do.  
22 Q And how did you go about calculating that?  
23 A I -- I hate to say -- using the principles of  
24 arithmetic.  
25 Q Fair enough, Doctor.

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- 1 A I'm sorry. I used the standard calculation that was  
2 used to calculate concentrations and report them in  
3 terms of milligrams per cubic meter. It's something  
4 that's done standard for air sampling type things.  
5 Q Do you recall the threshold limits at that time being  
6 suggested to be 1 or 2 micrograms per cubic meter?  
7 A That seems to be the number I would choose, but I  
8 would look it up before I got real excited about  
9 whether it was right or not.  
10 Q And assuming that was right, at least what you were  
11 finding here would have been in excess of that; is  
12 that right?  
13 A That's correct.  
14 Q Do you recall having any discussions with Mr. Jezerc  
15 regarding your findings?  
16 A No specific discussions do I recall.  
17 Q Was the information that you were passing on to  
18 Appleton Coated Paper Company by way of this air  
19 sample analysis consistent with Monsanto's practice

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20 of sharing results of its PCB investigations with its  
21 customers?

22 A Yes, absolutely.

23 MR. BIRKE: Object to form.

24 BY MS. CONLIN:

25 Q I want you to assume, Dr. Tucker, that plaintiffs are  
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1 alleging in this case that Monsanto told NCR in 1970  
2 that Aroclor 1242 appeared to present no potential  
3 environmental contamination problem.

4 would that be consistent or  
5 inconsistent with your view of the facts?

6 MR. BIRKE: Objection, foundation.

7 THE WITNESS: My view of the facts today  
8 would be inconsistent with it.

9 BY MS. CONLIN:

10 Q I want you to assume that NCR has taken the position  
11 in this case that Monsanto took steps to strictly  
12 control higher chlorinated Aroclors such as 1254 and  
13 1260 only. Would that be consistent or inconsistent  
14 with your view of the facts?

15 A Inconsistent.

16 Q I want you to assume that NCR has taken the position  
17 in this case that in April of 1970 Monsanto's focus  
18 was strictly on higher chlorinated products only.  
19 Would this be consistent or inconsistent with your  
20 view of the facts?

21 A Inconsistent.

22 MR. HA: Object to form.  
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23 BY MS. CONLIN:

24 Q I want you to assume that NCR has taken the position  
25 in this case that it had no information prior to 1970

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1 to suggest that its manufacture of NCR paper could  
2 pose an environmental contamination risk.

3 would that be consistent or  
4 inconsistent with your view of the facts as you know  
5 them?

6 MR. HA: Object to the form.

7 MR. MILLER: Object to the form. You can  
8 answer.

9 THE WITNESS: My choice would be  
10 inconsistent.

11 BY MS. CONLIN:

12 Q I want you to assume, and if we could turn back for a  
13 moment, Dr. Tucker, to Exhibit 895-F, which is in  
14 front of you, which is -- we looked at this earlier,  
15 which is a report of upcoming meeting with National  
16 Cash Register dated June 1 of 1970. okay?

17 I want you to assume that in this case  
18 NCR has taken the position that at this meeting  
19 Monsanto simply informed them that it was ceasing to  
20 use Aroclor 1242 but never communicated any  
21 information to NCR regarding why it was ceasing sale  
22 of 1242.

23 would that be consistent or  
24 inconsistent with your view of the June 1, 1970  
25 meeting as reflected by the agenda item on 895-F?

1 MR. HA: Object to form.  
2 MR. BIRKE: Object to form.  
3 THE WITNESS: My best recollection would be  
4 that it would be inconsistent.  
5 BY MS. CONLIN:  
6 Q Now, finally, I want you to assume that NCR has taken  
7 the position in this case that Monsanto was carefully  
8 timing its disclosure of information on PCBs in order  
9 to further its own business objectives.  
10 would that be consistent or  
11 inconsistent with your view of the facts?  
12 A Inconsistent.  
13 MR. HA: Object to form.  
14 MS. CONLIN: I have no further questions.  
15 MR. BIRKE: Off the record.  
16 VIDEOGRAPHER: Going off the record at  
17 10:41 a.m.  
18 (Brief recess taken from 10:41 a.m. to  
19 11:02 a.m.)  
20 VIDEOGRAPHER: We're back on the record at  
21 11:02 a.m.  
22 MR. LYONS: Good morning, Dr. Conlin. My  
23 name is -- Dr. Tucker, excuse me.  
24 THE WITNESS: No problem.  
25 MR. LYONS: I'll get one of our names right

1 here. I'm Kevin Lyons. I represent the  
2 Neenah-Menasha Sewerage Commission, as I told you  
3 earlier today.

4 E X A M I N A T I O N

5 BY MR. LYONS:

6 Q Doctor, with regard to all of the work you did  
7 concerning PCBs at Monsanto, did you ever speak to  
8 anyone at the Neenah-Menasha Sewerage Commission  
9 publicly-owned treatment works about PCBs?

10 A No, I don't recall ever doing anything -- no.

11 Q To your knowledge, did anyone from Monsanto ever  
12 speak to anyone at the Neenah-Menasha publicly-owned  
13 treatment works about PCBs?

14 MR. MILLER: Object to the form.

15 THE WITNESS: Not to my knowledge.

16 MR. LYONS: Thank you. No further  
17 questions.

18 MR. BIRKE: Dr. Tucker, my name is Dennis  
19 Birke. I represent Appleton Papers in this lawsuit.

20 E X A M I N A T I O N

21 BY MR. BIRKE:

22 Q Now, you testified this morning that you were first  
23 hired at Monsanto in about 1967; is that correct?

24 A That's correct.

25 Q Approximately what month?

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1 A It would have to be in the second or -- well,  
2 actually, it would probably be in the third or fourth

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4 quarter, because short story long, when I had my  
5 thesis done, in those days we had typists, and the  
6 typist didn't make the deadline, so I didn't defend  
7 my thesis in front of the committee. So I went to  
8 work for Monsanto, and in -- early in 1968 when the  
9 next opportunity came, I went back and defended my  
10 thesis successfully and it was awarded in 1968. But  
11 I went to work for Monsanto in 1967.

12 Q All right. Now, you testified that when you first  
13 started, you were first given a particular  
14 assignment; is that correct?

15 A That's correct.

16 Q And then after that, Dr. Keller, as I recall, asked  
17 you to review the Jensen-Widmark report, is that  
18 correct, with the article?

19 A That's correct.

20 Q And I believe you testified that he, among other  
21 things, asked for your thoughts or what you thought  
22 about that article; is that correct?

23 A Yes. I'm an analytical chemist, organic analytical  
24 chemist, and he wanted an expert review of the  
25 article and he wanted my opinion based on my expert  
review.

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1 Q And what was your review? What did you tell him?

2 A I told him that they were competent people and that  
3 what they were doing was, to my knowledge, based on  
4 what I read in the -- it was a lecture, by the way,  
5 what I read in the lecture, was -- looked okay to me.

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6           However, you know, it would have to be verified  
7           physically and actually.  
8       Q     And what do you mean by verified?  
9       A     well, it's like anything we do in the science area,  
10           no single scientist makes a publication and everybody  
11           just immediately believes him. We like and promote  
12           and ask other people to review what we do and to  
13           duplicate what we do so that we know what we're doing  
14           is correct and consistent and reproducible and real,  
15           and not just something that happened.  
16       Q     Now, it's my recollection that the Jensen-widmark  
17           article was first published in late 1966. Is that  
18           your recollection as well?  
19       A     That's correct.  
20       Q     And you --  
21       A     Let me correct that. I'm not sure that -- it became  
22           available. Whether or not it was officially  
23           published and peer group reviewed and appeared in  
24           Nature or one of those magazines, I'm not sure that's  
25           correct. But --

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1       Q     well, this morning you looked at Exhibit 895-B, and  
2           if you'll pull that out.  
3       A     sure. I'd be happy to. I'll get there. I'm sorry.  
4           Go ahead.  
5                       (Discussion off the record.)  
6                       THE WITNESS: Oh. You have them in order  
7           for me. All right. How kind. No wonder I couldn't  
8           find it, because it was supposed to be further down.

2009-08-19 Tucker, Scott Depo in Appleton  
9 BY MR. BIRKE:  
10 Q If you'll look at 895-B. I think it indicates that  
11 the date of that letter is February 27, 1967,  
12 correct?  
13 A That's correct.  
14 Q So this was just a few months after the article came  
15 out in late 1966?  
16 A I'm just looking for a date on this. This says  
17 November 22nd. There's a writing in the corner that  
18 says November 22nd, 1966.  
19 Q Does that seem about right to you?  
20 A It could. And like I said --  
21 MR. MILLER: Object to the form.  
22 THE WITNESS: -- it's a lecture. And the  
23 difference I'm making is a lecture is not a peer  
24 group reviewed paper that's been published.  
25

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1 BY MR. BIRKE:  
2 Q Now, by the time that you started in -- at Monsanto  
3 in the latter part of 1967, to your knowledge had  
4 Monsanto undertaken any kind of work or research in  
5 response to the Jensen-Widmark results?  
6 MR. MILLER: Object to the form.  
7 THE WITNESS: To my knowledge, no.  
8 BY MR. BIRKE:  
9 Q And was it, in fact, your understanding that  
10 Dr. Keller was asking you to initiate that work?  
11 A It became my understanding after he presented me with

12 2009-08-19 Tucker, Scott Depo in Appleton  
13 that and asked me to review it, and I reviewed it and  
told him what I thought.

14 Q Had Monsanto researchers performed the type of  
15 analysis that Widmark and Jensen reported in their  
16 article?

17 MS. CONLIN: I'm having trouble hearing you  
18 down here. Can you speak up a little bit?

19 THE WITNESS: Sure. Do we need to repeat  
20 the question?

21 MS. CONLIN: Please.

22 BY MR. BIRKE:

23 Q To your knowledge had Monsanto researchers performed  
24 the type of analysis, that is, on wildlife tissue  
25 samples, that Jensen and Widmark reported in their

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1 article?

2 MR. MILLER: Object to the form. It's  
3 vague and ambiguous. You're referring to the  
4 analysis of trace chemicals in wildlife samples, or  
5 are you talking about the use of GCMS in the same  
6 configuration with the interface that Widmark and  
7 Jensen used?

8 MR. BIRKE: I think both of those are part  
9 of their analysis, and so both are encompassed in my  
10 question.

11 THE WITNESS: And the time frame you're  
12 talking about is when Keller talked to me about the  
13 article?

14 BY MR. BIRKE:

2009-08-19 Tucker, Scott Depo in Appleton  
15 Q Yes.  
16 A Or the paper. Whatever it was. I don't think he  
17 would have asked me to duplicate or to try to do the  
18 analysis that Soren Jensen and Gunther Widmark had  
19 done if they'd already done it. I mean it was a new  
20 kind of thing to the company. We had gas  
21 chromatographs, we had electron capture detectors.  
22 There's probably a time-of-flight or an old kind of  
23 mass spectrometer sitting around, but certainly  
24 nothing that was up to par for that kind of stuff.  
25 So they were asking me to do something --

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1 COURT REPORTER: I can't hear you.

2 THE WITNESS: Yeah, and I'm very -- I  
3 apologize again. I get going with my thoughts.

4 It was something that was new, and  
5 they were asking me to establish it at the applied  
6 sciences and to start it. So I would guess they  
7 probably hadn't done that specific kind of thing  
8 before.

9 BY MR. BIRKE:

10 Q Would you characterize the results that Widmark and  
11 Jensen reported as a discovery?

12 A Yes, I would.

13 Q Now, I believe you testified that one of the first  
14 things you did upon getting the assignment from  
15 Dr. Keller was to acquire various equipment; is that  
16 correct?

17 A After I read the article, after I gave my opinion on

18 2009-08-19 Tucker, Scott Depo in Appleton  
the article, after it was decided that we needed to  
19 establish that and allocate funds and do that kind of  
20 stuff, yes, that's what we did.

21 Q And what type of equipment did you acquire at that  
22 point?

23 A Well, the first thing I did was look around and see  
24 what we had available to us in the United States that  
25 was equivalent to the equipment that they were using

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8

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1 in Europe. In Europe, I think in about 1965, LKB had  
2 come out with the first mass spectrometer that was  
3 directly connected to a gas chromatograph, and they  
4 were also using gas chromatographs that were  
5 connected to electron capture detectors.

6 And so I determined what the  
7 scientists in those areas were using, what kind of  
8 equipment, because there's a lot of different kinds  
9 of gas chromatographs.

10 And it became evident that at that  
11 particular point in time what I should be interested  
12 in is the gas chromatographs that were used for  
13 biomedical applications, because of the type of  
14 sample matrices that we'd be dealing with and the  
15 sensitivity of some of the constituents that come  
16 along with the things that you're looking for.

17 So the first instrument that I bought  
18 was a Hewlett Packard -- oh, no. It was an F&M 702  
19 which later became Hewlett Packard. And it was a  
20 biomedical gas chromatograph. It had glass columns,

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which were inert and didn't cause decompensation and  
that kind of stuff, and it was the kind that they  
were using. In addition to that, I bought it  
equipped with electron capture detectors, which was  
also the kind of detectors that were being used for

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-- predominately for pesticide analysis in the  
environment.

Q Is it correct to say, then, that Monsanto did not  
have the equipment inhouse to do the kind of analysis  
that Jensen and Widmark had performed?

A It is correct.

Q When you -- well, what was the process by which you  
acquired the various equipment that you just  
described?

A Well, I looked to the manufacturers and reviewed all  
the stuff -- all the things, all the instrumentation  
that was available. And then when I decided what I  
thought was a good thing, I reviewed it with other  
people that were knowledgeable in the area. We did  
have a gas chromatography group that did more  
process-related and product-related kinds of gas  
chromatography, and we all looked at it and then we  
agreed that this would be the kind of thing that we'd  
probably want to start out with, and at that point in  
time we got authorization to purchase it, it was  
purchased, and it was shipped to us.

Q Upon acquiring the equipment, were you able to begin  
analyzing wildlife tissue and water and air samples

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immediately?

25 A It would have been nice, but that's more like magic

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1 than not. It didn't work that way. What we had to  
2 do was familiarize ourselves with the equipment. We  
3 had to make sure that the equipment functioned the  
4 way the manufacturer said it did, and that the way it  
5 functioned was the kind of function that we needed to  
6 do the type of analysis that we wanted to do and had  
7 to do to verify it.

8 So we got the equipment in, we set --  
9 I set it up. I was the one guy that was doing it at  
10 that point in time. I set it up, made sure it was  
11 functional, made sure I understood how it functioned.

12 And then at that particular point in  
13 time when I was satisfied with the way it worked on  
14 the company stand -- the company who made it  
15 standards and things of that sort, then I was  
16 prepared to look at laboratory samples that were  
17 prepared and that I knew had what they had in it; in  
18 other words, simple PCBs in a hexane solution, and  
19 then run them through the instrument and make sure I  
20 got what I got and that kind of thing. So, it wasn't  
21 anything that you just said, oh, you know, snap your  
22 fingers or anything.

23 Q In the course of your answer you made reference to  
24 laboratory standards. What were you talking about?

25 A Yeah. Well, any instrument that you use has to be

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1 calibrated, for two reasons. One, to establish the  
2 identity to the best of its ability of the molecular  
3 constituent you're dealing with, the molecule; and  
4 secondly, to establish a response factor for the  
5 detection system so you can accurately calculate how  
6 much of the material is in the solution you deliver,  
7 and then in turn how much of the material is in  
8 whatever you got the material out.

9 So if you want to know the parts per  
10 million of something in tissue sample, you have to  
11 calibrate the instrument so it tells you the parts  
12 per million you put in and you can extrapolate that  
13 back to the tissue sampling.

14 Q would it be correct that because this equipment was  
15 new at Monsanto that it was necessary for you to  
16 develop the laboratory and analytical techniques to  
17 do the kind of work that you were planning to do?

18 A That's correct. On the other hand, I was -- it was  
19 helpful to understand that people had been analyzing  
20 the kinds of samples we were dealing with for  
21 pesticides, DDT, which is, of course, a chlorinated  
22 hydrocarbon, has very similar properties to PCBs from  
23 a physical viewpoint.

24 so they had already established  
25 techniques for isolating these things. And what we

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1 really had to do was establish those techniques in  
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2 our laboratory, and then, making sure we knew how to  
3 do it and that it was working with knowns, in other  
4 words, maybe even with DDT, we'd use that as a flag.  
5 Then to make sure that it would work with the PCBs,  
6 and we would extend it to the PCBs. Because not --  
7 as you asked me earlier, was Soren Jensen's and  
8 Gunther Widmark's thing a discovery. It was  
9 discovery. Other people weren't doing that.

10 And so then we established that it  
11 worked that way and then we felt we were ready to  
12 move on to the next level.

13 Q From the time that you were first given the  
14 assignment by Dr. Keller, how much time did it take  
15 until you completed the process of acquiring the  
16 equipment, becoming familiar with it, learning how to  
17 use it, and developing the standards that you  
18 referred to?

19 A The window that I would think was probably in --  
20 probably the last quarter in 1968, in that region.  
21 That doesn't mean that nothing was being done between  
22 then. As a matter of fact, I think the gas  
23 chromatograph wasn't delivered until somewhere in the  
24 third or fourth quarter of 1968.

25 (Discussion off the record.)

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1 (Deposition Exhibit No. 895-R marked for  
2 identification.)

3 BY MR. BIRKE:

4 Q Doctor, I've given -- Dr. Tucker, I've given you  
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5 what's been marked as Exhibit 895-R. Ask you to take  
6 a quick look at this. Do you recognize this  
7 document?

8 A Yes, I do.

9 Q Does your name appear on this document?

10 A Yes, it is. I'm on the cc section.

11 Q And do you recall receiving this document in about  
12 September of 1968?

13 A I don't doubt it. I don't have an instant memory of  
14 it, but there's no question that I received it around  
15 September 11th, 1968.

16 Q And what is this document?

17 A It's an Industrial Bio Test, proposed protocols, for  
18 studying toxicity of Aroclors relative to things like  
19 toxaphene and controls. So it's a proposal for the  
20 animal testing studies that they were going to  
21 perform.

22 Q And these were animal tests -- testing studies that  
23 were being done in response to the Jensen-widmark  
24 results?

25 MR. MILLER: Object to the form.

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1 THE WITNESS: The animal studies -- the  
2 toxicity studies that had been done on the Aroclors  
3 up to that point in time were the kind that were done  
4 for products and had been -- were adequate. With the  
5 findings that were being indicated by what Soren  
6 Jensen and widmark were doing, I believe they decided  
7 to expand the type of -- and create more current

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8 information relative to the toxicology in terms of  
9 animal exposure, because now the compounds were being  
10 moved in the same class as DDT and things of that  
11 sort. So, it was a natural extension to obtain more  
12 information to learn more about the products that you  
13 were manufacturing.

14 BY MR. BIRKE:

15 Q Now, you mentioned that there had been some prior  
16 testing on Monsanto products, on Aroclor in  
17 particular; is that correct?

18 A I -- I don't know of it specifically, but I certainly  
19 do know there had been some testing done previously,  
20 because it was the standard practice to do certain  
21 levels of acute testing and that kind of thing on  
22 products from -- just for employee safety.

23 Q And so it would have been Monsanto's practice to  
24 perform inhalation and dermatological type exposure  
25 tests on a product like Aroclor before it was sold to

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1 customers?

2 MR. MILLER: Let me object to the form.  
3 Dr. Tucker is here in his own individual capacity and  
4 not here on behalf of Monsanto, but to the extent you  
5 know, Dr. Tucker --

6 MR. BIRKE: That's correct, Your Honor --  
7 that's correct, Dr. Tucker.

8 THE WITNESS: And I'm not a toxicologist,  
9 but we did have Emmet Kelly, who was the director of  
10 the medical department, we did have Elmer Wheeler and

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11 we did have Jack Garrett and those kinds of people  
12 who were responsible for what we would call, I guess,  
13 industrial hygiene data that would be generated,  
14 which was the level at which most things were done at  
15 that time from a toxicity viewpoint.

16 BY MR. BIRKE:

17 Q And, by the way, Exhibit 895-R consists of pages  
18 numbered GPFOX00045556 through 579.

19 Now, turning to the second page of the  
20 document, Doctor, and continuing thereafter, this  
21 outlines a whole series of testing that was proposed;  
22 is that correct?

23 A Yes, it does.

24 Q And is it your recollection that, in fact, this  
25 testing was authorized and undertaken?

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1 A Yes, it was. Yes, it is, I should say. I'm sorry.  
2 (Deposition Exhibit No. 895-S marked for  
3 identification.)

4 BY MR. BIRKE:

5 Q Dr. Tucker, I've given you what has been marked as  
6 Exhibit 895-S. Would you please review that?

7 A (Witness complies.) It's a short document, so I'm  
8 going to take the time to read it, if you don't mind.

9 Q Please do.

10 VIDEOGRAPHER: Be a good time to change the  
11 tape? Would this be a good time to change the tape?

12 MR. BIRKE: Fine.

13 VIDEOGRAPHER: We're going off the record  
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14 at 11:21 a.m.

15 THE WITNESS: (Witness reads.) Okay.

16 VIDEOGRAPHER: We're back on the record on  
17 tape three at 11:23 a.m.

18 BY MR. BIRKE:

19 Q Dr. Tucker, I've given you what's been marked as  
20 Exhibit 895-S. It's a two-page memo numbered  
21 MONSFOX00097275 and 74. Do you recognize this  
22 document?

23 A Yes, I do.

24 Q Do you recall receiving this document on or about  
25 December 30, 1968?

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1 A I don't recall specifically receiving it, but I have  
2 no doubt that I did based on my examination of the  
3 document.

4 Q Who is W.A. Kuhn?

5 A You know, the one thing that -- question that came to  
6 my mind when I looked at this memo is I know  
7 everybody there almost except who he is. The  
8 conclusion I would draw from my cursory review of the  
9 thing is that he had something to do with our  
10 Krummrich plant, but I don't know.

11 Q All right. Now, if you'll look to the fourth  
12 paragraph, it says, "We are taking three steps to  
13 protect ourselves. Scott Tucker and R. Keller are to  
14 repeat some of the analytical identification work  
15 feeding Aroclor to chickens and seeing if Aroclor is  
16 really present as, quote/unquote, shown by the

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17 literature. I hope we have been falsely accused but  
18 maybe Aroclor is present."

19 Is that the type of work that you were  
20 undertaking at Dr. Keller's direction?

21 A Right. That was the confirmation work that I was  
22 talking about relative to the findings of Widmark and  
23 Jensen.

24 Q Now, Jensen and Widmark identified what they thought  
25 were PCBs. Those were not identified as Aroclor; is

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1 that correct?

2 A Yes.

3 Q And was that a matter of some concern to Monsanto?

4 MR. MILLER: Object to the form.

5 THE WITNESS: You mean did Monsanto want  
6 them identified as Aroclors? I don't understand the  
7 question, please.

8 BY MR. BIRKE:

9 Q Yeah. Let me restate that.

10 Were you attempting to establish that  
11 Aroclor could be detected in things such as chicken  
12 tissue and other wildlife tissue?

13 A I think it's more of a two- or three-part situation  
14 here. PCBs were constituents in Aroclor, and so we  
15 were wondering whether there really were PCBs being  
16 found in the environment. As to whether or not they  
17 were Aroclor, they could or could not be, because  
18 PCBs were in Aroclor, but that conclusion hadn't been  
19 established.

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20 And, furthermore, there were any  
21 number of manufacturers in Europe and internationally  
22 who manufactured PCB-containing products, so -- but,  
23 nevertheless, Monsanto was a safe rather than sorry  
24 type company.

25 Q Would it be safe to say, then, as of December 30,

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1 1968, Monsanto was still hoping that it had been,  
2 quote, falsely accused, closed quote, by allegations  
3 in literature?

4 MR. MILLER: Object to the form.

5 THE WITNESS: I think everybody has hopes,  
6 but the reality was that they wanted to determine  
7 beyond a shadow of a doubt by doing the next proper  
8 thing, if it was really true, because nobody wanted  
9 to waste time doing things that we didn't need to do.  
10 So we were proceeding in what I considered a logical  
11 and acceptable manner.

12 So hopes are, you know -- I hope on  
13 what my experiments are going to do, but that doesn't  
14 change the results, believe me.

15 (Deposition Exhibit No. 895-T marked for  
16 identification.)

17 BY MR. BIRKE:

18 Q Dr. Tucker, I've given you what has been marked as  
19 895-T. It's a two-page memo numbered MONSFOX00097236  
20 and 237. Your name is shown here as a cc.

21 Do you recall receiving this memo on  
22 or about January 23, 1969?

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23 A I don't specifically recall receiving the memo, but  
24 after looking at it, I don't have any reason to doubt  
25 that I didn't receive it.

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1 Q The memo is from P.B. Hodges. Do you recognize that  
2 name?

3 A I know Paul Hodges. He was at our general offices.  
4 So, yes, I recognize him.

5 Q And the memo is directed to an E.G. Wright and a C.F.  
6 Buckley. Do you recognize those names?

7 A Yes, I do.

8 Q And who were they, or who are they?

9 A My recollection is that Paul Hodges had something to  
10 do with pollution control at the -- of the processes  
11 and of the plant -- of the two plants. And that  
12 Wright and Buckley were the process control guys that  
13 were responsible for, you know, worrying about that  
14 kind of thing then.

15 Q And the two plants that are referenced here, Anniston  
16 and Krummrich, were both of those plants that  
17 manufactured Aroclor products?

18 A Correct. Both of those plants had Aroclor or  
19 PCB-manufacturing facilities on their plant site.

20 Q And, as I understand the memo, the gist of the  
21 concern here is about the possible presence of  
22 Aroclor in the effluent coming from those two plants.  
23 Would that be correct?

24 A I would phrase it more that the question to be  
25 answered was whether or not they were there, and

1 that's why they were asking to have the analysis  
2 done.

3 Q Now, the second paragraph in -- under the heading of  
4 No. 1 reads, "We do not presently have techniques for  
5 analyzing water for Aroclor in low concentrations.  
6 It is expected that these techniques will be  
7 developed by late this coming fall." That would be  
8 the fall of 1969.

9 Is that statement correct based on  
10 your knowledge?

11 A It's probably correct for the plant but not  
12 necessarily for the research center.

13 Q All right.

14 A Okay. And I don't -- I can't tell from the way the  
15 guy's writing it which he's referring to.

16 Q That paragraph goes on to say, "Therefore, please  
17 collect freeze and hold indefinitely three 2-3 liter  
18 samples of your outfall as it is discharged to  
19 natural surface waters." I'm omitting a few words,  
20 and then it says, "Scott Tucker, who is developing  
21 the analytical procedures, suggests use of  
22 polyethylene bottles."

23 Does the fact that your name is  
24 referenced there suggest to you that you were going  
25 to be analyzing these samples?

- 1 A It suggests to me they were probably going to send me  
2 the samples, because I had the capability and they  
3 didn't. However, it also suggests that if they took  
4 the samples of poly -- it says polyethylene, does it?  
5 Q Polyethylene.  
6 A Yeah, I would never have recommended that, but that's  
7 okay.  
8 Q Okay.  
9 A From an analytical viewpoint. There's obvious  
10 reasons for that, which I can explain, but it's  
11 probably not necessary. He was probably worried  
12 about breaking the samples in transit.  
13 (Deposition Exhibit No. 895-U marked for  
14 identification.)  
15 BY MR. BIRKE:  
16 Q Dr. Tucker, I've handed you a document marked 895-U.  
17 It's a three-page memo numbered MONSFOX00097200  
18 through 202. Your name is listed as a cc on the  
19 memo.  
20 A Is that a question?  
21 Q No, it's not.  
22 A Okay. I'm sorry, because I just -- I wasn't sure  
23 whether --  
24 Q I'd invite you to take a minute to review it, please.  
25 A Okay. I'd be happy to do so. (Witness complies.)

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- 1 MS. CONLIN: Can you confirm, counsel,  
2 whether this is 895-U?

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3 MR. BIRKE: 895-U, correct.

4 MS. CONLIN: Thank you.

5 THE WITNESS: Okay. I've looked at it.

6 BY MR. BIRKE:

7 Q The memo discusses an article published by a  
8 Risebrough. Are you familiar with that article?

9 A At one time I'm sure I was.

10 Q And my understanding, based on what I read here, is  
11 that it was reporting on the results of some PCB  
12 analysis in environmental and wildlife?

13 A My understanding of the work Risebrough initially did  
14 was that it was interpretation of analysis that he  
15 had done of environmental samples for things like DDT  
16 and other chlorinated hydrocarbons. And when he  
17 became aware of the Jensen-Widmark work, he reviewed  
18 the information that was already generated and  
19 concluded that there was a high probability that he  
20 was seeing the same unidentified peaks that Soren  
21 Jensen and Gunther Widmark had at that point in time  
22 first identified as being attributed to PCBs.

23 Q Near the bottom of the page it reads, "Monsanto is  
24 preparing to challenge certain aspects of this  
25 problem but we are not prepared to defend against all

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1 of the accusations."

2 A Is that the bottom of the first page? It says  
3 Monsanto is preparing itself to identify trace PCB  
4 quantities?

5 Q The paragraph above it.

6 A 2009-08-19 Tucker, Scott Depo in Appleton  
Above it. Okay, I'm sorry. Yes, I see it.

7 Q would you agree that Monsanto was viewing the types  
8 of results being published by Dr. Risebrough as  
9 accusations at that point?

10 MR. MILLER: Object to the form. You can  
11 ask Dr. Tucker what he knows or recalls, but not  
12 obviously what Monsanto was thinking or doing. He's  
13 here on his own individual behalf.

14 THE WITNESS: Right. I mean obviously the  
15 point's well made. I don't speak for Monsanto, but I  
16 can speak for my recollection.

17 And my feeling was, is that there was  
18 a question as to whether or not the information he  
19 was using to make his allegations was supportive  
20 enough for the extent of the allegations he was  
21 making.

22 BY MR. BIRKE:

23 Q And so further study was necessary for --

24 A Further scientific evaluation was necessary to verify  
25 the scope and the depth and the reality of the big

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1 picture that was suddenly presented that wasn't  
2 necessarily supported by the information that was  
3 there.

4 (Deposition Exhibit No. 895-V marked for  
5 identification.)

6 BY MR. BIRKE:

7 Q Dr. Tucker, I've handed you an exhibit marked 895-v.  
8 It's a two-page memo marked -- numbered GPFOX00037129

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through 130. You're shown as a cc on the memo.

Do you have any doubt that you  
received this document at or about March 13, 1969?

A I don't remember receiving it specifically,  
obviously, but I don't have any doubts based on a  
 cursory review. If it was a memo sent to me, I  
received it.

Q This is a memo from Dr. Keller. He was your boss at  
that time; is that correct?

A That's correct.

Q And who was Elmer Wheeler?

A Elmer Wheeler worked for Emmet Kelly who was the head  
of the medical department. I believe Elmer's  
expertise was in the area of environmental toxicology  
and things of that sort, industrial hygiene, that  
kind of thing.

Q Now this memo reports on a call that apparently

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Dr. Keller had with a Robert Wright -- Rock of the  
Federal Water Pollution Control Administration; is  
that correct?

A That's what it says.

Q The second paragraph reads, "I explained that we have  
no methods in writing for the specific detection and  
measurement of Aroclor in the PPB range in water."

was that a correct statement to your  
knowledge as of March of 1969?

A That's a correct statement that Keller's making.  
From his opinion we didn't have validated methods

12 2009-08-19 Tucker, Scott Depo in Appleton  
13 that we were ready to share, but we would share what  
14 we were doing and how we were going about that.

15 Q In the next paragraph, the third sentence reads, "I  
16 explained that we felt that no one in the U.S. has  
17 actually identified chlorinated biphenyls by mass  
18 spectroscopy or a similar technique."

19 Based on your knowledge, do you think  
20 that is a correct statement at the time?

21 A Yes, I do.

22 (Deposition Exhibit No. 895-W marked for  
23 identification.)

24 BY MR. BIRKE:

25 Q Dr. Tucker, I've handed you a document marked 895-W.  
It's a two-page letter numbered MONSFOX00089276 and

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1 277. It's a letter to a Dr. Joseph Calandra from  
2 Elmer Wheeler. You're shown as a cc.

3 Do you believe you received this  
4 document on or about April 15, 1969?

5 A Yes, I do. And it notes that Elmer Wheeler was the  
6 environmental health manager, so that's a better  
7 explanation than I gave, certainly.

8 Q Good. Now, earlier we had looked at some testing  
9 proposed by Bio Test. Do you recall that exhibit?

10 A Yes, I do.

11 Q Is this authorization to proceed with some of the  
12 testing that had been described in that earlier  
13 proposal?

14 A I would conclude that it is, yes.

15 Q 2009-08-19 Tucker, Scott Depo in Appleton  
16 And this letter is authorizing the studies identified  
17 in paragraphs 5 through 9 on the attachment. Do you  
see that?

18 A 5 through 9. No, I don't see that. Please help me a  
19 little bit here. Oh, study numbers. I thought you  
20 were saying paragraph numbers. Okay. He wanted to  
21 start, obviously, from what he's saying here, the  
22 three generation rat studies --

23 COURT REPORTER: I'm sorry. The three  
24 generation rat studies?

25 THE WITNESS: I'm sorry again.

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1 BY MR. BIRKE:

2 Q So this letter is authorizing the initiation of  
3 various animal studies. There's a three-generation  
4 rat study, a two-year chronic rat study, a two-year  
5 chronic dogs, chicken reproduction, and then similar  
6 testing for Mallard ducks; is that correct?

7 A Correct. It's authorizing the priority of the start  
8 and the quantity.

9 Q And so all of this testing was being initiated at  
10 that point in time; is that correct?

11 A That would be the conclusion I would draw from this  
12 memo, yes.

13 Q To your knowledge, this type of testing had not been  
14 authorized by Monsanto with respect to Aroclors  
15 previously; is that correct?

16 MR. MILLER: Object to the form.

17 THE WITNESS: No, that's not necessarily

18 2009-08-19 Tucker, Scott Depo in Appleton  
19 correct. This may have been a repeat of some  
20 information they generated earlier from acute  
21 toxicity viewpoint and that kind of thing that they  
22 wanted to refresh now. And the objective of this  
23 study, as I recall it, was to add -- increase the  
24 number of animals so there would be animals available  
25 for sacrifice for tissue residue studies. So, I  
don't know.

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1 (Deposition Exhibit No. 895-X marked for  
2 identification.)

3 BY MR. BIRKE:

4 Q Dr. Tucker, you've been handed a two-page memo  
5 labeled 895-U (sic). It's numbered GPFOX00039483 and  
6 four -- through 485. I'm sorry. It's a three-page  
7 memo. You're shown as a recipient of this memo dated  
8 May 13, 1969. Do you have any doubt that you  
9 received it?

10 A No.

11 MR. LYONS: Excuse me. Mr. Birke, I think  
12 you said 895-U. I already have an 895-U.

13 MR. BIRKE: I'm sorry.

14 THE WITNESS: This is X.

15 MR. BIRKE: Excuse me.

16 THE WITNESS: Can you speak up just a  
17 little bit louder for me, please.

18 MR. BIRKE: Sure.

19 Q So we've corrected that I've handed you what's been  
20 marked as 895-X.

2009-08-19 Tucker, Scott Depo in Appleton  
21 A It's X, correct.  
22 Q And I believe -- do you have any recollection  
23 receiving this document?  
24 A I think I answered earlier that I have no doubt that  
25 I received it, but I don't have specific recollection

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1 of it. This is a long time ago.  
2 Q Now, this memo reports on a conversation that  
3 apparently Mr. Richards had with Professor Widmark.  
4 Is that what you understand this to be?  
5 A I don't understand it to be a conversation based on  
6 the review of the memo, unless it says it in there  
7 somewhere where I didn't catch it in my review. But  
8 apparently Bill -- it wouldn't surprise me, because I  
9 think Bill visited Europe and talked with these  
10 folks. It's just really talking about what Widmark  
11 was finding, and I think he could have reviewed the  
12 lecture, too.  
13 Q At the top of page 2 he says, "He reported that he  
14 had not isolated or found much chlorinated biphenyl  
15 with 1 through 4," and I guess that's "chlorine  
16 atoms"?  
17 A That's correct.  
18 Q This would be -- "This might be because Aroclor 1242  
19 and below is more biodegradable, (or it could be due  
20 to the analytical isolation and separation methods,  
21 or perhaps Aroclor 1242 is less exposed in the  
22 world)." Is that correct?  
23 A It's conjecture. And you read it correctly. But are

24 2009-08-19 Tucker, Scott Depo in Appleton  
you asking me if the conjecture is correct?

25 Q No, I'm not asking you that.

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1 A Okay. I just want to make sure, because if I said  
2 yes, I could be agreeing with these particular  
3 conclusions. And I don't necessarily. And, in fact,  
4 some of them probably at this point in time we didn't  
5 have enough information to say whether it was true or  
6 not.

7 Q And what didn't you have enough information about at  
8 that time?

9 A Well, we didn't -- I mean this is in 1969. And he's  
10 saying that it could be due to analytical isolation  
11 and/or separation techniques. Whose analytical or  
12 isolation separation techniques? What laboratory is  
13 he talking about? If he's talking about the  
14 laboratory in Sweden with Gunther Widmark and those  
15 folks at the institute there, I think we'd gotten to  
16 the point where we validated what they were doing was  
17 fine, so I doubt their analytical procedures were  
18 getting rid of things that they weren't seeing, as he  
19 indicated here. But I mean, it could be another  
20 laboratory that wasn't performing it correctly.

21 His assumption that this might be  
22 because Aroclor 1242 and below is more biodegradable  
23 was probably correct, but it wasn't the full picture.  
24 There were portions of it which were biodegradable  
25 and portions of it which had a longer lifetime that

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1           made it difficult to call it biodegradable. And as  
2           far as the 1242 being less of it, less exposed,  
3           that's real conjecture. I mean how would you know  
4           that one way or the other?

5       Q     At the time this memo was prepared in May of 1969,  
6           was it understood that -- well, were the  
7           biodegradable properties of Aroclor 1242 understood?

8       A     They were much better understood than they were back  
9           in '66, '67 and that kind of thing. Whether or not  
10          we had a complete understanding then on it, I don't  
11          know, and I'd have to review the specific documents.

12                       But at some point in time, in that  
13          region, I certainly had the knowledge that the  
14          calcitrant portion of Aroclor 1242 was the  
15          pentachloro- and above, which was about 10 percent of  
16          the product, and that 90 percent of the product  
17          wasn't appearing and it was probably due to  
18          biodegradation, which I'd have to look at the  
19          specific time I generated the results and confirm  
20          that in the laboratory, but we eventually confirmed  
21          that.

22                       MR. MILLER: Dennis, can we take a  
23          five-minute break? We're going to probably be coming  
24          up to lunch pretty soon, and I just want to make sure  
25          I have those arrangements. Why don't we go off for a

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1           second.

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2 VIDEOGRAPHER: We're going off the record  
3 at 11:52 a.m.

4 (Brief recess taken from 11:52 a.m. to  
5 11:59 a.m.)

6 VIDEOGRAPHER: We're back on the record at  
7 11:59 a.m.

8 BY MR. BIRKE:

9 Q Dr. Tucker, before the break you were making  
10 reference to testing regarding the biodegradation  
11 properties of Aroclor. Do you remember that  
12 testimony?

13 A I remember that we were doing that.

14 Q And you were referencing, I believe, the timing or  
15 when that kind of testing occurred. Do you recall?

16 A I believe you were trying to establish a time line in  
17 the questions you were asking me. Yes, I recall  
18 that.

19 Q And I'd like you to pull out an exhibit we used  
20 earlier this morning, 895-J.

21 A Is that on top or -- these are unsorted, I would  
22 guess.

23 MR. BIRKE: No, they're in order.

24 THE WITNESS: Okay. So then I need to go  
25 to the bottom. I, K. I, J, K. I've got I, K.

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1 Here's 895-I. Here's 895-K, and then M, N. Okay.  
2 May be over in this pile.

3 (Discussion off the record.)

4 MR. BIRKE: Here it is.  
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5 THE WITNESS: Okay. Good. Okay.

6 BY MR. BIRKE:

7 Q If you'll turn to page 2, the third paragraph from  
8 the bottom of the page, it reads, "River water  
9 biodegradation experiments with Aroclors 1221, 1242,  
10 1248 and 1254" --

11 A No, I got it.

12 Q -- "will be started 11/25/69. These experiments are  
13 a cooperative effort with Dr. R.A. Swisher of the  
14 inorganic division."

15 Does that statement help to refresh  
16 your recollection about the initiation of  
17 biodegradation testing?

18 A Absolutely. It tells me exactly when we began the  
19 initiation, which was in November. And of course the  
20 memo you showed me earlier was in May. So I think I  
21 used the word conjecture when I was talking about  
22 Bill and the memo, and so he was at the conjecture  
23 level. However, I don't think I would have initiated  
24 biodegradation studies if I didn't have an opinion  
25 that I wanted to confirm.

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1 Q And -- but is it correct to say that there was no  
2 laboratory analysis supporting one hypothesis or the  
3 other at that point in time, at least within  
4 Monsanto, to your knowledge?

5 A Okay. With the addition of the last two things, yes,  
6 in the sense that we had not generated that  
7 information in our laboratories at Monsanto. We were

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- 8 beginning to generate it because we wanted to and we  
9 felt it might be the case. Are we getting there?  
10 I'm sorry to do that --  
11 Q I think so.  
12 A -- but you're confusing me, so I --  
13 Q Well, was the -- was it your desire to undertake this  
14 testing due in part to uncertainty as to what the  
15 biodegradation properties of the various formulations  
16 of Aroclor were?  
17 A I don't think anybody had verified at that point in  
18 time what the actual biodegradation properties of  
19 Aroclors were. And so obviously the answer to that  
20 question in my opinion would be yes, that we wanted  
21 to do that.  
22 Q Okay. If you'll pull out Exhibit 895-D.  
23 A 895-B?  
24 Q D.  
25 A D, okay. Thank you.

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- 1 Q This is an exhibit we looked at this morning  
2 reporting on your open combustion testing of NCR  
3 paper; is that correct?  
4 A Yes.  
5 VIDEOGRAPHER: Just pushes on. It snaps  
6 on.  
7 BY MR. BIRKE:  
8 Q Sir, was this test performed at your own initiation?  
9 A At my suggestion or initiation. If I hadn't  
10 initiated it, it wouldn't have been done. And did I  
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11 do it myself, yes.

12 Q To your knowledge or to your recollection did NCR  
13 request this test?

14 A I have no knowledge of that.

15 Q As you sit here today, do you have knowledge that  
16 these results were shared with NCR?

17 A I do not -- I can't remember whether they were  
18 specifically shared with NCR. I know it wasn't my  
19 job to do it, and I'm pretty sure I did not report to  
20 them directly or there would be a memo documenting  
21 that.

22 MR. BIRKE: Thank you. Let's mark this.

23 (Deposition Exhibit No. 895-Y marked for  
24 identification.)

25 (Discussion off the record.)

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1 BY MR. BIRKE:

2 Q Now, Dr. Tucker, throughout 1969 and 1970, there was  
3 ongoing testing of various sorts regarding Aroclors;  
4 is that correct?

5 A During 1969 and 1970 and you're specifically  
6 referring to Monsanto?

7 Q That's correct.

8 A That's correct, yes.

9 Q And Aroclor products were used by a number of  
10 customers, not just NCR; is that correct?

11 A Yes, that's correct.

12 Q And it was the practice of NCR to -- I'm sorry. It  
13 was the practice of Monsanto to communicate

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14 information to customers regarding what was known  
15 about Aroclor products?

16 A I don't speak for Monsanto, but it was my experience  
17 that that was the case.

18 Q And during this time period, did you have occasion to  
19 see letters that went from Monsanto to various  
20 customers regarding the types of Monsanto products  
21 that they were using?

22 A I may have, but it wasn't a practice.

23 Q All right. We've put in front of you what's been  
24 marked as 895-Y. Do you have that in front of you?

25 A Yes, I do.

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1 Q Would you take a minute and look through the first  
2 two pages of that, at least.

3 A First two pages?

4 Q Yes.

5 A Okay. (Witness complies.) I've read the first two  
6 pages.

7 Q Now, this morning you talked about Monsanto's  
8 practice of, as you understood it, of providing  
9 information to its customers. Is 895-Y an example of  
10 the kinds of information that was being provided to  
11 Monsanto customers?

12 MR. MILLER: Object to the form.

13 THE WITNESS: It could be an example of it,  
14 but it's not very clear whether this was provided to  
15 a customer or who it was provided to. It just says  
16 "Dear Sir." So if you're asking me to say was this  
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17 an example of something that was provided directly to  
18 customers, I'm not in a position to answer that  
19 question, because I would have to say I don't know.

20 BY MR. BIRKE:

21 Q well, let's refer to the third paragraph where it  
22 says, "As your supplier of Aroclor 1254 and 1260 and  
23 formulated products containing 1254, we wish to alert  
24 you to the potential problems of environmental  
25 contamination as referred to in the newspaper and

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1 magazine articles." Do you see that?

2 A Yes, I do.

3 Q Does that suggest to you that this is going to  
4 persons -- or companies whom Monsanto supplies with  
5 those products?

6 MS. CONLIN: Objection, foundation.

7 THE WITNESS: I see one memo to nobody from  
8 somebody I don't recognize, and I'm here to tell you  
9 that I don't know if it went to anybody or everybody.  
10 And so I'm not in a position to comment on that, so I  
11 just have to say I don't know.

12 MR. BIRKE: Okay. Okay.

13 Q At the bottom of the page there's -- of the first  
14 page, there's a line beginning, "We would like to  
15 point out the following additional facts," and if you  
16 jump down to paragraph two, that says, "PCBs with a  
17 chlorine content of less than 54 percent have not  
18 been found in the environment and appear to present  
19 no potential problems to the environment."

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20 Based upon what you know -- knew as of  
21 February 9, 1970, do you believe that's a correct  
22 statement?

23 MR. MILLER: Object to the form.

24 THE WITNESS: I don't know whether to say  
25 it's correct or not, and let me establish why.

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1 what has been said about environmental  
2 samples that were analyzed is that the PCBs that were  
3 being found in environmental samples were  
4 predominantly reflective of Aroclor 1254 and Aroclor  
5 1260.

6 we've already established, I think  
7 earlier, by reviewing documents that if they were  
8 fresh enough and we were close enough and you wanted  
9 to consider an effluent sample as environmental, you  
10 know, then the answer to your question would be  
11 obvious.

12 So, PCBs with a chlorine content of  
13 less than 50 percent have not been found in the  
14 environment and appear to present no potential  
15 problem to the environment. I'm not qualified to  
16 even comment on that statement. But do I -- and your  
17 question was -- repeat your question for me, make  
18 sure I'm --

19 BY MR. BIRKE:

20 Q well, I think you've answered the question I asked  
21 you.

22 A For my own benefit, though, would you be kind enough

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23 to repeat the question?

24 MR. BIRKE: Sure. Read back the question.

25 (Question read.)

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1 MR. MILLER: There's no question pending.

2 You said you weren't qualified.

3 THE WITNESS: I don't know.

4 MR. BIRKE: I think now might be a good  
5 time for lunch. Let's do that.

6 MR. MILLER: Sure.

7 VIDEOGRAPHER: We're going off the record  
8 at 12:14 p.m.

9 (Lunch recess taken from 12:14 p.m. to 1:10  
10 p.m.)

11 VIDEOGRAPHER: We're back on the record on  
12 take four at 1:10 p.m.

13 MR. LYONS: Good afternoon, Doctor. I'm  
14 Kevin Lyons, again, from the Neenah-Menasha Sewerage  
15 Commission.

16 E X A M I N A T I O N

17 BY MR. LYONS:

18 Q I'd like to direct your attention to Exhibit 895-T.

19 A T as in Tom?

20 Q As in Tom, and specifically the paragraph with the  
21 arabic No. 1.

22 A If you give me a second, I will --

23 Q Yes, sir. Take as much time as you need.

24 A -- locate it.

25 MR. MILLER: Here. You can just use mine.  
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1 THE WITNESS: Thank you very much. I  
2 appreciate that.

3 BY MR. BIRKE:

4 Q I believe before the break counsel asked you some  
5 questions about this exhibit and it brought a  
6 question or two to my mind.

7 If you look in the second full  
8 paragraph under the arabic No. 1, about midway down,  
9 there is an indication that the writer of this memo,  
10 Mr. Hodges, asked for the arrangement of samples to  
11 be taken from the outlet of the village. Do you see  
12 that, sir?

13 A Yes.

14 Q Do you know if such sampling was ever done at the  
15 village referred to in Exhibit 895-T?

16 A Okay. Let me locate the village, the word "village."

17 Q It's seven lines down in that second full paragraph  
18 after the arabic No. 1.

19 A Okay. outlet of village waste treatment plant.  
20 Let's see. Therefore, please collect and freeze --

21 Q All I want to know, sir, is if you know whether or  
22 not Monsanto ever took any of the samples that the  
23 village waste treatment plant referred to in 895-T?

24 A I don't specifically recall whether they did, but my  
25 assumption is they probably did based on the review

1 of the memo, and I wouldn't doubt that they had.

2 Q All right. Sir, does this memo refresh your  
3 recollection as to whether or not Monsanto ever  
4 arranged for a similar sampling at the outfall of the  
5 Neenah-Menasha publicly-owned treatment works?

6 MR. MILLER: We -- object to the form. Do  
7 you mean Monsanto went out and took the samples or  
8 collected the samples?

9 BY MR. LYONS:

10 Q Fair enough.

11 Do you recall, sir, if Mr. Hodges ever  
12 directed anyone to take the kind of samples he's  
13 talking about in 895-T at the Neenah-Menasha  
14 publicly-owned treatment works?

15 A I have no idea.

16 MR. LYONS: Thanks. That's all I have.

17 E X A M I N A T I O N

18 BY MR. BIRKE:

19 Q Dr. Tucker, are you familiar with the term "broke" as  
20 used in the paper industry?

21 A Not real familiar with it, no. I probably heard it  
22 used before, but I'm not specific -- I don't  
23 specifically understand it.

24 Q I'll represent to you that the term "broke" is  
25 sometimes used to refer to paper trimmings and the

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1 like that are produced in the course of manufacturing  
2 paper and, in particular, NCR carbonless copy paper.

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In the course of your work at

3

Monsanto, did you ever have occasion to do any type of testing regarding broke --

4

5 of testing regarding broke --

6 A No.

A No.

Q -- or other paper trimmings associated with NCR carbonless copy paper?

7

8 carbonless copy paper?

9                      A                      No .

10 Q would you pull out 895-J.

11       A     (witness complies.) I remember that one. It should  
12             be in the right pile because the J was -- that's it,  
13             right?

12

13 right?

14 Q No.

15       A     It looks like -- that's a Y. That's close.

16 MR. MILLER: It looks like this.

17 THE WITNESS: I'll be happy to let anybody  
18 go through this pile, but I didn't locate J.

10

19 MR. MILLER: Do you want to use mine?

20 THE WITNESS: There it is. We got it.

21 BY MR. BIRKE:

22 Q As I recall, this was the same exhibit we had trouble  
23 finding the first time. It's a stubborn one.

22

24 we looked at this before our break,

25 and we were looking at page 2 near the bottom where

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1 it refers to the river water biodegradation

2 experiments that Dr. Swisher was initiating. Do you  
3 see that?

2

4      A      (Witness nods.)

5 Q Do you know how long it took to complete the river

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6 2009-08-19 Tucker, Scott Depo in Appleton  
water biodegradation experiments?

7 A Just a minor correction to your interpretation of the  
8 paragraph. Swisher was being cooperative in that he  
9 provided answers to my questions and that kind of  
10 stuff. The actual work was not done by Bob. It was  
11 done by myself or one of my people.

12 If I remember correctly, the river  
13 die-away test is a fairly rapid test, because the  
14 biological population in the water that's being used  
15 is not being supported in any way, shape or form by  
16 being fed or anything besides what's there and what  
17 you put in there. And so it would be a week -- it  
18 would be in the week time frame.

19 Q Okay. Now, in the -- a couple of paragraphs above  
20 that, you were asked about the paragraph beginning,  
21 "The area percent of each homologue."

22 A Um-hmm.

23 Q This morning I believe you were asked some questions  
24 about that paragraph, and I wanted to follow up on  
25 that. And in particular, the last sentence that

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1 says, "At least 46 chlorinated biphenyls were  
2 detected. Homologues containing 5 to 10 chlorines  
3 per molecule accounted for" six -- sorry --  
4 "7.69 percent of the Aroclor;" is that correct?

5 A That's correct in what it says, yes.

6 Q Now, when you were asked questions about that this  
7 morning, I believe you testified that this indicated  
8 to you that this meant that less than 10 percent, and

9 2009-08-19 Tucker, Scott Depo in Appleton  
10 to be precise, 7.69 percent, of the homologues there  
11 were in excess of the five chlorines per molecule,  
12 correct?  
13 A Less than 10 percent of the polychlorinated biphenyl  
14 material in that particular sample that was used were  
15 PCBs that were in the 5 to 10 range. That's what  
16 you're saying, that's what it meant. Okay.  
17 Q Yes. And I believe it's your testimony that it was  
18 the homologues that had more than five chlorines per  
19 atom that were considered the higher chlorinated  
20 PCBs, higher chlorinated Aroclors?  
21 MR. MILLER: Object to the form.  
22 MS. CONLIN: Join.  
23 THE WITNESS: Yeah. Yes, that was the  
24 general terminology that was used for this specific  
25 application.

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1 BY MR. BIRKE:  
2 Q And I believe you were making a distinction earlier  
3 that your research was finding that molecules with  
4 more than five chlorines --  
5 MR. BIRKE: Let's go off.  
6 VIDEOGRAPHER: We're going off the record  
7 at 1:19 p.m.  
8 (Discussion off the record.)  
9 VIDEOGRAPHER: We're back on the record at  
10 1:20 p.m.  
11 BY MR. BIRKE:

12 Q 2009-08-19 Tucker, Scott Depo in Appleton  
13 Dr. Tucker, I'm trying to get at the breakdown you  
14 did earlier regarding the components of Aroclor 1242.  
15 And as I recall your testimony, you were indicating  
16 that all Aroclors contain some components that have  
17 in excess of five chlorines; is that correct?

18 MR. MILLER: Let me object to the form.  
19 You can answer.

20 THE WITNESS: On a theoretical basis,  
21 there's no reason why they shouldn't. On the other  
22 hand, there are some specific chemical reasons why  
23 Aroclor 1221, for example, might not have any  
24 pentachlorobiphenyl in it. I mean the conditions  
25 might not have been long enough, the chlorine hadn't  
been around.

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1 So it's feasible that each Aroclor,  
2 each polychlorinated biphenyl compound, each  
3 polychlorinated biphenyl product that was  
4 manufactured by direct chlorination could contain one  
5 of each, every isomer. Okay. However, if you're  
6 making Aroclor 1221, which is a dichloro-, it's only  
7 21 percent, the probability of producing penta-,  
8 hexa-, hepta-, octa-, nona- and et cetera, above,  
9 becomes minutia. So from an -- you can't say it's  
10 not there, but you can't say it's in there, because  
11 on a probability basis, it could be there on some  
12 level.

13 So I'm not sure that answers your  
14 question. But there's good reasons, also, to

15 2009-08-19 Tucker, Scott Depo in Appleton  
16 understand from other chemistry viewpoints that  
17 certain kinds of isomers are not present in  
18 polychlorinated biphenyls. And I published an  
19 internal article that dealt with that in terms of the  
20 probability of certain kinds of isomers being there  
21 and each of the constituents and the actual  
22 concentrations, and it went through and said those  
23 kinds of things. And it delineated very clearly what  
the pentachloro- and above meant.

24 So I'm not sure I've answered your  
25 question, but -- I'm not sure I can answer your

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1 question the way it's been asked.

2 BY MR. BIRKE:

3 Q All right. The statement on 895-J here that we've  
4 been looking at, when you're referring to 5 to 10  
5 chlorines per molecule, you're referring to  
6 substances that were of at least a penta- level and  
7 hexa- and of higher chlorine content than that?

8 A Yes.

9 Q And those are the types of Aroclor formulations that  
10 were less prone to biodegradation; is that a correct  
11 statement?

12 MR. MILLER: Object to the form.

13 THE WITNESS: No. They were the portions  
14 or the isomers that were present in Aroclor products  
15 that were being found in the environment in very aged  
16 samples, indicating that their lifetime in the  
17 environment was very long, and the other ones weren't

18 2009-08-19 Tucker, Scott Depo in Appleton  
19 being found, indicating that something was happening  
20 to them and they were going away.

21 This -- this -- this here is intended  
22 to establish what the content of the product is  
23 relative to the homologues; a homologue being a  
24 penta-, a hexa-, and so on. And it's injected into a  
25 gas chromatograph, you use a support-coated open  
tubular column --

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1 COURT REPORTER: Use a what?

2 THE WITNESS: I'm sorry. It's injected  
3 into a gas chromatograph with a support-coated open  
4 tubular column, a SCOT column, which is a very high  
5 resolution column, and it separates the mixture into,  
6 to the best of our ability, into its  
7 multi-components, almost down to the isomer level in  
8 some routines, but certainly down to the homologue  
9 level, based on boiling point and attraction for  
10 liquid phase.

11 So if you look at the chromatogram,  
12 you can draw a line in the center of the chromatogram  
13 starting at zero, where on the right, everything that  
14 would be a penta-, chloro- or above would be, and  
15 where on the left, everything that would be less than  
16 a tetra or less would be.

17 And then you can calculate, depending  
18 on the area and the response, what the percentage of  
19 the pentachloro- and above compounds are. That's all  
20 that's saying. It has nothing to do with environment

2009-08-19 Tucker, Scott Depo in Appleton  
21 or anything of the sort. It has to do with product  
22 composition and its resolution to the best of our  
23 ability on a homologue basis with the best analytical  
24 techniques available. I don't know whether that  
25 helps or not.

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1 BY MR. BIRKE:

2 Q Okay. Let's turn to 895-K.

3 A Okay. I found K.

4 Q And we looked at -- you were asked questions about  
5 this document early this morning, and I'd direct your  
6 attention to the second to the last paragraph on  
7 page 1 where it indicates the "EC/GC indicated that  
8 no biodegradation was occurring."

9 Now, would the fact that there was no  
10 biodegradation observed here be explained by the fact  
11 that this was a -- that this may have been a fresh  
12 release of Aroclor 1242 without any opportunity for  
13 weathering?

14 A Yes. And, as it points out, there is a memo  
15 discussing the subject with much more detail that's  
16 available.

17 MR. BIRKE: I don't have extra copies of  
18 the memo that I'm going to ask questions about. I'll  
19 provide it to you -- do you want to look at it first?

20 MS. CONLIN: Can I look at it? March 1,  
21 '74.

22 (Discussion off the record.)

23 MR. MILLER: Can I see it, please?

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24 MR. BIRKE: Yeah.

25 MS. CONLIN: Is it your intent, counsel, to

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1 mark that as an exhibit?

2 MR. BIRKE: Yes. I guess I'd propose that  
3 we put the label on a copy of this that does not bear  
4 my highlighting.

5 MS. CONLIN: That was going to be my  
6 objection. I believe it's been highlighted by you.

7 MR. BIRKE: Do you want to take a break and  
8 have a copy made?

9 MS. CONLIN: It's up to you.

10 MR. LYONS: I'd like to at least see it.

11 MR. BIRKE: Let's take a break.

12 VIDEOGRAPHER: We're going off the record  
13 at 1:28 p.m.

14 (Brief recess taken from 1:28 p.m. to 1:32  
15 p.m.)

16 (Deposition Exhibit No. 895-Z marked for  
17 identification.)

18 VIDEOGRAPHER: We're back on the record at  
19 1:32 p.m.

20 BY MR. BIRKE:

21 Q Dr. Tucker, I've given you what's been marked as  
22 895-Z. It's a two-page memo dated March 1, 1974.  
23 It's a memo from W.B. Papageorge to several people,  
24 including yourself. It's numbered MONSFOX00029468  
25 and 469.

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1 Have you had a chance to look through  
2 it?

3 A No, but I will shortly. (Witness reads.) Yes.

4 Q Now, the first sentence says, "As you know, we must  
5 submit written testimony relating to PCB effluent  
6 standards by March 15."

7 As you sit here today, do you recall  
8 what state this -- or government agency this  
9 testimony was being prepared for?

10 A No.

11 Q And it indicates that various topics were being  
12 assigned, and near the bottom of the page it  
13 indicates that you were responsible for a number of  
14 topics including PCB characteristics, biodegradation,  
15 definition, analytical methodology, and sampling.

16 Were you involved in the preparation  
17 of testimony of this nature from time to time during  
18 this time period?

19 A Yes.

20 Q And basically what did your responsibilities  
21 typically entail?

22 A I think it's delineated here in this particular memo  
23 for what we're talking about. There was overlapping  
24 responsibility amongst the people, obviously, but I  
25 had been assigned areas which I had expertise; PCB

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2 biodegradation, definition, analytical methodology  
3 and sampling. My assumption is we each prepared our  
4 own documents and then submitted for a group review.

5 Q And who, again, is W.P. Papageorge?

6 A Bill Papageorge was a gentleman who used to be down  
7 at the Anniston, Alabama plant. I think he ran the  
8 plant, as a matter of fact. And he was early on  
9 brought aboard to act as an overall coordinator and  
10 interface with all agencies and everybody that needed  
11 information, so that we'd be doing it and focusing it  
12 through one individual and we'd have an understanding  
13 of what was going on.

14 Q Can you recall approximately how many times you were  
15 involved in preparing written testimony of the kind  
16 that's described here?

17 A I haven't the faintest idea, no.

18 Q Was it more than five?

19 MR. MILLER: Object to the form.

20 THE WITNESS: I would assume it probably  
21 exceeded five.

22 BY MR. BIRKE:

23 Q Would it exceed ten?

24 MR. MILLER: Object to the form. Calls for  
25 speculation.

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1 THE WITNESS: We're actually getting in a  
2 guessing game here, so -- I don't know, but there was  
3 a number of times would be the best way for me to  
4 state it.

5 BY MR. BIRKE:

6 Q okay. On the last paragraph, page 2, it says, "I am  
7 attempting to arrange for a discussion with Dr. G.  
8 Fred Lee, Consultant, to determine if he can be of  
9 any assistance." Do you have -- do you know who  
10 Dr. G. Fred Lee is?

11 A I recognize the name, and at one time I knew who he  
12 was, but I do not recollect at this point in time  
13 what his specific -- what the specifics are.

14 (Deposition Exhibit No. 895-AA marked for  
15 identification.)

16 THE WITNESS: AA.

17 BY MR. BIRKE:

18 Q Dr. Tucker, I've handed you what's been marked as  
19 Exhibit 895-AA. It's a multipage document numbered  
20 NCRFOX0281394 through 0281469. I'll represent to you  
21 that this is the transcript of a hearing held in  
22 Wisconsin regarding proposed administrative rules  
23 relating to the discharge of polychlorinated  
24 biphenyls into the waters of the state, and the first  
25 page of the document indicates that the hearing was

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1 held on August 28 and 29, 1975.

2 Do you have any recollection of attending  
3 this hearing?

4 A No.

5 Q And, in fact, if you'll turn to pages 1 through 4, it  
6 lists persons who made appearances, and if you'll  
7 turn to page 2, it indicates that there were

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8 appearances by William Papageorge and Dr. Paul Wright  
9 on behalf of Monsanto. Do you see that?

10 A Yes, I do, and that confirms what I said, I think.

11 Q And who was Dr. Wright?

12 A Paul Wright was -- I think he worked in Emmet Kelly's  
13 area with Elmer Wheeler, with Jack Garrett in the  
14 environmental area there, and I think he was kind of  
15 like an animal toxicologist, a rat man, if I remember  
16 correctly. Oh, no. That was -- no. Backup to what  
17 I said previously.

18 Q And is it consistent with your understanding of  
19 Mr. Papageorge's duties and responsibilities at the  
20 time for him to appear at a function like this on  
21 behalf of Monsanto?

22 A Yes.

23 MR. MILLER: Object to the form, lack of  
24 foundation.

25

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1 BY MR. BIRKE:

2 Q Now if you'll turn to page 26.

3 A (Witness complies.) Okay.

4 Q Near the top of the page the hearing examiner  
5 indicates that "The next person appearing on behalf  
6 of and at the request of the Department of Natural  
7 Resources is Mr. W.B. Papageorge." Will you please  
8 step up here, sir, and he does so, and he makes some  
9 opening remarks. And I'm reading in the second  
10 paragraph of his remarks here.

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11                   He makes the statement, "It's my  
12                   considered opinion that if we could just turn the  
13                   clock back and only use, let's say 1221, a 1232 or  
14                   even a 1242 and no others, we probably wouldn't be  
15                   sitting in this room today. I just don't think a  
16                   problem would have developed."

17                   Dr. Tucker, based on your knowledge as  
18                   of 1975, is that a correct statement?

19                   MR. MILLER: Object to the form.

20                   MS. CONLIN: Objection, foundation.

21                   MR. MILLER: Lack of foundation. It's  
22                   vague and ambiguous. Which part of it? The  
23                   existence or absence of a problem or -- which is a  
24                   vague and undefined term.

25

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1           BY MR. BIRKE:

2           Q     Do you understand?

3           A     I understand the words, certainly, and I understand  
4                 what the sentences say, certainly. And I understand  
5                 that it's a-okay for Bill Papageorge to have that  
6                 particular opinion.

7                         You're asking me as a scientist  
8                 whether or not what Bill is saying is true. And what  
9                 Bill is saying may be true to Bill, but it may not be  
10                to me, and the relevance doesn't -- so let me read it  
11                again and see, in 1975, if I can even begin to  
12                believe -- know where I was at, precluding -- okay.  
13                (Witness reads.)

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14                   Basically what I understand him as  
15 saying is that if we use materials that didn't have  
16 any penta- and hexa- and above chlorinated biphenyls  
17 in them that were being found in aged -- in all the  
18 aged samples, that we would not have the problem of  
19 refractory PCBs existing in the environment and  
20 accumulating. And he extends that to Aroclor 1242.

21                   And we've already established that  
22 Aroclor 1242 had 10 percent of those kinds of  
23 materials in it. So what that would mean to me is  
24 that Bill is extrapolating that that little amount of  
25 material relative to the uses of Aroclor 1242 might

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1                   not have caused a problem, or, he could be referring  
2 to the fact that there were some substitutes being  
3 proposed where those materials were almost completely  
4 removed from the 1242.

5                   So, you know, asking me to tell you  
6 what was in another person's mind is very difficult  
7 for me, but that would be my understanding of what I  
8 think he was saying at that point in time in history.

9                   MR. BIRKE: I think we may be done, but  
10 let's just take a quick break and we'll confirm that.

11                   MR. MILLER: Sure.

12                   VIDEOGRAPHER: We're going off the record  
13 at 1:42 p.m.

14                   (Brief recess taken from 1:42 p.m. to 1:45  
15 p.m.)

16                   VIDEOGRAPHER: We're back on the record at  
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17 1:45 p.m.

18 (Deposition Exhibit No. 895-BB marked for  
19 identification.)

20 MS. CONLIN: Is this BB?

21 MR. LYONS: Yes.

22 E X A M I N A T I O N

23 BY MS. CONLIN:

24 Q Dr. Tucker?

25 A Yes.

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1 Q This morning counsel for the plaintiffs was talking  
2 with you about the time frame in which Monsanto  
3 undertook analytical work relative to the Jensen and  
4 widmark study. Do you recall that questioning by  
5 counsel?

6 A Yes.

7 Q Okay. Now, what I've handed you is what's been  
8 marked as Exhibit 895-BB, which bears the Bates No.  
9 GPF0X30433, and is a letter from Dr. Kelly to David  
10 Wood, and in the first sentence it's written, "Thank  
11 you for the information you sent me," and that's a  
12 reference, I will represent to you, to the  
13 Jensen-widmark work. Quote, "I am having our  
14 analytical people, as well as NCR here in the States,  
15 evaluate it." Do you see that?

16 A Yes, I do.

17 Q And the date of this is February 27th of 1967; is  
18 that right, sir?

19 A That's correct, on my copy.

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20 Q Now, are you aware of any work that NCR undertook to  
21 actually evaluate the Jensen and Widmark work when it  
22 came out?

23 MR. HA: Object to form. Are you saying in  
24 February of 1967?

25 MS. CONLIN: That's correct.

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1 THE WITNESS: No.

2 MR. HA: I'm going to object to foundation  
3 because I think it predates his employment.

4 BY MS. CONLIN:

5 Q Are you aware at any point, Dr. Tucker, of NCR  
6 undertaking its own work to evaluate the findings of  
7 Jensen and Widmark?

8 A No.

9 Q Are you aware of any work by NCR to look at, on their  
10 own, the findings of Risebrough?

11 A No.

12 Q Now, would the sharing of the Jensen and Widmark work  
13 with NCR be consistent with the type of practice of  
14 sharing that you would expect to exist at Monsanto?

15 A Yes.

16 MR. HA: Object to form.

17 MR. BIRKE: Object to form.

18 BY MS. CONLIN:

19 Q Now, if we could direct your attention back, Doctor,  
20 to Exhibit 895-D.

21 A 895-B as in --

22 MS. CONLIN: D as in dog.  
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23 THE WITNESS: D as in dog, okay. okay.

24 BY MS. CONLIN:

25 Q And this, Dr. Tucker, is the March 4th, 1969 memo

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1 regarding the burning of NCR paper. Do you recall

2 testimony on that?

3 A Yes.

4 Q okay. And I believe counsel for plaintiffs asked you

5 whether you were aware of whether this -- the results

6 of this was ever shared with NCR. Do you recall that

7 testimony?

8 A Yes.

9 Q okay.

10 (Deposition Exhibit No. 895-CC marked for

11 identification.)

12 BY MS. CONLIN:

13 Q I'd direct your attention to Exhibit 895-CC, which

14 bears Bates Nos. MONFOX97702 through 97703.

15 This is a memo by Cumming Paton to

16 Messrs. Farrar and Wheeler dated November 17th, 1969.

17 Do you see that?

18 A Yes, I do. This has a GPFOX number, not a MONFOX

19 number, but I don't know how important that is.

20 Q I'm sorry. Could I borrow that? Exhibit 895-CC

21 bears Bates Nos. GPFOX58736 through 58737. I

22 apologize.

23 A That's correct, okay, on the copies I have. Thank

24 you.

25 Q And listed there -- now, did you have occasions to

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- 1 interact with Mr. Paton, Mr. Farrar, and Mr. Wheeler  
2 as it related to your PCB work?
- 3 A Yes.
- 4 Q And how about Messrs. Springgate and Wilde?
- 5 A Springgate. And Wilde, maybe. But those two people  
6 I didn't interact with very often at all.
- 7 Q Now, this memo sets forth an upcoming agenda for a  
8 meeting with NCR, specifically Howard Lauer for  
9 December 16th at 9:00 a.m. Do you see that?
- 10 A Yes, I do.
- 11 Q And I'd like to direct your attention down to Issues  
12 1 and 2 which Paton is proposing as expanded agenda  
13 items.
- 14 A Okay.
- 15 Q Do you see that?
- 16 A Yes, I do.
- 17 Q And he describes here that some of the things to be  
18 discussed include "effluent analysis, progress on  
19 biodegradation of Aroclor 1242, and NCR plant  
20 clean-up." Do you see that?
- 21 A Yes, I do.
- 22 Q And then under No. 2 at the end it says, "Preliminary  
23 incineration data on Aroclor 1242 and NCR paper." Do  
24 you see that?
- 25 A Yes, I do.

1 Q would that be consistent with the type of information  
2 that would be being shared with NCR as your work  
3 evolved?

4 MR. HA: Objection, foundation.

5 THE WITNESS: Yes.

6 BY MS. CONLIN:

7 Q And would it be consistent with -- well, let me  
8 strike that and ask a different way.

9 You would agree that your  
10 understanding of the PCB issue evolved over time, Dr.  
11 Tucker. Is that a fair summary of what you've  
12 testified to earlier?

13 A Yes.

14 MR. HA: Object to form.

15 MS. CONLIN: Okay.

16 MR. LYONS: I didn't get the answer because  
17 of the objection. What was it?

18 THE WITNESS: My answer was yes.

19 MR. LYONS: Thank you.

20 BY MS. CONLIN:

21 Q And would it be fair to state that you were timely  
22 informing your supervisors as you were uncovering the  
23 issues related to PCBs?

24 A Yes, absolutely.

25 Q Did any of your supervisors ever suggest to you that

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1 they were keeping that information from Monsanto  
2 customers such as NCR?

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3 MR. HA: Object to form.

4 THE WITNESS: Absolutely not.

5 BY MS. CONLIN:

6 Q Now I'd like to direct your attention to 895-K, which  
7 counsel also referenced during his examination.

8 A Okay. I have K.

9 Q And if you'd like to, sir, as long as you're digging,  
10 if you could pull out Exhibit 895-L.

11 A Okay.

12 Q I'm going to reference both of those.

13 A The documents I have in front of me jump from K to M.

14 Q It looks like this, Doctor. It's a one-page document  
15 that's got a table on it.

16 A I may have it, but it's just taking me a little  
17 longer to find it, if I do have it. And I thought --

18 MR. MILLER: Do you want to use mine?

19 THE WITNESS: But I'd be happy to look at  
20 another copy. Is that the memo we're talking about?

21 BY MS. CONLIN:

22 Q That's correct. So you have in front of you 895-K  
23 and 895-L?

24 A Yes.

25 Q Now, when counsel for plaintiffs was questioning you,

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1 he directed you to 895-K, and specifically the second  
2 to last paragraph regarding sampling of 1242 at NCR's  
3 plant in Wisconsin. Do you recall that questioning?

4 A Yes.

5 Q And he stated to you, or asked you, whether the

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6 "EC/GC indicated that no biodegradation was  
7 occurring." I think he asked you if that was fresh  
8 Aroclor.  
9 A Yes.  
10 Q Do you recall that? And then the last sentence here  
11 says, "A memo discussing the subject was issued."  
12 I think we previously established that  
13 that memo is 895-L?  
14 A Okay. And I have my exhibit copy of it now.  
15 Q Okay, great. And so I'd like to direct you to 895-L,  
16 which is a December 3rd, 1969 memo from you regarding  
17 the samples at NCR plant in Wisconsin. And I'd like  
18 to direct your attention down to the last paragraph  
19 there.  
20 "However, it is possible that the high  
21 level of fresh Aroclor present has completely masked  
22 any degradation that might have occurred to Aroclor  
23 previously discharged." Do you see that?  
24 A Yes.  
25 Q Okay. And did you, in fact, find as a result of

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1 later testing that there were portions of 1242 that  
2 wasn't degrading as you testified to previously?  
3 A Yes.  
4 Q Now, if you can take a look at 895-R, which is the  
5 Industrial Bio Test Labs, the thicker document.  
6 A Yes.  
7 Q Counsel showed you this this morning, and if we could  
8 direct your attention to the third page of the

9 2009-08-19 Tucker, Scott Depo in Appleton  
exhibit, which bears Bates No. GPFOX45558.

10 A I have it.

11 Q Okay. And one of the indications here was a  
12 three-generation reproduction study in rats. Do you  
13 recall that testimony?

14 A Yes.

15 Q And I believe you indicated that that, in fact,  
16 subsequently took place?

17 A Yes.

18 (Deposition Exhibit No. 895-DD marked for  
19 identification.)

20 BY MS. CONLIN:

21 Q I've handed you, Dr. Tucker, what's been marked as  
22 895-DD, as in dog, dog, which is a multipage document  
23 bearing Bates PHGNCR2005292 through 2005296.

24 Do you see that this is a memorandum dated  
25 2/12/71 addressed to you and others?

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1 A Yes.

2 Q Okay. And I'd like to direct your attention, sir, to  
3 the Bates page, I'll read the last three numbers,  
4 295.

5 A I have it.

6 Q Okay. And on that page it shows the sampling, water  
7 sampling at National Cash Register in Portage,  
8 Wisconsin, correct?

9 A Yes.

10 Q Finding the presence of 1242?

11 A Yes.

2009-08-19 Tucker, Scott Depo in Appleton  
12 Q And then also Appleton Coated Paper Company, finding  
13 the presence of 242 (sic) in air and water samples;  
14 is that right, Doctor?  
15 A Yes. I'm sure you meant 1242.  
16 Q 1242. Thank you for the correction.  
17 Now if we could turn to the last page  
18 of this exhibit, 895-DD. There's an entry here near  
19 the bottom, "Miscellaneous Support Work." Do you see  
20 that, Doctor?  
21 A Yes.  
22 Q And it says "Bio Test Laboratory Tissue Studies." Do  
23 you see that?  
24 A Yes.  
25 Q And, in fact, it's got a reference there to rats?

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1 A Yes.  
2 Q And based on a number of 48 samples, what is shown as  
3 having been found in the rats?  
4 A Aroclor 1242, 1248 and 1254.  
5 Q And is that the Bio tech lab work that is referenced  
6 in 895-R?  
7 A I'm quite sure it is, yes.  
8 Q All right. Finally, Doctor, counsel for plaintiffs  
9 asked you about broke. Do you recall that?  
10 A Yes.  
11 Q Okay. And I think you testified that you were not  
12 aware of whether there had been any work done testing  
13 certain recycling aspects. Do you recall that  
14 testimony?

2009-08-19 Tucker, Scott Depo in Appleton  
15 A whether or not I'd analyzed any broke which was  
16 considered scraps and cuttings from the paper, yes.  
17 Q Do you recall doing any analysis at all of water  
18 samples from companies that may be involved in the  
19 recycling process?  
20 A well, hm, let me think. When -- the trick was you  
21 threw in recycling, and I'm not sure. I couldn't  
22 answer that question yes or no right now.  
23 Q Fair enough, Doctor. Let me --  
24 A I don't -- I couldn't answer it yes or no. I --  
25 that's good enough.

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1 Q I've handed you, Dr. Tucker, what's been marked as  
2 895-EE, which is a two-page document bearing  
3 JDGFOX174 through 175.  
4 A I have the document.  
5 MR. LYONS: 895-EE?  
6 THE WITNESS: 895-EE.  
7 (Discussion off the record.)  
8 BY MS. CONLIN:  
9 Q Let me start over again.  
10 We put in front of you, Doctor, an  
11 exhibit which has been marked 895-EE, which bears  
12 Bates Nos. NCR-FOX-563950 through 51. Do you have  
13 that in front of you?  
14 A No. I -- it's probably the same. It may or may not  
15 be. I have NCRINS0000081.  
16 Q And if you look a little further down on the  
17 document --

18 A 2009-08-19 Tucker, Scott Depo in Appleton  
Okay. I see it. I had my finger on it. I  
19 apologize.  
20 Q All right. We're all on the same page then?  
21 A Yes. Yes, we are, indeed.  
22 Q This is a letter from a Willis Clark to Gordon Taylor  
23 at National Cash Register dated January 5, 1971. Do  
24 you see that?  
25 A Yes, I do.

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1 Q And it says, "Dear Gordon, I have enclosed a copy of  
2 the results of analysis obtained by Dr. E.S. Tucker  
3 on the water effluent samples which you submitted to  
4 us." Do you see that?  
5 A Yes, I do.  
6 Q Is E.S. Tucker you?  
7 A Yes, it is.  
8 Q Okay. And again, would this suggest the type of  
9 exchange of information that was going on during the  
10 '60s and '70s between Monsanto and National Cash  
11 Register?

12 MR. HA: Object to form and foundation.

13 THE WITNESS: Yes, it certainly would.

14 BY MS. CONLIN:

15 Q Now, if we take a look at the second page of this  
16 document, he's attached a memorandum from you dated  
17 December 31, 1970; is that right?  
18 A Yes.  
19 Q And the subject is "Kimberly Clark, Mead Paper." Do  
20 you see that?

2009-08-19 Tucker, Scott Depo in Appleton  
21 A Kimberly Clark, deinked plant? Is that what -- oh,  
22 the subject. Yeah. Okay. I got it. Kimberly  
23 Clark, Mead Paper. Comma, indicating two different  
24 sources.  
25 Q Right. Kimberly Clark, Mead Paper.

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1 A Okay.  
2 Q And is this the results of water sample analysis that  
3 you did in connection with these two plants, Kimberly  
4 Clark and Mead Paper --  
5 A Yes.  
6 Q -- looking at the issue of whether Aroclor 1242 was  
7 being found?  
8 A Yes.  
9 Q Okay. Now, if we take a look at the first two  
10 entries, Kimberly Clark No. 1 and Kimberly Clark  
11 No. 2. Do you see that?  
12 A Yes, I do.  
13 Q And it says under Kimberly Clark No. 1, "Deink Plant,  
14 washer water, most concentrated," and it's got 21,640  
15 parts per billion; is that right?  
16 A We're talking about OR Log No. 473?  
17 Q Correct.  
18 A And how much -- 21,640. Did you say that?  
19 Q Correct.  
20 A Okay, good. I just didn't hear the part --  
21 Q Parts per billion?  
22 A Yeah, you were looking the other way. I apologize.  
23 Q And so roughly translated, what would that be parts

24 2009-08-19 Tucker, Scott Depo in Appleton  
per million?

25 A It would be 21.640 parts per million.

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1 Q And under Log No. 474, Kimberly Clark No. 2, there's  
2 a determination here by you of 3,750 parts per  
3 billion?

4 A Yes.

5 Q And what would that equate to as parts per million?

6 A 3.750.

7 Q And are you aware that Kimberly Clark was in the  
8 recycling business, that this related to recycling of  
9 pulp?

10 A At the time I did these, I certainly wasn't.

11 COURT REPORTER: Wasn't?

12 THE WITNESS: At the time I saw this, I  
13 certainly wasn't.

14 BY MS. CONLIN:

15 Q Would you consider those ranges to be relatively  
16 high?

17 A Very high.

18 MR. MILLER: Object to form.

19 MR. HA: Object to form.

20 BY MS. CONLIN:

21 Q And does the cover letter to 895-EE suggest that this  
22 information was, in fact, imparted to National Cash  
23 Register on January 5th of 1971?

24 MR. HA: Object to form and foundation.

25 THE WITNESS: Okay. Let me find EE.

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1 BY MS. CONLIN:

2 Q It's the cover letter to what you've got in front of  
3 you.

4 A Oh, okay. Great.

5 Q So my question was --

6 A There's no question it says that -- this reflects  
7 that the information was sent to Dr. Gordon Taylor,  
8 and he's with NCR, National Cash Register Company.

9 MS. CONLIN: Thank you, Doctor. I have no  
10 further questions.

11 MR. BIRKE: Nothing. Thank you, Doctor.

12 THE WITNESS: You're welcome.

13 (Discussion off the record.)

14 MR. MILLER: I just have several questions.  
15 I want to ask these just for clarification.

16 E X A M I N A T I O N

17 BY MR. MILLER:

18 Q Dr. Tucker, during the course of the deposition today  
19 you mentioned a number of biodegradation studies that  
20 you undertook at Monsanto in late 1969; is that  
21 correct?

22 A That's correct.

23 Q You mentioned one in particular, a river die-away  
24 study?

25 A Yes.

1 Q And you indicated that that was a short-term study;  
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2 is that correct?

3 A Correct.

4 Q There were other biodegradation studies that you  
5 undertook as well as the river die-away study; is  
6 that correct?

7 A Yes.

8 Q One of them was an activated sludge study?

9 A That's correct.

10 Q Were there others?

11 A There were others that were done, but those were the  
12 two primary techniques that we evaluated. There were  
13 some done in Europe at our UK facility in terms of  
14 acclimated sludges and bacteria.

15 Q The biodegradation studies, such as the activated  
16 sludge studies, those take a matter of weeks to  
17 months to conclude; is that correct?

18 A They're -- okay. You -- they're run on a daily basis  
19 and they're emptied and recharged on a daily basis  
20 and they're fed, and the bacteria population is kept  
21 very alive and very active. So you run it, you spike  
22 it, you sample it. Twenty-four hours later you pull  
23 the sample out and you see the difference. Okay? If  
24 it's a readily degradable material, you see  
25 significant depletion of the parent compound.

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1 And that process continues, and you  
2 can establish what the biodegradation rate is during  
3 that 24-hour period. With some compounds, where the  
4 bugs haven't seen them, you put it in and you don't

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5 get anything, you put it in and you don't get  
6 anything, and then suddenly you get something because  
7 of the population acclimates to that as a source.

8 Q But with respect to the biodegradation --

9 A So it's a very heavy test, and it can be a short  
10 frame or a longer frame, but you can run it longer  
11 without killing it.

12 Q But the biodegradation test that you ran on, for  
13 example, 1242 starting in the late  
14 November-December 1969 time period, they weren't  
15 finished in a matter of days? Those extended for  
16 weeks or months, correct?

17 A Yes.

18 MR. MILLER: That's all I have. Thank you.

19 VIDEOGRAPHER: We're going off the record  
20 at 2:09 p.m.

21 (Deposition concluded at 2:09 p.m.)

22 (Original exhibits attached to Original.  
23 Copies of exhibits are attached.)

24  
25

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1 STATE OF WISCONSIN )  
2 ) SS:  
3 MILWAUKEE COUNTY )

4

4 I, Rosanne E. Pezze, RPR/CSR/CRR and  
5 Notary Public in and for the State of Wisconsin, do  
6 hereby certify that the deposition of E. SCOTT  
7 TUCKER, Ph.D. was recorded by me and reduced to  
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writing under my personal direction.

I further certify that said deposition was taken at 190 Carondelet Plaza, Clayton, Missouri, on the 19th day of August, 2009, commencing at 9:00 a.m.

I further certify that I am not a relative or employee or attorney or counsel of any of the parties, or a relative or employee of such attorney or counsel, or financially interested directly or indirectly in this action.

In witness whereof, I have hereunto  
set my hand and affixed my seal of office on this  
20th day of August, 2009.

ROSANNE E. PEZZE, RPR/CSR/CRR  
Notary Public  
My commission expires January 17, 2010

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STATE OF WISCONSIN )  
 ) ss:  
\_\_\_\_\_ COUNTY )

I, E. SCOTT TUCKER, Ph.D., do hereby certify  
I have read the foregoing transcript of proceedings  
taken August 19th, 2009, at 190 Carondelet Plaza,  
Clayton, Missouri, and the same is true and

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correct except for the list of corrections noted on  
the annexed page.

Dated at \_\_\_\_\_  
this \_\_\_\_\_ day of \_\_\_\_\_, 2009.

\_\_\_\_\_  
E. SCOTT TUCKER, Ph.D.

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