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Superior Court of the State of California
For the County of Los Angeles

TRANSWESTERN PIPELINE COMPANY,	)	
Plaintiff,	)	
vs.	)	**Case No. BC 026959**
MONSANTO COMPANY and DOES 1 through 200, inclusive,	)	
Defendant.	)	

Volume II

June 12, 1992

Deposition of **ROBERT ELLIS KELLER**, taken on behalf of Plaintiff.

GORE REPORTING COMPANY

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Superior court of the State of California

For the County of Los Angeles

TRANSWESTERN PIPELINE COMPANY, Plaintiff,	)	
v.	)	No. BC 026959
MONSANTO COMPANY and DOES 1 through 200, inclusive, Defendants.	)	

Volume II

Continuation of the deposition of ROBERT ELLIS KELLER, taken on behalf of Plaintiff, at the offices of Bryan, Cave, McPheeters & McRoberts, 500 North Broadway in the City of St. Louis, State of Missouri, on the 9th day of January, 1992, before J. Bryan Jordan, certified shorthand reporter and notary public.

WATER_PCB-SD0000008862

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(The deposition of Dr. Keller was resumed beginning at 9:00 a.m., as follows:)

BY MR. TALLON:

Q. Doctor, do you have any knowledge regarding the process that -- used by Monsanto to manufacture aroclors in the 1200 series?

A. I had very little to do with the processing, and I have -- don't recall the process knowledge.

Q. Does it refresh your recollection in any respect if I asked you whether the manufacturing process involved running chlorine gas over hot biphenyls for a set period of time?

A. I just mad no involvement with that part of it. I have no, no remembrance of that.

Q. So my asking you that question does not refresh your recollection in any respect?

A. No, it does not.

Q. Do you have any recollection,

WATER_PCB-SD0000008865

Doctor, of being involved in any analysis of mud samples from a river near Newport in the United Kingdom?

A. No, I do not.

MR. TALLON: Let me show you a document that we'll mark as the next exhibit in order, which is 298. That's a two-page document bearing production numbers TRAN 023503 and 04.

(Plaintiff's Deposition Exhibit 298 marked for identification.)

BY MR. TALLON:

Q. Take a moment and review that, please.

(Witness peruses said document.)

BY MR. TALLON:

Q. Have you reviewed that document, Doctor?

A. Yes.

Q. Does having reviewed it refresh your recollection in any respect as to whether or not you participated in any analysis of estuary mud samples from the

WATER_PCB-SD0000008866

Uskmouth area?

A. No, this doesn't help me a bit.

Q. Do you have any recollection whether Mr. Tucker participated in such an analysis?

A. Mr. Tucker?

Q. Right, E. S. Tucker.

A. What was the question again, please?

Q. Yes, do you know if he participated in an analysis -- do you recollect whether he participated in an analysis of estuary mud samples?

A. I recollect that he participated, yes.

Q. E. S. Tucker is Scott Tucker?

A. Correct.

Q. Do you have any present recollection of having communicated with Mr. Tucker on the subject of his analysis?

A. I had no communication that I recall.

Q. Are you able to state anything other than that he participated in the analysis?

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A. I can't recall anything else.

Q. Do you know whether there was a plant or other -- do you know if there was a plant in Newport in the United Kingdom that was -- that had PCB's in plant effluent of any type?

MR. ZIMMER: Calls for speculation, assumes facts not in evidence, lacks foundation.

MR. TALLON: You can answer.

A. Well, I recall that there was an Aroclor plant and that's all.

BY MR. TALLON:

Q. An Aroclor plant in Newport?

A. Newport.

Q. And was there also a plant in Ruabon?

A. I'm not sure on that.

Q. Was there some Monsanto facility in Ruabon?

A. Oh, yes.

Q. What? What that facility?

A. It was a manufacturing facility for a variety of products for Monsanto.

Q. And where is Ruabon?

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A. Ruabon is in North Wales.

Q. Doctor, just one point on that Exhibit 298 which you have before you. You appear to be a cc: of that memoranda -- memorandum; correct?

A. Correct.

Q. And following your name is a designation that says "S. 2nd." Do you see that?

A. Yes.

Q. Do you have any understanding as to what this designation signifies?

A. Yes.

Q. What is your understanding?

A. Chief chemist at Newport at that point in time.

Q. The "2nd" signifies chief chemist at Newport at that time?

MR. ZIMMER: He means the indication following your name, not that A. F. --

A. I'm sorry, you are talking about the South 2nd Street.

Q. Right. Is that what that means?

A. That means the location where I

WATER_PCB-SD0000008869

was located in Monsanto.

Q. At that point, that is to say, October 8th, 1969, you were in a facility at South 2nd Street?

A. Correct.

Q. And Mr. Tucker was also there?

A. Correct.

Q. Where was his office in relationship to your office?

A. His office was in a laboratory, in the laboratory facility at that location and would have been approximately two to three hundred feet from my office; that range.

Q. Was the GC mass system at South 2nd Street in October 1969?

A. Yes.

Q. How long did you have an office at South 2nd Street?

A. Until approximately 1972, when the Organic -- or, when the research laboratories moved from that location out to the Creve Coeur site.

Q. Did you ever have an office in a facility with the name Queeny?

A. The research laboratories were a

WATER_PCB-SD0000008870

part of the Queeny plant location, yes.

Q. And where was the Queeny Plant locationst?

A. That was at South 2nd Street.

Q. Doctor, do you recall ever, without specific reference to the analysis of estuary mud samples from the Uskmouth area reflected in this exhibit, do you have a recollection of Aroclor 1242 being found in mud samples from any location?

A. No.

MR. ZIMMER: In which time frame? Well, I guess it's moot.

A. (Continuing) I don't have any recollection.

BY MR. TALLON:

Q. Doctor, are you familiar with the term "electron capture fingerprints"?

A. I'm not a practicing gas chromatograph person, and I've been away from that too many years and never did do the technical experimental work, so my answer is going to be no.

Q. You have no familiarity with that term?

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A. I know what the term is. I know it's a, a way of monitoring what comes out of a gas chromatograph, but I'm not in a technical position to explain more to you.

Q. Without -- that's a sufficient response. I mean, I'm not going to question you about the fine points of gas chromatography. I was simply wanting to establish a foundation for more general questioning.

A. Okay.

Q. Do you know if there's any information provided by electron capture fingerprints which is indicative of or relates to biodegradation?

MR. ZIMMER: Lacks foundation. He just told you what he knew about it and that's all he knew.

You can answer if you know.

THE WITNESS: Would you read the question back, please?

THE COURT REPORTER:

"Q. Do you know if there's any information provided by electron capture fingerprints which is indicative of or

WATER_PCB-SD0000008872

relates to biodegradation?"

A. I have no recollection of any specifics on that.

MR. TALLON: Let me show you a document, Doctor, which is a one-page memorandum dated December 3rd, 1969, bearing production number TRAN 022090, and after the reporter marks that as Exhibit 299, we'll ask you to take a moment and review that, please.

(Plaintiff's Deposition Exhibit 299 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Having reviewed that document, do you have any enhanced recollection with respect to the relationship, if any, between electron capture fingerprints and biodegradation?

A. No.

Q. Do you have any recollection, Doctor, whether Mr. Tucker did any work on samples with respect -- samples obtained from National Cash Register?

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A. I have no recollection of his working on any samples from National Cash Register.

Q. Do you know whether National Cash Register, which I will refer to as NCR, used a Monsanto product?

A. No, I have no recollection of that.

Q. Does it refresh your recollection if I ask you whether Monsanto -- NCR used an Aroclor 1242 in the manufacture of its carbonless carbon paper?

A. It is my recollection that they did use an Aroclor 1242-type product.

Q. Do you know whether or not the product, the Aroclor 1242 product was used in connection with NCR's carbonless carbon paper?

A. That was my understanding.

Q. Do you have any recollection as to whether you met with officials or representatives of NCR to discuss biodegradability of Aroclor 1242?

A. I personally can remember no such meetings or contact with them.

WATER_PCB-SD0000008874

Q. Do you recollect whether you or persons working for you did any work to analyze the biodegradation characteristics of Aroclor 1242 for the benefit of NCR?

A. I don't recall any such work.

MR. TALLON: Let me show you a document, Doctor, that's a multipage document bearing production number 0, what appear to be 0001248 through 1255. I'll ask the court reporter to mark it.

(Plaintiff's Deposition Exhibit 300 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Did you get a chance to review that, Doctor?

A. Yes.

Q. Have you seen that document before?

A. I have no recollection of seeing it.

Q. Do you have any recollection as to whether Mr. Tucker, in 1970, did an initial

WATER_PCB-SD0000008875

biologically populated river water degradation study?

A. I just don't recall that.

Q. Do you have any recollection of learning in 1970 that Aroclor 1242 remains stable in certain tests performed by your group?

MR. ZIMMER: Lacks foundation.

A. I have no recall on that.

BY MR. TALLON:

Q. Doctor, do you have any understanding as to whether or not biphenyl is required in order to degrade PCB's?

A. No.

Q. You have no understanding?

A. No understanding.

Q. Do you know if biphenyl occurs naturally in the environment?

A. No.

Q. You do not know?

A. I do not know.

Q. Doctor, do you have any recollection with respect to discussions having to do with use of bromines? Brominated compounds to replace

WATER_PCB-SD0000008876

polychlorinated biphenyls?

A. I recall no such discussions.

(Discussion off the record.)

MR. TALLON: We're back on the record.

BY MR. TALLON:

Q. Doctor, do you have knowledge as to whether or not in 1969 or 1970, Monsanto performed any river die-away studies?

A. Yes, it is my recollection that river die away tests were performed.

Q. And for the record, would you define what you understand to be the meaning of the term "river die-away study"?

A. As I recall it, it's simply taking water, and in some cases, for example, river water, and determining the rate at which compounds in question or of interest are being tested will degrade in that medium, without adding purposely other materials or chemicals.

Q. Did Monsanto conduct river die-away studies with respect to polychlorinated biphenyls?

A. Yes, it's my recollection that

WATER_PCB-SD0000008877

this was done.

Q. Do you know who was in charge of those studies?

A. Yes.

Q. Who?

A. Scott Tucker.

Q. And do you know over what period of time those studies were conducted?

A. My best estimate would be 1970 to '71.

Q. Did you have any role with respect to those studies, Doctor?

A. No, and only as manager of that area.

Q. Do you have any present recollection as to the results of those studies?

A. I have a few, I would call vague recollections.

Q. Could you please tell me what your vague recollections are?

A. That the river die-away test was not a very good test because of the very slow rate of degradation normally taking place with chlorinated biphenyl-type products; slow

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degradation.

Q. What is the relationship of the slow degradation to the river die-away test not being a very good test?

A. Well, there wouldn't be enough degradation with a period of time where you could actually see changes over a period of time, perhaps days or longer, to compare different species of chlorinated biphenyls.

Q. Were those tests indicative to you of the rate of degradation in naturally-occurring water systems?

A. Not to me, but I would not be the right one to answer that question.

Q. Who would be; Mr. Tucker?

A. Mr. Scott Tucker.

Q. Do you recollect what, if any, conclusion Mr. Tucker reached in his river die-away studies with respect to the degradation of Aroclor 1242 or higher?

A. At this point in time, I do not recall that.

MR. TALLON: Let me show you a document that will be marked as 301. It's a three-page document bearing production

WATER_PCB-SD0000008879

numbers TRAN 040011 through 13.

(Plaintiff's Deposition Exhibit 301 marked for identification.)

(Witness peruses said document.)

THE WITNESS: Okay.

BY MR. TALLON:

Q. Doctor, does reviewing the exhibit before you, and particularly the paragraph which is numbered 1, "Monsanto-USA studies," refresh your recollection in any respect as to the results of river die-away studies conducted in 1970?

A. Yes, now I see this, it does help me reflect on our earlier discussion.

Q. Do you recall having reviewed this exhibit, the results of river die-away studies with respect to Aroclor 1242?

A. No.

Q. In what respect has your recollection been refreshed as a result of reviewing this exhibit?

A. Well, you asked me if I knew what the difference of degradation would be in the

WATER_PCB-SD0000008880

river die away test, and I believe I responded that I could not recall that.

Q. Mm-hmm.

A. Now that I read this, I recall it, but that's, that's all.

Q. And now what do you recall?

A. Just what Scott Tucker -- presumably, this is out of his laboratory and his work, and he participated in this meeting with Papageorge for this document, concluded, and I guess I can't go beyond that.

Q. You mean, are you referring to the sentence that states, "River die-away studies indicated Aroclor 1221 disappears, Aroclors 1242, 1248 and 1254 were undegraded"?

MR. ZIMMER: I don't think he referred to a specific sentence. He mentioned the document.

MR. TALLON: That's why I mentioned it.

MR. ZIMMER: Okay, Doctor, let me ask you again not to speculate about what Dr. Tucker and others may have done to contribute to this document, but please tell him your recollection.

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A. Right. Well, I think I have to conclude with that that I really don't have a recollection, and I'll restate the reason, which its obvious, this came out of Dr. Flan (Phonetic), he participated in this meeting, put together this, and I really can't contribute beyond that.

Q. So you have no recollection of the conclusions of the river die-away studies --

A. No.

Q. And this document doesn't refresh your recollection?

A. No.

Q. Okay, what meeting are you referring to?

A. Well, I presume that it was -- this may have been an assumption on my part, but the opening sentence of this says I reviewed studies with these persons. Whether there was a meeting or not, I don't know.

MR. TALLON: Okay, that's fine.

MR. ZIMMER: Mr. Tallon doesn't want you to guess, presume or to speculate.

THE WITNESS: Okay.

MR. ZIMMER: He can interpret the

WATER_PCB-SD0000008882

document, as well.

THE WITNESS: Okay.

BY MR. TALLON:

Q. Doctor, were you ever part of a PCB task force?

A. I don't recall being ever so identified.

Q. All right. In 1970, do you know approximately how much of Mr. Tucker's time was spent on degradation studies with reflect to PCB's?

A. Relative to his total PCB efforts?

Q. Yes.

A. At least half would be my estimate.

Q. Is that half of the total time he worked, or half --

A. Half of the total time.

Q. And what percent of his total time was directed to his PCB efforts, as you --

A. A hundred percent.

Q. A hundred percent? So that was, basically, his job, is to work on the PCB issues?

A. Right.

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Q. And how does his time in 19 -- the expenditure of his time that you've just described compare with his, the expenditure of his time in 1969? Was it different?

MR. ZIMMER: Calls for speculation.

A. As I best recall, he was, in '69, also full-time on PCB's.

BY MR. TALLON:

Q. And Mr. Tucker was hired in 1967 or --

A. '67.

Q. '67?

A. '67.

Q. Do you have any knowledge with respect to how much time Mr. Tucker was spending on PCB-related studies in 1968?

A. Essentially full-time, as I recall.

Q. And what about the period or the portion of 1967 that he was working for Monsanto?

A. He was in the process of phasing into that, with his entry into Monsanto, and by the end of the year, he was essentially

WATER_PCB-SD0000008884

full-time.

Q. After 1971, did Mr. Tucker continue to work or continue to focus his work on PCB studies?

MR. ZIMMER: Calls for speculation.

A. Well, after '71, Scott continued, to my best recollection, and I'm not sure for how long, and other persons, perhaps, got involved, also.

BY MR. TALLON:

Q. Were other persons who were reporting to you or persons who were reporting to persons who were reporting to you, also involved in degradation work in the late Sixties and early Seventies?

A. Yes.

Q. Could you identify any persons by name?

A. The only person that comes to my mind would be Saeger, S-a-e-g-e-r.

Q. Is that Mr. Saeger?

A. Dr. Saeger.

Q. Dr. Saeger? And what was his job, as best you recall it?

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A. He was a research chemist and he was -- I'm not sure if he was assigned to Scott at that point, but he was, to my best recollection, involved with biodegradation studies, work.

Q. Do you know if Mr., Dr. Saeger is still working for Monsanto today?

A. As far as I know, he is.

Q. Other than Dr. Saeger and Mr. Tucker, do you recollect whether there are other persons in your group who were working on degradation studies in the late Sixties or early Seventies?

A. No.

Q. Are you --

MR. ZIMMER: It's Dr. Tucker, by the way.

BY MR. TALLON:

Q. Is it Dr. Tucker??

A. It is Dr. Tucker.

Q. Are you familiar with the name Dick Baxter?

A. Yes.

Q. And tell me what Mr. Baxter's position was in 1971.

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A. As I recall, he was a manager of research located at either Ruabon or Newport; I believe, Ruabon.

Q. Did Mr. Baxter have any responsibility with respect to degradation studies in Europe, so far as you know?

A. I don't know. I don't recall.

MR. TALLON: Let me show you a document that's going to be marked as Exhibit Number 302, a two-page document. One of the two pages bears production number TRAN 063363, and the other does not appear to be related, so we won't mark it.

(The page bearing production number TRAN 063363 was marked as Plaintiff's Deposition Exhibit 302 marked for identification.)

(Witness peruses said document.)

THE WITNESS: Okay.

BY MR. TALLON:

Q. Does reviewing that exhibit, Doctor, refresh your recollection in any respect as to whether or not Mr. Baxter was

WATER_PCB-SD0000008887

involved in degradation work in the early Seventies?

A. No, it does not.

Q. Do you recognize the handwriting that appears on the bottom of that one-page exhibit?

A. No, I cannot identify that writing.

Q. Is Dr. Saeger's first name Victor?

A. Yes, it is.

Q. Was he known as Vic?

A. Vic; correct.

Q. Doctor, do you know whether biphenyl-adaptel organisms have any effect on the degradation of PCB's?

A. No.

Q. Do you recall any work done by Monsanto in the late Sixties or Seventies having to do with the effect of bacterial organisms on the degradation of PCB's?

A. We -- Comment further on bacterial organisms.

MR. TALLON: Let me show you a document that may or may not be of assistance.

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We'll mark this as 303. It's a one-page document bearing production number TRAN 060457.

(Plaintiff's Deposition Exhibit 303 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Have you read that document?

A. Yes.

Q. Have you ever seen that before?

A. I don't remember.

Q. Does reviewing that document refresh your recollection in any respect as to whether there is any relationship between biphenyl-adaptel organisms and the degradation of PCB's?

A. No.

Q. Are you familiar with the term "Trigger substrate" as it relates to bio -- or, to degradation of PCB's?

A. No.

MR. TALLON: Let me show you a document, Doctor, which we'll mark as Exhibit

WATER_PCB-SD0000008889

304, a multipage document bearing production numbers BIR 007951 through 7962.

(Plaintiff's Deposition Exhibit 304 marked for identification.)

BY MR. TALLON:

Q. The question, Doctor, will be whether you have seen this document before.

(Witness peruses said document.)

A. I don't recall seeing this.

Q. Could you look at Page 4 of that document? I'm referring now to the numbers which appear at the top of the memorandum pages. There's a notation under the caption "Research: Biodegradation Studies -- Ruabon," referring to a biphenyl degrading culture C2," do you have any knowledge or information as to what biphenyl degrading culture C2 is referring to there?

A. No. None.

Q. Were biodegradation studies being conducted by the European offices of Monsanto contemporaneously with work going on in St.

WATER_PCB-SD0000008890

Louis in the late Sixties and early Seventies?

A. It's my recollection that some work was being done at the Ruabon facility, with their biodegradation facility. That's all I recall.

Q. Do you have any recollection as to who was involved in such work?

A. I can't come up with a name, no.

Q. Do you have any recollection as to whether that work was independent of or coordinated with the work underway in St. Louis?

A. I can't recall that.

Q. Do you recall or have any recollection whether, in connection with biodegradation studies being performed in the United States, biodegradation field tests were ever conducted? And by field tests, I mean outside the laboratory.

A. I don't recall any field tests.

MR. TALLON: Let me show you a document, Doctor, which we'll mark as the next exhibit. This is a multipage document bearing production numbers 0007267 through

WATER_PCB-SD0000008891

007302.

(Plaintiff's Deposition Exhibit 305 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Did you get a chance to review that document?

A. Yes.

Q. Do you recollect ever having seen that before?

A. I don't recall seeing this.

Q. Do you know whether there was an R. A. Lidgette working for Monsanto in 1971?

A. Yes.

Q. And what was Mr. Lidgette's position in 1971?

A. He was laboratory supervisor in charge of, including analytical-type work at Ruabon.

Q. Could you know if Mr. Lidgette is still living today?

A. Yes, he is.

Q. Is he retired?

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A. Yes.

Q. Do you know where he is?

A. Yes.

Q. Where?

A. It's near -- and don't ask me to spell this -- Llangollen in North Wales, which is, I would guess, fifteen, ten, fifteen miles from the Ruabon plant.

Q. And do you know whether H. A. Vodden, V-o-d-d-e-n, was working for Monsanto in 1971?

A. Yes.

Q. And what was his position as you best know it?

A. As I best recall, he was involved with process researching of functional fluid-type products, perhaps including Aro -- I'll strike that. Period.

Q. Do you know where he was physically located in 1971 for his office?

A. Ruabon.

Q. Do you know if he is still living today?

A. No, I don't.

Q. And where was he when you last

WATER_PCB-SD0000008893

knew his whereabouts?

A. At Ruabon twenty years ago.

Q. And did you know a P. E. Gilbert working for Monsanto in 1971?

A. I can't recall Mr. Gilbert.

Q. Without regard to your ability recollecting ever having seen this particular document, do you have any recollection of work done by Lidgette and Vodden having to do with the degradation of Aroclors 1242 and 1016?

A. No.

Q. Do you have any recollection of work done by Lidgette and Vodden having to do with biphenyl-degrading organisms C2 and C3?

A. No.

Q. Do you know what a biphenyl-degrading organism C2 is?

A. No.

Q. And would it, therefore, follow that you don't know what a biphenyl-degrading organism C3 is?

A. Correct.

Q. As a chemist, do you know if C2 refers to a particular compound?

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A. I can't answer that. When they use this in connection with bio-information studies, I'm not familiar with their terminology.

Q. Okay. Doctor, do you recollect ever having attended a meeting in 1970 with representatives of General Electric?

A. No.

MR. TALLON: Let me show you a document which we'll mark as the next exhibit in order. That is a multipage document bearing production numbers TRAN 023509 through 023518.

(Plaintiff's Deposition Exhibit 306 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Does reviewing Exhibit 306 refresh your recollection in any respect, Doctor, as to whether you attended a meeting with representatives of General Electric in 1970?

A. I can't recall anything about such a meeting.

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Q. Do you have any recollection, Doctor, of ever having met with any customers of Monsanto to discuss the biodegradability of Aroclor 1242?

A. I can't recall where I personally participated with that.

Q. Does the term Aroclor 1242-B have any meaning to you?

A. No.

Q. Does the term MCS 1016 have any meaning to you?

A. I -- the name of the term is familiar. I recall that name.

Q. Do you have anymore recollection than simply of the name?

A. It's my best recollection that was a, an experimental-type product as a potential replacement for Aroclor 1242.

Q. Did you personally have any responsibility for the testing of MCS 1016?

A. Not that I recall.

Q. Do you know whether MCS 1016 was used as a replacement for Aroclor 1242 in any respect?

A. No.

Q. You do not know?

A. I do not know.

Q. Do you know whether Mr. Tucker or anyone working for you conducted tests with respect to the biodegradability of MCS 1016?

A. I can't recall anything on that.

Q. Are you familiar with a man by the name of J. H. Mainprize?

A. Yes.

(Discussion off the record)

BY MR. TALLON:

Q. You said you did know a Mr. Mainprize?

A. I think I do. I think I can, I recall who Mainprize was.

Q. What do you recall?

A. I couldn't have thought of the name myself, but now that I hear it, it's my best recollection he was involved with or possibly supervised the biodegradability-type functions at Ruabon.

Q. All right, let me ask you if you can identify the document that we will mark as the next exhibit, a multipage document bearing two series of production numbers.

WATER_PCB-SD0000008897

The first is 0001966, and that runs through 0002006, attached to pages TRAN 066313 and 066312.

(Plaintiff's Deposition Exhibit 307 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Have you seen that before, Doctor?

A. I have no recollection of this report at all.

Q. Does reviewing that exhibit refresh your recollection in any respect as to work done on the biodegradation of Aroclor 1242 in comparison with potential substitute products?

A. No.

Q. Do you know whether MCS 1016 replaced Aroclor 1242 in any product?

A. No.

Q. You do not know whether or not it did?

A. I did not know that.

Q. Do you recollect ever having been

WATER_PCB-SD0000008898

a participant in any discussion or communication in which the use of MCS 1016 as a replacement for Aroclor 1242 was a subject?

A. No.

MR. TALLON: Let me show you a document bearing production numbers TRAN 042387 through 389, which we will mark as the next exhibit.

(Plaintiff's Deposition Exhibit 308 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Did you review that, Doctor?

A. Yes.

Q. Does review of that document refresh your recollection in any respect as to whether you had any participation in discussions or communications regarding the substitution of MCS 1016 for Aroclor 1242?

A. No.

Q. In particular, does reference to the paragraph numbered 2 on Page 1 under "Biodegradation Studies" enhance your

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recollection in that regard?

A. No.

MR. TALLON: Let's mark as the next exhibit a one-page document bearing production number TRAN 009721.

(Plaintiff's Deposition Exhibit 309 marked for identification.)

MR. TALLON: Please review that.

(Witness peruses said document.)

(Plaintiff's Deposition Exhibit 310 marked for identification.)

BY MR. TALLON:

Q. Did you ever see that document before, Doctor?

A. No. I don't recall this document.

Q. Do you recall planning for a meeting with representatives of NCR?

A. I have no recollection of that.

Q. Let me show you a document that the court reporter has now marked as the next exhibit, Exhibit 310, and ask you whether a review of this document enhances your

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recollection in any respect with regard to a meeting or meetings conducted between Monsanto and representatives of NCR.

A. No, I can't, I can't recall anything out of this.

Q. Do you recollect, Doctor, ever meeting with representatives of Westinghouse in 1970 to discuss PCB's?

A. It's my recollection there was a meeting with Westinghouse. I can't recall participants, or time frame, or anything.

MR. TALLON: Let me show you a document that bears production number 1154 and which we will mark as the next exhibit.

(Plaintiff's Deposition Exhibit 311 marked for identification.)

BY MR. TALLON:

Q. I ask you to take a look at that and see if reviewing it refreshes your recollection in any respect as to a meeting with Westinghouse.

(Witness peruses said document.)

BY MR. TALLON:

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Q. Does review of that exhibit refresh your recollection in any respect --

A. No.

Q. -- about the meeting with Westinghouse?

A. (Witness shakes head in negative manner.)

Q. Do you recall anything about any meeting with Westinghouse other than that one occurred?

A. No.

Q. Doctor, are you familiar with a Monsanto product known as Aroclor 5460?

A. I recall the terminology, Aroclor 5460. That much I recall, as a Monsanto product.

Q. Do you know if Aroclor 5460 was a chlorinated terphenyl?

A. That's my recollection, a chlorinated polyterphenyl, probably; terphenyl.

Q. Do you have any understanding as to whether Aroclor, or excuse me, yes, whether Aroclor 5460 contained any chlorinated biphenyls?

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A. I don't recall.

MR. TALLON: Well, let me show you a document, a two-page document bearing production numbers TRAN 058001 and 002.

(Plaintiff's Deposition Exhibit 312 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Did you review that, Doctor?

A. Yes.

Q. Does your review of Exhibit 312 refresh your recollection in any respect as to whether Aroclor 5460 was composed in part of chlorinated biphenyls?

A. No.

Q. Doctor, do you recall ever attempting to determine a test method for determining chlorinated biphenyl content of Aroclor 5460?

A. No.

Q. Do you recollect whether anyone in your group did so?

A. I have no recollection of that.

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Q. Just for the sake of clarity, do you have an understanding one way or the other as to whether Aroclor 5460 was composed in part of polychlorinated biphenyls?

A. I don't know that.

MR. TALLON: Okay.

Why don't we take a two-minute break.

(Recess)

BY MR. TALLON:

Q. Doctor, are you familiar with the term "Semi-continuous activated sludge test?

A. Yes.

Q. And can you state for the record your understanding of that phrase?

A. It's a test that is designed to simulate a secondary sewerage disposal plant treatment where microorganisms in the test are used along with certain nutrients to show degradation of tested materials under controlled conditions with that experimental parameter.

Q. Did someone in your group perform semi-continuous activated sludge tests with respect to PCB degradation in the late

Sixties or early Seventies?

A. Yes.

Q. Who?

A. Well, this would have been Scott Tucker, Victor Saeger, primarily.

MR. TALLON: Let me show you a document, Doctor, that bears production numbers 3485 and 3486, and we'll mark that as Exhibit 313.

(Plaintiff's Deposition Exhibit 313 marked for identification.)

BY MR. TALLON:

Q. Can you identify the document?

(Witness peruses said document.)

A. Okay.

Q. Can you identify the document?

A. I don't recall this correspondence or the document.

Q. Do you have any recollection as to the results of semi-continuous activated sludge tests and river water die-away tests as of June 1970?

A. No.

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Q. Do you have any recollection whether early results from such tests indicated that a major number of the two chlorine and three chlorine isomers degrade under certain conditions?

A. What I remember from the test is, you could show more rapid biodegradability of the lower-chlorinated isomers of PCB's relative to the higher-chlorinated isomers. I don't recall more than that, and I'm not sure what time frame that work was done in.

Q. By lower chlorinated, are you referring to two chlorine and three chlorine isomers?

A. Yes, and also three and four.

Q. And is it your recollection that the five, six and higher chlorine isomers did not degrade to the same extent or at the same rate as the lower chlorinated isomers?

A. Yes.

Q. Do you have any recollection as to when you acquired that information?

A. No, I do not.

Q. Do you recall, Doctor, ever doing any work to determine whether PCB's were

present in Monsanto food or medicine products?

A. No.

MR. TALLON: Let me show you a document which we'll mark as the next exhibit, bearing production number TRAN 021409.

(Plaintiff's Deposition Exhibit 314 marked for identification.)

(Witness peruses said document.)

A. Okay, I don't recall generating this document, but --

BY MR. TALLON:

Q. Do you know what cresyldiphenyl phosphate is?

A. I believe it's an additive used in some Monsanto products.

Q. Do you know what the purpose of the additive is?

MR. ZIMMER: In which product?

MR. TALLON: I don't know. I'll find out from the doctor what it is.

A. No, I really don't know the

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purpose of it as an additive.

BY MR. TALLON:

Q. Do you know what saccharin is?

A. Yes.

Q. It's a sweetener; correct?

A. Correct.

Q. And do you know what Santicizer 334F is?

A. No, I do not.

Q. Do you know what Santicizer 711 is?

A. No.

Q. Santicizer 160, do you know what that is?

A. That's a plasticizer product. And I would assume the other Santicizers are plasticizer products.

Q. And do you know what Vanillin is?

A. Yes.

Q. What is it?

A. That's a synthetic vanilla product produced by Monsanto.

Q. Do you know for what use that product is put to?

A. Flavorings.

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Q. Having reviewed this list, do you have any enhanced recollection of testing for PCB's in certain Monsanto products?

A. I have no recollection.

Q. Do you have any recollection, Doctor of ever being told by Mr. -- Dr. Tucker that he had found PCB's in dishwasher detergents?

A. No.

Q. Do you have any specific recollection, Doctor, of Dr. Tucker ever telling you that he had found Aroclor 1242 present in dishwasher detergents?

A. No, I don't recall that.

MR. TALLON: Let me show you a document that we'll mark as Exhibit 315, bearing production number TRAN 023044, and ask you to take a moment and review it.

(Plaintiff's Deposition Exhibit 315 marked for identification.)

(Witness peruses said document.)

BY MR. TALLON:

Q. Have you reviewed it?

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A. Yes.

Q. Does reviewing it, or has reviewing it refreshed your recollection in any respect about any work done by Dr. Tucker in connection with identifying PCB's in dishwasher detergents?

A. No.

Q. Do you recollect ever having had discussions with Pap -- Dr. Tucker about the presence of PCB's in household products of any kind?

A. No.

Q. Do you recollect ever having had any discussions with Mr. Papageorge about the presence of PCB's in household products of any type?

A. No.

Q. Doctor, does the handwritten notation in the upper right-hand corner of this exhibit that appears to say "Aroclor SP," do you see that?

A. Yes.

Q. Can you identify that handwriting?

A. It looks like it could be mine.

Q. Did you have a file denominated

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"Aroclor SP" in 1972?

A. If you are asking what "SP" means, I think I would have had a file -- at that time, I think the business unit was called, perhaps, Specialty Products. That would be Aroclor, perhaps, in the specialty products file. That's about as far as I can go with it.

Q. Did you keep files in your office in 1972?

A. Mm-hmm, yes.

Q. Did you have any files that related particularly to testing with respect to PCB's?

A. No separate files apart from products, et cetera; that I recall.

Q. Do you recollect whether, if you received written reports of studies relating to PCB's, where you filed such reports?

THE WITNESS: Would you read that back, please?

THE COURT REPORTER:

"Q. Do you recollect whether, if you received written reports of studies relating to PCB's, where you filed such

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reports?"

A. No. I don't recall that.

MR. TALLON: All right, thank you.

MR. ZIMMER: Thank you, Doctor.

THE WITNESS: Thank you.

(Whereupon, at 10:45 a.m., the deposition was concluded.)

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COMES NOW THE WITNESS, ROBERT ELLIS KELLER, and having read the foregoing transcript of the deposition taken on the 11th and 12th days of June, 1992, acknowledges by signature hereto that it is a true and accurate transcript of the testimony given on the date hereinabove mentioned.

Robert Ellis Keller

ROBERT ELLIS KELLER

Subscribed and sworn to before me this 15 day of July, 1992.

BROMA J. ROBINSON
NOTARY PUBLIC — STATE OF MISSOURI
ST. LOUIS COUNTY
MY COMMISSION EXPIRES AUG. 28, 1995

My Commission expires:

Broma J. Robinson

Notary Public

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STATE OF MISSOURI)
SS:)
CITY OF ST. LOUIS)

I J. Bryan Jordan, notary public in and for the State of Missouri, duly commissioned, qualified and authorized to administer oaths and to certify depositions, do hereby certify that pursuant to agreement in the civil cause now pending and undetermined in the Supeiror Court of the State of California, to be used in the trial of said cause in said court, I was attended at the offices of Bryan, Cave, McPheeters & McRoberts, in the City of St. Louis, State of Missouri, by the aforesaid witness and by the aforesaid attorneys, on the 11th and 12th days of June, 1992.

The said witness, being of sound mind and being by me first carefully examined and duly cautioned and sworn to testify the truth, the whole truth, and nothing but the truth in the case aforesaid, thereupon testified as is shown in the foregoing transcript, said testimony being by me reported in shorthand and caused to be

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transcribed into typewriting, and that the foregoing pages correctly set forth the testimony of the aforementioned witness, together with the questions propounded by counsel and remarks and objections thereto, and is in all respects a full, true, correct and complete transcript of the questions propounded to and the answers given by said witness; that signature of the deponent was not waived by agreement of counsel.

I further certify that I am not of counsel or attorney for either of the parties to said suit, not related to nor interested in any of the parties or their attorneys.

Witness my hand and notarial seal at St. Louis, Missouri, this 15th day of June, 1992.

My commission expires July 20, 1994.

J. Bryan Jordan

Notary Public in and for the

State of Missouri

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