SUPERIOR COURT OF CALIFORNIA
CITY AND COUNTY OF SAN FRANCISCO

BIRMINGHAM FIRE INSURANCE COMPANY, et al.,	)	
Plaintiffs,	)	
vs.	)	No. 840161
PACIFIC GAS & ELECTRIC COMPANY, et al.,	)	
Defendants.	)	

VOLUME I

Deposition of Witness
GEORGE J. LEVINSKAS
on Behalf of the Plaintiffs.

******

August 5, 1987

Direct Examination by Mr. Dicum.....Page 4

Reported by:
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Certified Court Reporter

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STLCOPCB4027561

INDEX OF EXHIBITS

	Page Marked	Page Identified
Plaintiff's Exhibit No. 23 Letter from Papageorge to Jenkins dated 7-8-70 BIR No. 001476 through 001478	44	47
Plaintiff's Exhibit No. 24 Letter from Papageorge to O'Leary dated 8-17-70 BIR No. 001474 through 001475	44	48
Plaintiff's Exhibit No. 25 Article by Walter Weyzen BIR No. 001600 through 001606	59	60
Plaintiff's Exhibit No. 26 Article on Identification of Polychlorinated Isomers in in Fly Ash and PCB Pyrolysis BIR No. 001625 through 001691	59	59
Plaintiff's Exhibit No. 27 Article on Formation of PCDFs from the Pyrolysis of PCBs BIR No. 001577 through 001587	59	59
Plaintiff's Exhibit No. 28 Article on PCDFs Found in Yusho Oil and in Used Japanese PCB BIR No. 001681 through 001687	88	88
Plaintiff's Exhibit No. 29 Article in Chemical Regulation Reporter BIR No. 001677 through 001680	88	103
Plaintiff's Exhibit No. 30 Article on Debate Continues over Dow's Dioxin Theory BIR No. 001575 through 001576	88	107

INDEX OF EXHIBITS (Cont'd)

	Page Marked	Page Identified
Plaintiff's Exhibit No. 31 Article on Formation of PCDFs From the Pyrolysis of Individual PCB Isomers BIR No. 001607 through 1624	88	108
Plaintiff's Exhibit No. 32 Article on Dioxins and Dibenzofurans BIR No. 001636 through 001648	88	110
Plaintiff's Exhibit No. 33 Article on PCDDs, PCDFs, and Other PCPNAs Formed During PCB Fires BIR No. 001649 through 001676	88	124
Plaintiff's Exhibit No. 34 Article on Contamination of and Office Bldg. in Binghamton, New York BIR No. 001588 through 001599	88	125
Plaintiff's Exhibit No. 35 Letter from Shipp to EPA dated 6-24-82 with attachments BIR No. 001692 through 001708	126	126
Plaintiff's Exhibit No. 36 Program for Monitoring Potential Contamination in the Laboratory	132	
Plaintiff's Exhibit No. 37 Letter from Borghese to Wright dated 2-16-76 BIR No. 007551 through 007552	155	156
Plaintiff's Exhibit No. 38 Letter from Martin to Wright dated 11-22-76 with attachments BIR No. 007553 through 007556	160	160

INDEX OF EXHIBITS (Cont'd)

	Page Marked	Page Identified
Plaintiff's Exhibit No. 39 Letter from Wright to Martin dated 2-11-77 BIR No. 007558	163	
Plaintiff's Exhibit No. 40 Letter from Martin to Wright dated 2-24-77 BIR No. 007559	168	169
Plaintiff's Exhibit No. 41 Letter from Martin to Wright dated 3-3-77 BIR No. 007560	168	174
Plaintiff's Exhibit No. 42 Materials and Methods BIR No. 007561 through 007567	168	172
Plaintiff's Exhibit No. 43 Report of Litton Bionetics BIR No. 004385 through 004944	181	181
Plaintiff's Exhibit No. 44 Letter from Martin to to Wright dated 4-11-77 BIR No. 007569	188	188
Plaintiff's Exhibit No. 45 Letter from Martin to Wright dated 4-15-77 with attachments BIR No. 007570 through 007582	190	190
Plaintiff's Exhibit No. 46 Letter from Martin to Wright dated 8-8-77 BIR No. 007583	197	197

INDEX OF EXHIBITS (Cont'd)

	Page Marked	Page Identified
Plaintiff's Exhibit No. 47 Letter from Martin to Laveglia dated 11-17-77 BIR No. 007584 through 007585	198	200
Plaintiff's Exhibit No. 48 Letter from Martin to Laveglia dated 3-15-78 BIR No. 007586	203	203
Plaintiff's Exhibit No. 49 Letter from Martin to Berteau dated 4-11-78 BIR No. 007588 through 007589	203	204
Plaintiff's Exhibit No. 50 Letter from Martin to Berteau dated 5-10-78 BIR No. 007590	203	
Plaintiff's Exhibit No. 51 Letter from Martin to Berteau dated 5-17-78 BIR No. 007591	203	208
Plaintiff's Exhibit No. 52 Letter from Berteau to Martin dated 6-1-78 BIR No. 007592 through 007593	203	216
Plaintiff's Exhibit No. 53 Letter from Berteau to Martin dated 6-28-78 with attachments BIR No. 007594 through 007599	203	218
Plaintiff's Exhibit No. 54 Letter from Martin to Berteau dated 7-14-78 with attachment BIR No. 007600 through 007602	203	236

INDEX OF EXHIBITS (Cont'd)

	Page Marked	Page Identified
Plaintiff's Exhibit No. 55 Letter from Giss to Berteau dated 8-7-78 with attachment BIR No. 007603 through 007605	203	
Plaintiff's Exhibit No. 56 Letter from Adamo to Berteau dated 8-18-78 BIR No. 007605	203	
Plaintiff's Exhibit No. 57 Letter from Martin to Berteau dated 9-1-78 BIR No. 007606 through 007607	203	223
Plaintiff's Exhibit No. 58 Letter from Cicmanec to Berteau dated 9-8-78 BIR No. 007608	203	
Plaintiff's Exhibit No. 59 Letter from Giss to Berteau dated 9-11-78 BIR No. 007609	203	224
Plaintiff's Exhibit No. 60 Letter from Martin to Berteau dated 9-15-78 with attachment BIR No. 007610 through 007611	203	
Plaintiff's Exhibit No. 61 Letter from Martin to Berteau dated 10-5-78 with attachments BIR No. 007612 through 007652	203	225
Plaintiff's Exhibit No. 62 Project (Protocol) Change Sheet dated 12-7-78 BIR No. 007650	203	

INDEX OF EXHIBITS (Cont'd)

	Page Marked	Page Identified
Plaintiff's Exhibit No. 63 Letter from Martin to Berteau dated 1-19-79 BIR No. 007652	203	227
Plaintiff's Exhibit No. 64 Letter from Martin to Berteau dated 3-2-79 BIR No. 007653	203	230
Plaintiff's Exhibit No. 65 Letter from Berteau to Martin dated 3-8-79 BIR No. 007654	203	
Plaintiff's Exhibit No. 66 Letter from Martin to Berteau dated 4-6-79 with attachment BIR No. 007657 through 007659	203	
Plaintiff's Exhibit No. 67 Letter from Martin to Berteau dated 4-12-79 BIR No. 007660	203	
Plaintiff's Exhibit No. 68 Letter from Phillips to Berteau dated 6-27-79 BIR No. 007662	203	
Plaintiff's Exhibit No. 69 Letter from Berteau to Martin dated 7-10-79 with attachments BIR No. 007663 through 007668	203	
Plaintiff's Exhibit No. 70 Letter from Berteau to Martin dated 6-2-80 with attachment BIR No. 007669 through 007670	203	218

INDEX OF EXHIBITS (Cont'd)

	Page Marked	Page Identified
Plaintiff's Exhibit No. 71 Letter from Adamo to Berteau dated 8-4-80 BIR No. 007671	203	
Plaintiff's Exhibit No. 72 Letter from Berteau to Martin dated 8-29-80 BIR No. 007672	203	237
Plaintiff's Exhibit No. 73 Letter from Berteau to Martin dated 3-23-81 BIR No. 007673 through 007675	203	242

SUPERIOR COURT OF CALIFORNIA
CITY AND COUNTY OF SAN FRANCISCO

BIRMINGHAM FIRE INSURANCE COMPANY, et al.,	)	
Plaintiffs,	)	
vs.	)	No. 840161
PACIFIC GAS & ELECTRIC COMPANY, et al.,	)	
Defendants.	)	

DEPOSITION OF WITNESS GEORGE J. LEVINSKAS, produced, sworn and examined on the part of the Plaintiffs, pursuant to Notice, and pursuant to the following stipulation between the hours of eight o'clock in the forenoon and six o'clock in the afternoon of Wednesday, August 6, 1987, at the Holiday Inn, 7730 Bonhomme Avenue, Room 407, in the County of St. Louis, State of Missouri, before me,

CAROLYN SUE HOWSER
Certified Court Reporter
of
HOWSER COURT REPORTING

a Notary Public in and for the State of Missouri, in a certain cause now pending in the Superior Court of California, City and County of San Francisco, wherein BIRMINGHAM FIRE INSURANCE COMPANY, et al., are the Plaintiffs and PACIFIC GAS & ELECTRIC COMPANY, et al., are the Defendants.

A p p e a r a n c e s

For the Plaintiffs: Hall, Henry, Oliver & McReavy
Attorneys at Law
100 Bush Street - Suite 1200
San Francisco, CA 94104
By: Henry D. Dicum

STLCOPCB4027569

Appearances (Cont'd)

For the Defendant I.T. Corp.:	La Follette, Johnson, Schroeter & De Hass Attorneys at Law 50 California Street - 35th Floor San Francisco, CA 94111 By: Matthew J. Rothschild
For the Defendant PG&E:	Sedgwick, Detert, Moran & Arnold Attorneys at Law One Embarcadero Center - 17th Floor San Francisco, CA 94111 By: Beth S. Jordan
For the Defendants Weaver and Welton Beckett:	Lempres & Wulfsberg Attorneys at Law 300 Lakeside Drive - 18th Floor Oakland, CA 94612 By: Roy A. Combs
For the Defendant Westinghouse:	Thelen, Marrin, Johnson & Bridges Attorneys at Law Two Embarcadero Center San Francisco, CA 94111 By: Gary Fontana
For the Defendant Monsanto Company:	Bronson, Bronson & McKinnon Attorneys at Law Bank of America Center San Francisco, CA 94104 By: Bernard Kearns
Also Present:	Mary Oliver

Stipulation

Before the taking of the within deposition, the parties, by their counsel, stipulate and agree that the same is being taken pursuant to Notice. Counsel further stipulate same may be taken in stenotypy and thereafter typed, signature of the witness not being waived, and regularly filed in the case, subject to objections as to competency, relevancy, and materiality.

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GEORGE J. LEVINSKAS

being produced, sworn and examined on behalf of the Plaintiffs, deposeth and saith:

DIRECT EXAMINATION

BY MR. DICUM:

Q. Sir, could you state for the record your full name and address.

A. My name is George J. Levinskas. I live at 526 Fairways Circle in Creve Coeur, Missouri.

MR. ROTHSCHILD: How do you spell that city in Missouri?

THE WITNESS: Creve Coeur, C-r-e-v-e, C-o-e-u-r.

MR. ROTHSCHILD: C-r-e-v-e, C-o-e-u-r?

THE WITNESS: Right, it's two words.

Q. Do you currently work for Monsanto?

A. Yes, I do.

Q. Could you tell us when you first started working for Monsanto?

A. The summer of 1971.

Q. Any particular month that you recall starting there?

A. July.

Q. Have you had your deposition taken before?

A. Yes.

Q. In what matters?

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A. At the request of attorneys for different circumstances.

Q. Pardon me?

A. At attorneys' request for different circumstances.

Q. Were those -- was that more than one deposition?

A. Yes.

Q. Did the circumstances involve any kind of facts involving alleged exposures to PCBs?

A. Yes.

Q. Can you tell us where the cases were?

A. I have not testified. I've been deposed.

Q. I understand. Can you tell us where the cases were, these depositions?

MR. KEARNS: You mean where the cases were pending?

Q. Where the facts were, where the cases were pending.

A. The depositions were given in Houston.

Q. Was the lawsuit on file in Houston?

A. I don't know.

Q. How many times have you been deposed?

A. Four or five.

Q. Can you tell us what the names of the cases

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were?

A. I don't recall specific names. I have not testified in any of those cases.

Q. Can you tell us any names of cases in which you've been deposed?

A. I don't recall the names of the cases.

Q. Let me try out something for you. Have you been deposed in a case called Holly Farms?

A. No.

Q. Ever been deposed in a litigation in North Carolina?

A. No.

Q. What about any litigation in Tulsa?

A. No.

Q. Or in Miami?

A. No.

Q. What kind of cases were they in terms of the alleged exposure?

MR. KEARNS: You mean --

Q. What sort of exposure was involved, whether it was spills, leaks, or what exactly was alleged?

A. I'm not sure that I really know in all cases the alleged roots of exposure. The one in Houston is just -- I don't know the specific nature of the exposure to PCBs. There was one on dioxin which

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involved a railroad spill.

Q. A railroad spill?

A. A railroad spill. I don't recall details or being told details of the exposures on the others.

Q. Was that spill from a transformer?

A. No, it was a railroad tank car rupture.

Q. Have you received any kind of transcript of any of those depositions?

A. I've seen transcripts of the depositions that I gave.

Q. Did you make any kind of corrections or changes to the deposition transcripts?

A. Yes.

Q. And you sent them into the court reporter I take it?

A. I beg your pardon?

Q. You sent those into the court reporter I suppose?

A. Yes.

Q. We may come back to that later. Well, in view of the fact you've had several depositions taken, you I expect are familiar with the process, but essentially let me remind you it is a question and answer session in front of a court reporter who is taking down every word that you say and every word that

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I say and anyone else says unless we agree to go off the record for purposes of convenience and that you are under oath, of course, and your oath has just been administered.

If you don't understand a question, I would like you to tell me you don't understand a question because I don't want you to guess at what I mean.

We want to try to get at the facts and try to get the record as clear as we can and again just to remind you a little bit about sort of the procedure we have, you have to actually use words to explain your meaning. In other words, nodding, shaking your head, that's not going to get into the transcript and also to help the court reporter, I'm going to let you -- and help both of us, I'm going to let you finish your answers and if you would, please let me finish my questions because she can't take down two conversations going on on top of each other at the same time, okay?

A. Okay.

Q. So when you came to Monsanto in July of 1971, what kind of educational background did you have?

A. I have a bachelor's degree in chemistry and a Ph.D. in pharmacology.

Q. From what institutions was that education obtained?

A. The bachelor's from Wesleyan University in Middletown, Connecticut, and the doctorate from the University of Rochester.

Q. Did you do any kind of study in the course of either of those degrees of PCBs?

A. No.

Q. Did you write a paper for your doctorate?

A. Yes.

Q. In what area did you write that paper?

A. It was on synthetic hydroxylapatite (bone mineral).

Q. You'll have to explain that a little bit more. You have to assume that I am a basic layman and that you have to explain things in really very simple terms for me.

A. It is an inorganic chemical which is similar to the inorganic part of bone in people and it was a study on the chemistry of that mineral.

Q. When you say, "bone," was this human bone or animal bone?

A. It was synthetic material which is structurally chemically identical to the inorganic part of bone. It could be animal or human.

Q. Now, in the course of any of your studies whether in the B.S. in chemistry or the pharmacology,

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did you do any studies that involved learning about animal testing procedures?

A. No.

Q. Did you receive any kind of further education after you got your pharmacology degree?

A. Mostly it's reading and self study. There have been a few refresher courses given by professional societies.

Q. Are you a member of any professional society?

A. Yes.

Q. What societies?

A. American Chemical Society, the American Industrial Hygiene Association, the American Society for Pharmacology and Experimental Therapeutics, the Society of Toxicology, the New York Academy of Sciences, the Society of the Sigma Psi.

Q. Pardon me?

A. The Society of the Sigma Psi, Environmental Mutagen Society, and if I did not say it, the New York Academy of Sciences.

Q. Can you tell us whether these or any of these are societies that you need to enter by passing some kind of test or professional exam?

A. I'm a charter member of the Society of

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Toxicology. The American Society for Pharmacology and Experimental Therapeutics requires demonstration of research in the area of pharmacology. I was founding member or charter member of the Environmental Mutagen Society. I believe those are the only ones -- those three societies do have requirements for active interest in the field, evidence of publications or research in the field.

Q. What publications did you rely on in order to become a member or become a charter member of those societies?

A. At the time of application, I could not specify, but something on the order of three to five papers were picked and submitted along with the membership application.

Q. Let me back up a moment. Can you tell me what dates your bachelor's and doctoral degrees were?

A. Bachelor's in 1949, doctoral in 1953.

Q. Between 1949 -- I beg your pardon, between 1953 and today, what was your job experience before you joined Monsanto?

A. I taught in a graduate school public health at the University of Pittsburgh from 1953 to 1958. I was with the American Cyanamid Company from 1958 until 1971.

MR. ROTHSCHILD: Excuse me, American what?
THE WITNESS: Cyanamid, C-y-a-n-a-m-i-d.
MR. ROTHSCHILD: American Cyanamid?
THE WITNESS: Company.
MR. ROTHSCHILD: From?
THE WITNESS: From '58 to '71.
MR. ROTHSCHILD: Thank you.
A. Then in '71 I joined Monsanto.
Q. What subjects did you teach in the graduate school at Pittsburgh?
A. Predominantly applied toxicology.
Q. Did any of that have anything to do with PCBs at any time?
A. No.
Q. Or dioxin?
A. No.
Q. Or something called chlorinated dibenzofuran?
A. No.
Q. Now, the American Cyanamid Company, what position or positions did you hold in that period between '58 and '71?
A. I joined them as a research pharmacologist. Then I became their chief industrial toxicologist and also director of their environmental health laboratory.

Q. Can you give us some dates for these various positions?

A. The first one was perhaps on the order of six months to a year, after which I held the other two.

Q. At the same time?

A. Concurrently, yes.

Q. Now, when you were in the University of Pittsburgh, did you do any kind of work in the area of animal testing?

A. Yes.

Q. Was that the first time that you started doing tests in the animal testing field?

A. I did some animal testing while in graduate school.

Q. Can you tell us what lab you did those animal tests in while in graduate school?

A. We had a laboratory as a part of the department.

Q. In Rochester, is that correct?

A. I'm sorry, you said in graduate school?

Q. Yes.

A. I'm sorry. Well, it would have been part of the medical school laboratories. It was not a separate laboratory.

Q. And that was in Pittsburgh or Rochester?

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A. Rochester.

Q. Did -- or perhaps you didn't tell us. What exactly do these tests consist of that you did in graduate school?

A. Most of them were feeding diets to produce rickets in animals so that I could study the changes in bone as a result of the rickets.

Q. Was it still the product we're talking about?

A. Bone mineral.

Q. Bone mineral, all right. What sort of animals did you use?

A. Mostly guinea pigs, smaller numbers of rats and mice.

Q. Any particular type of rat?

A. I do not recall.

Q. Do you know of something known as a Charles River rat?

A. I have knowledge of it, yes.

Q. Did you use any Charles River rats do you recall in Rochester?

A. I indicated I do not recall the specific strain. I doubt that they were using the Charles River rat.

Q. At the University of Pittsburgh where you

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were teaching, did you do any kind of animal testing work there?

A. Yes.

Q. What kind of work?

A. We had contracts with various government agencies and we were looking at the toxicity of a variety of industrial and military chemicals.

Q. Did any of those chemicals involve PCBs?

A. No.

Q. Or dioxins?

A. No.

Q. Or furans?

A. No.

Q. Again, what sort of animals did you use for those tests?

A. Again -- well, not again. This time predominantly rats, some rabbits, some dogs, and some monkeys.

Q. What kind of monkeys?

A. Rhesus monkeys.

Q. What kind of dogs?

A. Beagles.

Q. And what kind of rats?

A. Carworth Farms at that time.

Q. Were they albinos?

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A. Yes, albino rats.

Q. Now, can you tell us at this point whether you recall what kind of rats you used?

A. They were from Carworth Farms. Carworth at that time had a so-called Wistar derived strain, Carworth Farms Wistar.

Q. Do you know where exactly Charles River rats were first developed?

A. No. The Charles River laboratory has had a rather long existence.

Q. Okay. Do you remember if at some point during your career they suddenly came into existence? Do you remember hearing about Charles River strain rats whereas before you didn't have Charles River rats to experiment on?

A. I cannot recall a specific time. My recollection is that they have been -- it's a long standing laboratory.

Q. Now, did any of these tests involve feeding of these animals?

A. The ones I did at the University of Pittsburgh were predominantly not feeded.

Q. What kind of tests were they?

A. Mostly inhalation exposures.

Q. What kind of equipment did you use for

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that?

A. We had exposure chambers which we had built ourselves with a variety of plumbing and hardware to convey the material into the chambers and to exhaust it, to scrub the air and get rid of the contaminants before we exhausted the air outside the building. At this stage, I can't recall specific details.

Q. I may have asked you this question before. If so, please forgive me and tell me. But did any of these experiments in inhalation involve inhalation of vapors or of PCBs?

A. No.

Q. Or of dioxins?

A. No.

Q. Or of furans?

A. No.

Q. Did you do any kind of patch test work, any skin tests?

A. I have not done patch tests as I think of them in terms of humans. We do do applications of materials to rabbit skin.

Q. And can you tell us any specific chemicals that you can recall that you, in fact, did test while at the University of Pittsburgh?

A. It was a class of compounds called boron

hydrides or boranes which at that time were being considered as high energy fuels for aircraft. That was the predominant one. There was a variety of related chemicals.

Q. Did you do any testing of any form of chlorinated hydrocarbon?

A. Not that I recall.

Q. Have you ever done any tests on DDT, for instance?

A. No.

Q. Or on a chemical Aldrin, A-l-d-r-i-n?

A. No.

Q. Or of Dielerin?

A. No.

Q. Or of Toxaphene?

A. No.

Q. Did you publish any papers at this time while at the University of Pittsburgh?

A. Yes.

Q. Can you remember what those papers were?

A. They dealt with the toxicity of the boranes, the compounds that I just referred to, a little bit of the chemistry of the compounds and I believe I also published my dissertation which I had conducted earlier at the University of Rochester.

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Q. Can you tell us where that was published?

A. Those days probably most of them would be in the American Industrial Hygiene Association Journal. The dissertation was in the Journal of Physical Chemistry.

Q. When you say you did animal tests, was this work where you were doing hands-on work or did you have some kind of lab assistant who actually did the hands-on work and supervised him or her?

A. At that time both. I had some assistants, but I also was participating personally in the dosing of animals.

Q. Have you done or did you do while, first of all, at graduate school at Rochester any kind of hands-on work involving animals?

A. Everything I did at Rochester with animals I did myself.

Q. Did that involve the dissection -- if that's the word -- of the animals after they were killed?

A. Yes.

Q. And did you sacrifice animals yourself?

A. Yes.

Q. Did you as a result of your experience at Rochester and the University of Pittsburgh get a

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familiarity with the procedures that existed for animal testing?

A. Yes.

Q. Now, would it be fair to say that for the purposes of testing animals you have to take samples of tissues? Is that the purpose of that?

A. I don't think that is a generalization that would apply to all tests.

Q. Can you tell me what actually you were observing in that case in the tests in Rochester?

A. Well, the purpose of an experiment is to answer a question.

Q. I understand.

A. So one phrases the question and then designs an experiment to attempt to answer the question.

Q. First of all, have you read animal tissues?

A. No, I have looked at them, but I do not consider myself a pathologist. I do not read animal tissues.

Q. Now, when an animal was sacrificed if a tissue had to be taken and read while you were at, let's say, Rochester, would you have sent it to some other specialty, some pathologist perhaps who would have read it?

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A. The work I did at Rochester did not involve microscopic examination of tissues.

Q. What about the work involved at the University of Pittsburgh?

A. At the University of Pittsburgh, we sent tissues to the pathologist in the medical school for evaluation.

Q. Were these tissues already set up on slides by the time it got to the pathologist?

A. Yes.

Q. Did you set up the tissues on slides?

A. I did not, but technicians that were reporting to me did.

Q. Have you seen that procedure done, the setting up of tissues on slides?

A. Yes.

Q. Can you tell me in 1953 to '58 was there a standard procedure for doing that?

A. I am not aware of a standard procedure in the sense of either a universally accepted or a legalized regulated type procedure.

Q. Now, you said a little bit earlier that you did not consider yourself a pathologist and that you would rely upon other people to read tissues for you.

Is that also true of the formal procedure

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for setting up a tissue for reading on the slide?

A. I --

Q. Do you understand the question?

A. I don't think I understand the question.

Q. If in setting up tissues for reading for your pathologist at the University of Pittsburgh, did you have anyone to supervise you doing that?

A. No.

Q. And you were doing it yourself on hands-on work, is that right?

A. I had technicians doing that.

Q. You weren't doing it yourself?

A. I said --

Q. Maybe I misunderstood.

A. I said I did the animal studies and I autopsied animals. I did not process the tissues to make the slides.

Q. Would it be fair to say that the way animal tissues are set up on slides for review is an important part of the whole experimental procedure?

A. Yes.

Q. At some point in 1958 you left for the American Cyanamid Company, is that correct?

A. Yes.

Q. And you held various positions starting

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with research pharmacologist?

A. Yes.

Q. Did you do any kind of animal testing there?

A. Yes.

Q. Did you do any kind of tests also with human beings at any time in any of the positions you held?

A. No, I indicated earlier I had not tested chemicals on humans.

Q. Can you tell us what kind of experimental work you did while at American Cyanamid Company?

A. We did virtually every kind of toxicity testing that could be anticipated on a range of industrial and agricultural chemicals which were the products of the Monsanto -- of the Cyanamid Company.

Q. Did those include PCBs?

A. No.

Q. Any chlorinated hydrocarbons?

A. No.

Q. Did the American Cyanamid Company have its own laboratory?

A. Yes.

Q. Where was that laboratory located?

A. When I joined the company, it was in

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Stanford, Connecticut. In 1961 we moved to Princeton, New Jersey.

Q. Did the lab breed its own animals?

A. No.

Q. At American Cyanamid Company were you supervising other people or doing hands-on work in animal tests?

A. It was more supervision with occasional hands-on to show people certain techniques.

Q. When you say, "supervision," was this more in the nature of reviewing papers or was this actually going into the lab making sure that things were going smoothly?

A. It involved both.

Q. Approximately how much time did you spend in the laboratory as opposed to in your office?

A. In the early years, probably 25 to 35 percent of the time in the laboratory. As the laboratory grew and we gained additional experienced people, the time probably dropped to about 10 percent, maybe less.

Q. In the course of your work at American Cyanamid, did you also do any kind of work monitoring the health of workers at the company?

A. No.

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Q. Was there a separate department for that sort of work if there was one?

A. There was a separate section for industrial hygiene which would have been involved and then there were the physicians who would have had the primary responsibility.

Q. Did they ever come to you and ask you for assistance in pursuing their experiments?

A. I don't recall they did experiments in that sense and we did, where we had capabilities in a laboratory to do clinical chemistry or analytical tests, we would occasionally do those for them.

Q. Now, at this period of time between '58 and '71, did you publish further writings?

A. Yes.

Q. Can you tell us what those writings were?

A. These were dealing with Monsanto's -- I'm sorry, Cyanamid's products, some of their herbicides, some of their industrial chemicals, ultraviolet light absorbers, various things of this nature.

Q. Were any of those herbicides a product which was later called Agent Orange?

A. No.

Q. And I take it since you didn't do work with chlorinated hydrocarbons, you didn't do work on DDTs

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in that case?

A. That's correct.

Q. Did you give any kind of seminar lectures at any time during this period?

A. Yes.

Q. Any of that involve PCBs?

A. No.

Q. Did you at any time before you joined Monsanto Company have any experience in work with the form of chlorinated hydrocarbon called PCBs?

A. No.

Q. Now, would it be fair to say that the purpose of these animal tests was to check out potential for harm to human beings if they were exposed to those chemicals?

A. I would say the purpose of the testing would be to try to determine what the biological effects of the chemical might be.

Q. Now, you said a little bit earlier that you had never done tests or experiments on human beings?

A. That's correct.

Q. Would it be fair to say at least today and certainly throughout your career, it wasn't the custom and practice to test chemicals which might have uncertain qualities on human beings to see whether they

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would cause certain effects?

A. I'm sorry, in focusing on part of the question I must have lost the content.

Q. Let me try that again. First of all, would you consider human beings to be a member of the animal kingdom?

MR. KEARNS: For what purpose?

MR. DICUM: For the purposes of his experiments.

A. Biologically we divide living organisms into plants and animals. In that classification, man is an animal.

Q. And was that also true for the purposes of your experiments that man would be an animal for purposes of your experiments?

A. I have not done, nor do I do experiments on man.

Q. Now, would it be fair to say that the -- that if a chemical is suspected to have perhaps been cancer causing that you would do those experiments to check out its quality on animals in the first instance?

A. The experiments on animals may give rise to a question of whether a chemical is a carcinogen.

Q. I think that I may be having some difficulty explaining the question I'm trying to ask.

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Have you ever heard of any experiments during the course of your career where people exposed human beings to chemicals in order to find out if they would die of cancer?

A. I have no knowledge of people exposing other people to chemicals to see if they would die of cancer.

Q. So in the whole of the period of your experience with animal testing, you've never heard of anyone doing that?

A. That's correct.

Q. And that's because it's just not the custom and practice, is it, to expose human beings to chemicals to see if human beings would die off of cancer, to see what the effects of those chemicals were?

MR. KEARNS: Are you asking that's the only reason why or if that's one?

MR. DICUM: Right.

A. As I indicated, I have no knowledge of such goings on or such tests and I can't comment on it.

Q. And would it be fair to say that if a new chemical is being put on the market that it is quite customary to do experiments with animals to check it out to see whether it is cancer causing?

A. I think the generalization is too broad.

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Based on a variety of considerations which includes judgment and intuition, knowledge, one would do some testing before marketing the chemical. The scope and extent and the timing would depend on many factors.

Q. If you wanted to find out whether a chemical might cause carcinogenic effects on a human being, would it be customary to run tests on animals?

A. If one wanted to know -- if one ran tests on animals and got a carcinogenic response, it would certainly raise questions about whether they could occur in man. Conversely the absence of positive or finding of cancer in animals would not necessarily mean that the chemical would be cancerfree in man.

Q. And that's because there may be differences in the physical structure or the biochemical structure of human beings as opposed to, let's say, rabbits?

A. There could be many differences.

Q. Now, is that true also of monkeys?

A. That would be true of monkeys as well.

Q. Would it be fair to say that at least there is a greater zoological affinity between monkeys and man rather than between, let's say, monkeys and rabbits or between man and rabbits?

A. In some circumstances, that may be correct, but it is not again -- again it is not a valid

generalization.

Q. Do you know the meaning of the term teratogenic study?

A. Teratogenic study, yes.

Q. And can you tell us what your understanding is of that term?

A. Well, the word terato is from a Greek term meaning monster and it's a study designed to see whether a chemical will produce malformations in the offspring of the animal.

Q. And is there a normal way in which such studies are set up?

A. There are a variety of ways that such studies could be set up.

Q. Is there any kind of institute, by the way, or standards body that sets up standards for how to set up animal study experiments?

A. I am not aware of any standards institute. In some instances, government regulatory agencies have issued guidelines dealing with some kinds of testing.

Q. Which government institutes or agencies?

A. The Consumer Products Safety Commission and the Environmental Protection Agency.

Q. Can you tell us when these guidelines were set up?

A. The Consumer Products Safety Commission, its predecessor was the FDA and that act was passed in '58 or '60, somewhere about that time, so somewhat after that their regulations were issued.

Q. Do you recall if the regulations were issued while it was still under its old name?

A. It was part of FDA I believe when the regulations were first issued.

Q. That was the time in the sixties?

A. '60, '61 maybe.

Q. Were these regulations do you know issued for a particular type of product?

A. They were designed to evaluate the potential health hazards of household products.

Q. You mean detergent, soap, that sort of product?

A. Yes.

Q. Not designed therefore for PCBs or something like that?

A. That's correct.

Q. What about the Consumer Products Safety Commission?

A. They are the inheritors, the successors to the FDA regulations for household products.

Q. Do you know of any regulations that govern

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the procedures for animal testing for nonhousehold products?

A. The ones that come to mind are those of the EPA, Environmental Protection Agency.

Q. Do those -- at any time did the EPA at any time say those covered PCBs?

A. I do not recall ever seeing any regulation dealing with testing of PCBs.

Q. Okay. Again with teratogenic studies, would it be fair to say that in your experience it is not customary to expose, let's say, human mothers to chemicals to see if their offspring would be born deformed?

A. I would make the same comment I did earlier. I am not aware of people deliberately exposing other people to chemicals to see what the effects of those chemicals will be.

Q. And that includes teratogenic studies?

A. That would include teratogenic.

Q. What about mutagenic studies?

A. That would be the same.

Q. Can you tell us what your understanding is of the difference in the mutagenic study and the teratogenic study?

A. In a teratogenic study, the teratogen

produces a malformation of an offspring, an infant. That effect is the result of exposure to the chemical while the animal or the infant is being formed.

Q. You mean during the period of gestation?

A. Yes. It is limited to that individual. A mutagen would affect the genetic germ material or genetic material and it would become a characteristic that would be incorporated, would become part of succeeding generations. If we had -- it might or might not be manifest in the parents, but it would appear in the offspring and the offspring would pass it on to their offspring, so it's a transmissible characteristic for mutagenicity. It's a single event limited for a teratogen.

Q. You'd expect in the case of mutagenic studies to see multigeneration studies?

A. It could be done that way in terms of you would have to have successive generations, yes.

Q. While in the case of the teratogenic study, you would only expect to see a single generation with its offspring?

A. You would not need to do repeated studies.

Q. In fact, you wouldn't expect to, would you?

A. That's correct.

Q. Have you heard the term dominant lethal

STLCOPCB4027600

study?

A. Yes.

Q. What is a dominant lethal study?

A. It is a form of mutagenicity testing in which a dominant characteristic appears which is essentially incompatible with the survival of the offspring, so it produces death of the offspring.

Q. By "dominant characteristic," do you mean a characteristic, in fact, which dominates through the gene system so that it's passed on and overwhelms other characteristics?

A. A dominant characteristic is the one that predominants or is visible. Brown eyes.

Q. It's something that's passed through the gene system as opposed to a recessive gene, for instance?

A. Recessive genes are also passed along. They just don't appear.

Q. It's the one that appears?

A. It's recessive not dominant, but the genes are passed along whether you see them or not.

Q. Now, can you tell us how you came to the Monsanto Company in 1971?

A. The Cyanamid Company had decided to close its toxicology laboratory. I was faced with the option

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of transferring to another location within the company and I decided that it might be a good opportunity to take a look at other choices.

Q. Did you interview at Monsanto Company?

A. Yes, I came here for an interview.

Q. Who did you interview with?

A. Elmer Wheeler, Dr. Kelly, Jack Garrett, I think Dr. Bill Williams, Dr. John Speziale.

Q. Can you spell that?

A. S-p-e-z-i-a-l-e, and I think the vice president, one of the vice presidents, John Eck.

Q. E-c-k?

A. E-c-k.

Q. Was this in 1971?

A. Yes.

Q. Did all these people work in the same department?

A. No.

Q. What department did they work in?

A. Dr. Kelly, Elmer Wheeler, and Jack Garrett were part of the medical department. Dr. Williams was the director I believe of the central research division. Dr. Speziale was the director of research for the agricultural division. Mr. Eck was a senior vice president, member of the board. Did I miss

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anyone?

Q. The board of directors of Monsanto?

A. The board of directors of Monsanto Company.

Q. Dr. Wheeler, was he a medical doctor?

A. He's not a doctor, no. He's not a medical doctor.

Q. In other words, he's like you; he has a doctorate?

A. He does not have a doctorate. I believe he has a master's degree. He does not have a doctorate.

Q. Is doctor a courtesy title in his case?

A. I have never called him doctor.

Q. I've seen it in correspondence is why I ask you the question. Dr. Kelly, is he a medical doctor?

A. Yes.

Q. Is he a medical doctor as opposed to being a vet?

A. Very definitely he is a medical doctor.

Q. A human physician?

A. A human physician.

Q. As opposed to a veterinarian?

A. Yes.

Q. What about John Garrett?

A. It's Jack.

Q. Jack Garrett?

A. Jack again has I believe a master's degree and he is an industrial hygienist.

Q. Do you know what master's degree Mr. Wheeler held?

A. No, I don't.

Q. And what about Mr. Garrett?

A. His probably was in chemistry.

Q. Chemistry?

A. Yes.

Q. Mr. Williams, what was his specialty?

A. I assume it's chemistry because he headed the central research division of the Monsanto Company.

Q. Located in St. Louis?

A. All these people were in St. Louis.

Q. And can you tell us what at this time in '71 the division of function was between the medical department and the central research division?

A. I don't know. By definition, those sound like they had different functions, but I don't know how they divided things.

Q. What department were you applying for a job in at this time?

A. In the medical department.

Q. Do you know why the central research division had a person there to interview you?

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A. I do not know why.

Q. What about Speziale, what was his job description?

A. He was the director of research for the agricultural chemicals division.

Q. Also located in St. Louis?

A. Yes.

Q. And what about Mr. Eck, was he any kind of scientist?

A. I do not know, but I do not believe his training was scientific.

Q. Did Mr. Speziale have any kind of specialty?

A. He was an agricultural chemist.

Q. During the course of the interview, did these gentlemen ever tell you what the precise job was that you'd be expected to do once you got on board?

A. The general discussion was that they wished to start a program to look at potential health risks of new products and new uses of existing products.

Q. Was the subject of PCBs brought up at that time?

A. Not that I recall.

Q. What about furans or dioxins?

A. No.

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Q. When did you first hear about PCBs at Monsanto?

A. I would assume relatively shortly after I came here. Not to be facetious, but one of the earlier recollections I have is a fact simply of a paste on label saying, "Caution, environmental contaminant, take care," and so forth, a warning against environmental contamination and that probably caught my attention more than anything else, but specifically when I was involved in discussions on PCBs, I cannot recall.

Q. Where did you see that label?

A. I remember one on a chair in Elmer Wheeler's office.

Q. In Mr. Wheeler's office?

A. Yes.

Q. Did you ask him what that label was?

A. Since I was familiar with labeling of chemicals, it was quite evident to me. I don't recall that I asked him.

Q. Did you ever see any labels dealing with dioxins?

A. I don't believe I have.

Q. What about furans, f-u-r-a-n-s?

A. I don't believe I've seen labels on them.

Q. At the time when you joined in 1971 in

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around July, is that correct?

A. Yes.

Q. And you came aboard, can you tell us how many people were working in the medical department then?

A. In terms of professional staff or senior staff, there were probably some six or eight here at St. Louis. With respect to nurses, secretaries, physicians at other locations, I really can't say. I don't know.

Q. Well, you've named a Mr. Wheeler, you've named a Dr. Kelly, you've got Mr. Garrett, that's three out of those I take it?

A. Yes.

Q. Can you recall who the others were?

A. There was a Dr. Maurice Johnson, a physician who left. I believe he was associate medical director. He left to go elsewhere. There was --

Q. When did he leave?

A. Oh, two or three years after I came I guess, maybe. I can't recall specifically.

Q. Was he replaced?

A. I'm not sure the succession of later people if anyone replaced him or not as such. There was a Dr. Bill Hunt who was a Ph.D. in toxicology who died about

a year after I -- a little over a year after I came here. Dr. Carl Bohl who is still with Monsanto.

Q. Spell that last name.

A. B-o-h-l.

Q. What sort of doctor was he?

A. I think he has a doctorate of science. He's in the industrial hygiene radiology area.

Q. Was Dr. Johnson a physician?

A. He's a physician.

Q. So those two were physicians, Dr. Kelly and Dr. Johnson?

A. Yes.

Q. Any other physicians amongst the various people?

A. There was a Dr. Ray Mezera.

Q. M-i-e-u-r-e?

A. No, I think it's M-e-z-e-r-a and I'm not sure if there was an "s" on the end of it, Mezera or Mezeras.

Q. Also a physician?

A. He was a physician. He had a stroke a year or two after I got here and subsequently has died. Those the best I recall were the senior staff in the medical department and then I joined them.

Q. And you were considered -- you were

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obviously part of the professional senior staff?

A. (Nodding head.)

Q. Now, can you tell me what sort of people you had to supervise in that department? You named nurses, for instance. Any other type of people?

A. I said I did not know how many nurses and other personnel were there.

Q. Can you tell us what the types were?

A. Either the kinds of people or the number of people, I'd have no knowledge of that.

Q. Did Monsanto have an internal animal testing lab at this time?

A. Not for toxicology testing.

Q. What sort of testing?

A. There may have been some other facilities doing animal work, but I'm just saying not for toxicology testing.

Q. For all purposes there was none?

A. Right.

Q. What is the actual job title that you held when you were there?

A. I believe the first title was manager of product development.

Q. Did that title change at some point?

A. Yes. Nobody liked it and none of us

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understood it.

Q. Okay.

A. So then I became the manager of environmental assessment and toxicology.

Q. What date was that change?

A. I would -- I don't recall precisely, but it was either the end of '72 or early '73. It was about that time.

Q. Can you tell us what the initial responsibilities were that you held?

MR. ROTHSCHILD: Excuse me, what was the name of his title again, Henry, I'm sorry?

THE WITNESS: Manager of environmental assessment and toxicology.

Q. Can you tell us what the initial responsibilities were that you had held as manager of product development?

A. It was to initiate the program I referred to earlier, to look at new products, new uses of existing products, try to anticipate the kinds of questions that could be raised about the safety of the products, and to make recommendations of the kind of testing that should be done to develop information to respond to those potential questions.

Q. Did your responsibilities change when you

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got the new title of manager of environmental assessment and toxicology?

A. After Dr. Hunt died, I was handed the responsibility for toxicology as well and that's why the name change came about at this interval.

Q. So it did actually involve a change in responsibilities and not just in title?

A. Right.

Q. At some point in time, were you assigned to do work on PCBs?

A. Many years later, we did some monkey work with PCBs, yes.

Q. We'll come to look at some of those later on. Do you recall if in your early years between 1971 and, let's say, around 1981 or, let's say, between 1971 and '77, did you do any kind of -- let's strike that.

I'm going to show you what I'm going to have marked as a exhibit, first of all, a couple of documents.

(Plaintiff's Exhibits 23 and 24 marked for identification.)

Q. Have you heard of someone called Mr. Papageorge?

A. Yes.

Q. When you first started working with the

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medical department, did you meet Mr. Papageorge almost immediately?

A. I can't recall when I met Mr. Papageorge.

Q. What time -- do you remember when you first met Mr. Papageorge?

A. I just don't recall when. Somewhere along the line I made contact with him.

Q. Can you place it between 1971 and today? Would it be nearer the 1980s then?

A. I'm sure it was in the early 1970s.

Q. Did Mr. Papageorge at any time have discussions with you about PCBs?

A. Yes.

Q. Was that the purpose of those meetings that you had with him?

A. Some of them probably to discuss PCBs, yes.

Q. Did Mr. Papageorge ever talk to you about dioxins?

A. I can't recall a specific time, but he may have.

Q. Or furans, f-u-r-a-n-s?

A. Similarly, he may have. I can't recall specific circumstances.

Q. Do you recall what kind of chemicals it was

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that you were first working on when you first joined the company?

A. I'm sorry, I can't.

Q. Any chlorinated hydrocarbons in that one?

A. No, I don't think it was chlorinated hydrocarbons.

Q. Before those monkey studies, did you have any kind of responsibilities which involved testing including the supervising of testing of PCBs?

A. We probably did some short term studies on either PCBs or similar materials.

Q. Do you recall a company called Industrial Bio-Test?

A. Yes.

Q. Did you communicate with Industrial Bio-Test about PCB testing?

A. Yes.

Q. And was this in the early seventies?

A. Yes.

Q. Will you look at the documents that have been marked as Plaintiff's Exhibit Monsanto Numbers 23 and 24?

MR. KEARNS: You want him to read the whole letter?

MR. DICUM: I would be satisfied with Paragraph

STLCOPCB4027613

4 of 1474 and paragraph --

MR. KEARNS: Paragraph 4 on that page?

MR. DICUM: Yes, to start with.

MR. FONTANA: Which is which?

MR. DICUM: Plaintiff's Exhibit 23 is 1474.

MR. FONTANA: Not according to the way they are marked.

MR. DICUM: I beg your pardon.

Q. Let's look at Exhibit 23, a letter dated July 8th, 1970, is that correct?

A. Yes.

Q. Would you turn to Page 2 of that letter and would you look at the paragraph that begins "Disposal"? Do you see that?

A. Yes.

Q. And I direct your attention to the following sentence beginning there: "The preferred method for disposal is high temperature incineration. I suspect there are several commercial burners on the market which will perform well. I personally witnessed burning tests at the John Zink Company's unit in Tulsa, Oklahoma. Temperatures must exceed 1600 degrees Fahrenheit to assure that complete destruction is achieved. Lower temperatures would only vaporize the Aroclors and create atmospheric pollution or, worse

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yet, would form, by partial oxidation, materials which could be highly toxic (e.g., furans and dioxins)," and it bears at the end of the letter the name W. B. Papageorge.

Have you seen this letter before?

MR. KEARNS: Just a moment, please.

Q. I should say feel free to read the rest of the letter if you think that helps as well.

MR. KEARNS: I'm sorry, what was the question now?

MR. DICUM: You want to read the question, please.

(Whereupon the following portion of the question was read back by the Court Reporter: "Q. ...Have you seen this letter before?")

A. No.

Q. Will you look at Exhibit 24 at Page 1, Paragraph 4 and I direct your attention to the following statements: "Disposal of scrap PCB by burning can be achieved if the temperature is maintained above 800 degrees Centigrade. Attempts to dispose at lower temperatures will result in vaporization or worse if partial oxidation to highly toxic furans or dioxins results."

Have you seen those statements before?

MR. KEARNS: This is a different question. This other one was this letter --

Q. Let me try it again. Have you seen this letter before?

A. No.

Q. I'm going to show you some exhibits that were already marked yesterday Plaintiff's Exhibit Number 2, dated July 6th, 1970, again with the name of Papageorge at the bottom and I direct your attention to Paragraph 2 of this letter, which is addressed to a gentleman called Garlington Wilburn at Westinghouse Electric Corporation. Have you seen this letter before?

A. No.

Q. At any time around 1971, did Mr. Papageorge talk to you about the possibility of PCBs being partially oxidized into materials which can be highly toxic such as dioxins and furans?

A. I do not recall discussions on that subject with him.

Q. At any time or at that time?

A. I don't think I ever really discussed it. I can't recall discussing contaminant or decomposition of products with Papageorge at any time.

Q. Will you look at Plaintiff's Exhibit Number

STLCOPCB4027616

10? Do you see your name anywhere on Plaintiff's Exhibit Number 10?

A. Yes.

Q. It's at the top right-hand corner, G. J. Levinskas is you?

A. Yes.

Q. Have you seen, first of all, the front page, the page that's marked 7868 before?

A. Yes.

Q. Did you see it with the notations that are on it in ink or did you see it just with the typed materials on it?

MR. KEARNS: The first time he ever saw it?

MR. DICUM: Yes.

A. I don't recall seeing it with the notations on it.

Q. At some later time did you see it with notations on it?

A. I don't recall ever seeing it with notations on it.

Q. Do you remember at least the material in the type, "Attached is a copy of a paper which is being offered for publication in the 'Bulletin of Environmental Contamination and Toxicology.' Dr. Kimbrough has solicited our comments. If you or any of

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the recipients of copies of this memo have any comments to offer, please submit them to me by December 16th." Do you remember that?

A. I don't recall this specific memo. I may well have seen it, but I do not recall it.

Q. Would you look at the next page? Have you seen this article before?

A. I would respond as I just did. I may well have seen it. I do not particularly recall it.

Q. Do you have any information or knowledge to inform us that you did not, in fact, receive the memorandum that was circulated by Mr. Papageorge?

A. What I think I've said is that or to recapitulate, I'm shown as a carbonee of this memo from Papageorge. I may well have seen it. I do not particularly recall it and the same comment regarding the attached paper. I may well have seen it, but I don't particularly recall it.

Q. I was wondering if there was anything on the memorandum itself which helps you to determine one way or the other whether you received it.

A. Nothing on that memo would -- on this copy of the memo would indicate to me or refresh my memory that I may or may not have received it.

Q. There's a line through the first four

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names, Bergen, Kelly, Levinskas and it extends down to Richard. Do you see that?

A. Yes.

Q. Do you know what the significance is of that mark?

A. I do not.

Q. Was it the custom and practice at Monsanto to delete names on the carbon copy list once the material had been circulated?

MR. FONTANA: Delete names?

MR. DICUM: Yes, strike, put a stroke through it.

A. I'm not aware of a Monsanto practice on that subject nor do I know the practices of other individuals as to how they score, mark, or otherwise check documents.

Q. Have you seen Mr. Papageorge's signature during the course of your years at Monsanto?

A. I suspect I have.

Q. Is that Mr. Papageorge's signature?

A. I do not know, but it has a slash and initials behind it. I would assume it is not.

Q. Well, there are two signatures. There's one which is above the type and then there's another one in the right-hand corner.

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A. As I say, I am not sufficiently familiar with his handwriting to know whether that is his or not.

Q. Perhaps he can help us on that later. Would you take a look at the documents which is attached to the memorandum and tell us if that refreshes your recollection as to the subject matter of the document?

MR. FONTANA: I'm sorry?

MR. KEARNS: Is there a question pending?

MR. DICUM: I was asking if that refreshes his recollection about the subject matter of the --

MR. KEARNS: As to whether or not he read it?

MR. DICUM: That's right.

MR. FONTANA: That's a different question than the one pending.

MR. KEARNS: Mr. Dicum, would you rephrase it?

Q. Does the article -- does reading the article refresh your recollection as to whether you've seen it before?

A. No.

Q. Does reading the article refresh your recollection about the subject matter of tetrachlorodibenzofurans?

MR. KEARNS: Does it refresh his collection

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about the things that are said in the article?

MR. DICUM: Yes.

MR. KEARNS: Has it been established that he didn't know about the things before?

Q. Had you heard of dibenzofurans?

A. Yes.

Q. When did you first hear about dibenzofurans?

A. It's like many other things, I don't recall specifically when I heard it.

Q. Before or after you went to Monsanto?

A. I may have heard it before I came to Monsanto. Certainly I heard more of it when I was at Monsanto.

Q. I direct your attention to BIR 007873 which is in the article, it's about three pages in, under "Acknowledgement," it says, "The authors are indeed grateful to Drs. A. Poland, J. J. Wade and A. S. Kende, School of Medicine and Department of Chemistry, University of Rochester, Rochester, New York, for a gift of the authenticated 2,3,7,8 tetrachlorodibenzofuran." Do you remember any of these people, Poland, Wade, or Kende from your education in Rochester?

A. No, I don't remember those people. At the

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time I did not meet those people when I was at Rochester.

Q. Do you remember at all whether you heard the term tetrachlorodibenzofuran while you were at Rochester?

A. I do not recall.

Q. What about dioxins? Did you hear about that before or after you came to Monsanto?

A. I have a similar response to dioxin as I do to furans. I don't remember specifically when I heard about it.

Q. Can you tell us how you first heard about, first of all, dibenzofurans?

A. I've indicated I can't recall when I first heard about it.

Q. Not when, how.

A. It may have been from reading in the literature or in the newspapers or it may have been discussions. Specifically how I became aware of them and when, I just can't recall at this time.

Q. Do you recall learning at any time anything about the toxicity of chlorinated dibenzofurans?

A. My knowledge of toxicity of chlorinated dibenzofurans is fairly limited because I don't believe there is very much in the way of toxicity data on that.

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Q. We'll come to that in a moment, but do you recall discussing sometime in 1974 with Mr. Papageorge anything about chlorinated dibenzofurans?

A. It's a broad question in time. I may have talked to him, but I have no knowledge or recollection of the specific occurrences, specific circumstances.

Q. Do you recall responding in any way to this document dated December 6th, 1974, that's Plaintiff's Number 10 that was sent to you by Mr. Papageorge?

A. Looking at this article which was proposed for publication, it is basically a chemistry issue and I -- my reaction would have been to virtually do nothing with it because it was a chemistry issue. The reliability, the validity of the statements and the conclusions would depend on how good the chemical methodology involved was. Since that's not my area of expertise, I would be inclined to do nothing about it.

Q. Have you ever met any of the people who appear as authors on the article? First of all, August Curley?

A. No.

Q. Burse?

A. No.

Q. Jennings?

A. No.

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Q. Villanueva?
A. No.
Q. Renate Kimbrough?
A. Yes.
Q. When did you first meet Renate Kimbrough?
A. I would estimate it was probably somewhere in the time or shortly after I came to Cyanamid or about that time.
Q. Before you came to?
A. Before I came to Monsanto, I'm sorry. I would say probably in the late fifties, early sixties when I first met Dr. Kimbrough.
Q. Where was she at the time?
A. She was with the Public Health Service, the Centers -- what was called the Centers For Disease Control in Chamblee, Georgia.
Q. Did you meet her on subsequent occasions?
A. Yes, several times.
Q. Including after you arrived at Monsanto?
A. Yes.
Q. Did you meet her again before you came to Monsanto?
A. I've met with her several times on different technical issues from the time I first met her.

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Q. How did you first meet her?

A. Again, I cannot give a very precise recollection. She was working with a Dr. Wayland Hayes at the Centers For Disease Control and I had contacts with Dr. Hayes through societies and through common interests and it's through him that somewhere along the line I met Dr. Kimbrough.

Q. Do you recall if you met her at some kind of seminar or where did you meet her?

A. I don't recall, but I would assume we probably met at a national meeting with Dr. Hayes making the introductions.

Q. Dr. Kimbrough is currently with the Centers for Disease Control?

A. I beg your pardon?

Q. Is she currently with the Centers for Disease Control?

A. She shifted to the Environmental Protection Agency for awhile, I think still staying, though, at the same location and --

Q. You mean at Atlanta?

A. Outside of Atlanta and recently I had a change of address notice from her. She is moving to an EPA office or she'll be working with the Environmental Protection Agency in Washington, D. C.

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Q. Between the time that you first met her and today, did she change her job at any time from the CDC?

A. My impression is that her basic job has not changed, but with the structuring and restructuring of the government agencies, her superstructure has changed but not basically her job.

MR. KEARNS: Is this a good place to take a break?

(At this time a short recess was taken, after which the following proceedings were had:)

(Plaintiff's Exhibits 25, 26, and 27 marked for identification.)

Q. Sir, I'm showing you three documents that are marked Plaintiff's Monsanto Exhibit Number 25 which starts at BIR 001600 through 001606, Exhibit Number 26 which starts at --

MR. KEARNS: 0016000?

Q. -- 26 which starts at 1625 and Exhibit 27 which starts at 001577. The first document, Plaintiff's Exhibit 25 --

MR. FONTANA: 27 doesn't start where you said it did.

MR. DICUM: Where does 27 start?

MR. KEARNS: 001577.

MR. DICUM: 001527 did you say?

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MR. KEARNS: 001577.

MR. COMBS: Have we stated what the BIR number is?

MR. DICUM: Yes, 001577.

Q. First of all, looking at Exhibit Number 25, have you seen this document before?

A. I'm sorry, I'm looking at the exhibit.

Q. Yes.

A. I do not recall having seen these documents before.

Q. Do you know a gentleman called Walter Weyzen?

A. I do not recall hearing that name before.

Q. And do you recall an incident in Japan in which certain women consumed quantities of PCBs while cooking rice?

A. I have read of it, yes.

Q. Do you recall when you first read of it?

A. No, I cannot.

Q. Was it an American publication?

A. It would have been an American publication, yes.

Q. Do you recall even if you don't remember an exact date whether you read of it after or before you arrived at Monsanto?

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A. Everything that I have -- as far as I can recall, everything I've read on Yusho has been since I have been with Monsanto.

Q. Now, I direct your attention to 001603 in the first document I showed you. It's Page 129 at the top.

A. Okay.

Q. I direct your attention to Paragraph 3 of that page under the heading "Human Studies" and for the benefit of others I read, "Yusho, Y-u-s-h-o, is usually cited as a typical example of PCB toxicity. We now know that the oil these victims ingested contained significant amounts of dibenzofurans and other related chemicals. Since TCDF is considerably more toxic than PCBs, it is now believed that the toxicity observed in these people was predominantly, if not totally, caused by furans."

Now, have you ever heard before today that the Yusho incident involved exposure to furans of these people?

A. Yes.

Q. The answer is yes and can you tell us when you first heard that?

A. I cannot recall a specific date.

Q. Can you tell us whether at least it was

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before 1983?

MR. KEARNS: He learned of that?

MR. DICUM: Learned about the fact that the Yusho incident apparently involved exposure to furans.

MR. KEARNS: Before 1983?

MR. DICUM: Yes, if he did.

A. I believe, yes, before 1983.

Q. Do you know if you learned about it at a conference or from what source did you learn of it?

A. I don't know where I first learned of it, but I would surmise I probably read it in the literature.

Q. Again you're talking about some kind of learned periodical?

A. The technical literature, yes.

Q. Some American publication it would have been?

A. Yes.

Q. Now, in the course of your work, have there been occasions when you also read foreign publications?

A. Most of the foreign literature I believe is a translation into English.

Q. Before you did your graduate studies way back in the 1950s, did you have to pass any kind of an examination in a foreign language for the purposes of

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reading?

A. Yes.

Q. What language?

A. French and German and English.

Q. And do you or have you since your graduate studies on occasions read articles in French and German?

A. I do occasionally, yes.

Q. Do you still do that?

A. Yes.

Q. Do you subscribe to any publications in French and German?

A. No.

Q. Does the company that you work for subscribe to such publications?

A. Yes.

Q. Have you read publications in a foreign language notably French and German while at Monsanto?

A. Yes.

Q. Is this in the library that Monsanto subscribes?

A. Yes.

Q. Located in St. Louis?

A. Yes.

Q. Easily accessible to you if you want to use

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it?

A. Yes.

Q. Now, is it your custom and practice in the course of keeping up as it were in your field to constantly read various learned journals as they come out?

A. I make an effort to keep current in reading.

Q. Are there any particular ones that you pursue?

A. Predominantly the ones I get with the society memberships that I referred to earlier.

Q. Does each of those societies publish its own special journal?

A. Essentially all do, yes.

Q. For instance, you have American Chemical Society. Is that one of the ones you belong to?

A. Yes.

Q. And New York Academy of Science?

A. Yes.

Q. Industrial Hygiene?

A. Yes.

Q. Environmentally --

A. I'm sorry, that should be Environmental Mutagen Society.

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Q. I'm sorry, does it publish its own work?
A. Yes.
Q. Have you read or do you recall reading at any time since you joined Monsanto articles in any of those publications about PCBs?
A. There have been articles on PCBs in some of those publications, yes.
Q. What about articles about dibenzofurans?
A. I cannot recall specific articles dealing with dibenzofurans.
Q. By the way, what is your understanding of the term dibenzofuran?
A. Dibenzofuran is a basic or apparent molecule and much of the discussion that we've been using the word dibenzofuran should properly be chlorinated -- polychlorinated dibenzofurans.
Q. Well, I'm happy to use that word polychlorinated dibenzofuran. Just for the sake of not making this record even longer than it will be, can we agree that I'll just use the shortened form dibenzofurans for convenience?
A. Yes.
Q. Would you look at the next article in series, Number 26? Have you seen this article before, "Identification of Polychlorinated Dibenzofuran Isomers

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in Fly Ash and PCB Pyrolyses"?

A. I do not recall whether I have seen it or not.

Q. Do you subscribe to Chemosphere?

A. No.

Q. Have you ever read articles in Chemosphere?

A. I look at occasional articles in it, yes.

Q. Is Chemosphere one of those periodicals that is subscribed to by Monsanto?

A. Yes.

Q. So it's available for your use if you want to inside the corporation's library?

A. Yes.

Q. Ever met Christoffer Rappe?

A. No.

Q. What about Hans Rudolf Buser?

A. No.

Q. Hans-Paul Bosshardt?

A. No.

Q. Roger Lindahl?

A. No.

Q. Ever seen this article perhaps in some French or German edition?

A. I do not recall reading this in French or German or English.

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Q. Look at Number 27. It starts at BIR 001577, is that correct?

A. Yes.

Q. And it's entitled "Formation of Polychlorinated Dibenzofurans (PCBFs) from the Pyrolysis of PCBs"?

A. Yes.

Q. Have you read this article before?

A. Again, I do not recall.

Q. Would you review it and see if that helps refresh your recollection?

A. It does not aid my recollection. I do not recall whether I have seen it before or not.

Q. Okay. Let me refer you to the second page at the second paragraph and again for the benefit of others, I'll read what it says there. "In 1970, Vos, V-o-s, et al." and then there's a Footnote 4, "identified polychlorinated dibenzofurans (PCDFs) as toxic impurities in European PCBs at the ppm-level, and the same has also been reported for American and Japanese PCBs." Now, there's a Footnote 5 and 6 and I'm going to direct your attention to that Footnote 5 and 6 for the American and Japanese PCBs. Would you look at Footnote 5? Do you have it in front of you?

A. Yes.

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Q. What's the date of that article?
A. Reference 5 is dated 1974.
Q. "Bulletin Environ. Contam. Toxicology," is that a journal known to you?
A. Yes.
Q. What is the full title of that?
A. "Bulletin of Environmental Contamination and Toxicology."
Q. Is that a publication subscribed to by Monsanto in its library?
A. Yes.
Q. Again another that you have access to?
A. Yes.
Q. What about Item 6, "Nature"?
A. Yes.
Q. Do you recall ever seeing an article by Mr. Roach and Pomerantz in the "Bulletin of Environmental Contamination --" what is it?
A. "Bulletin of Environmental Contamination and Toxicology."
Q. "And Toxicology" in Volume 12 at Page 338, 1974 concerning a finding of furans in American PCBs?
A. I do not recall that.
Q. What about an article by Bowes, Mulvihill, Simoneit, Burlingame, and Risebrough in "Nature" in

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1975 concerning a finding of furans in PCBs?

A. I do not recall.

Q. Was there any reason other than the fact that you don't recall whether you didn't have access to these materials at the time they were published?

A. I think I would go back to the comment I made earlier with respect to the paper by Kimbrough. These are basically analytical chemistry questions and this is not my field of expertise. I read where toxicology articles may make a reference to something of this sort. I may pick up the information --

Q. Thank you.

A. -- but I do not read the chemical articles.

Q. Okay. So essentially you try to get a general knowledge if you can of the chemical articles and then you specialize in toxicology, is that correct?

A. Yes.

Q. Next sentence, "The toxic effects of the PCDFs are very similar to those reported for the polychlorinated dibenzo-p-dioxins."

MR. KEARNS: Excuse me, where are we reading?

MR. DICUM: Back to Page BIR 001578.

A. Okay, same paragraph.

Q. Same paragraph, immediately after Footnote 6, "The toxic effects of the PCDFs are very similar to

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those reported for the polychlorinated dibenzo-p-dioxins (PCDDs). In both cases, the 2,3,7,8-tetrachloro compounds are the most toxic isomers, having LD," that's lethal dose, correct?

A. Yes.

Q. "50-values in the range of 1-10 milligram/kilogram per guinea pig," and then there are a couple of footnotes, 7 and 8. Would you look at Footnote 7 and 8?

A. Okay.

Q. Footnote 7 refers to an article by McKinney, Chae, Gupta, Moore, and Goldstein in a periodical apparently published in 1976, does it not?

A. Yes.

Q. Can you tell us the title of that periodical?

A. "Toxicology and Applied Pharmacology."

Q. Now, that's in the toxicology field, is it not, that periodical?

A. Yes.

Q. Is that a publication that's taken by Monsanto?

A. Yes.

Q. Is that periodical again accessible to you?

A. Yes.

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Q. Have you read articles from it?
A. Yes.
Q. Is it one of those periodicals that it is your custom and practice to follow up on?
A. I generally look through the issues when they come out, yes.
Q. Of that particular periodical?
A. Yes.
Q. And then Footnote 8, again referring to tests on PCDFs and PCDDs on guinea pigs, Footnote 8 apparently refers to an article by McConnell, Moore, Haseman, and Harris from the same journal and this time it's Volume 37, Page 146 dated 1976?
A. (Nodding head.)
Q. I take it that these articles in this particular journal, they are all written in English?
A. Yes.
Q. Is this an American publication?
A. Yes.
Q. Do you know who puts it out?
A. It's a publication of the Society of Toxicology.
Q. Is that one of the ones you belong to?
A. Yes.
Q. In fact, is that one of the ones you are a

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charter member of?

A. Yes.

Q. Now, do you recall when these articles came out apparently in 1976 reading about the guinea pig tests on polychlorinated dibenzofurans?

MR. KEARNS: Did he read this article?

MR. DICUM: The articles referred to in Footnotes 7 and 8.

Q. Let's take Footnote 7 first. Let's break it down. I don't want to make it a compound question. Footnote 7, the McKinney, Chae, Gupta, Moore, and Goldstein article dated 1976, did you read that article when it came out?

A. I can't recall.

Q. Is there any reason for you to believe that you would not have at least seen it during the course of your review of the periodical?

A. I would have noticed the title, but since this reference does not give a title to the article, a name and a journal reference is not very meaningful to me.

Q. Okay. Was it your custom and practice because of the fact that Monsanto was a manufacturer of PCBs to pay particular attention to articles about PCBs?

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A. At that time, I don't believe I was paying particularly greater attention to PCBs than most other things.

Q. Isn't it a fact that by 1975, you were already communicating with Industrial Bio-Test concerning various studies on rats and Beagle dogs, chickens and so on to which PCBs had been applied?

A. Yes, but that's still not inconsistent with my earlier statement that I don't think I was giving any more emphasis to PCBs than other chemicals.

Q. If there was another chemical and you saw an article about another chemical that you were doing work on, would you not have read that article to see if that gave you any updating on your expertise just as a matter of routine, I mean nothing extraordinary about it?

MR. KEARNS: Could I have all that read back to me, please?

(Whereupon the following question was read back by the Court Reporter: "Q. If there was another chemical and you saw an article about another chemical that you were doing work on, would you not have read that article to see if that gave you any updating on your expertise just as a matter of routine, I mean nothing extraordinary about it?")

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A. Well, my general response would be that I make an effort to keep current or as current as I can on the chemicals that are of interest to me or the company at that time.

Q. Okay. And one of those is PCBs, is that correct?

A. And PCBs was of interest to Monsanto, yes.

Q. Now, a Footnote 8, here's another article that is referred to by McConnell, Moore, Haseman, and Harris in the same magazine. Do you recall reading that article?

A. No, I do not and as I indicated earlier, without a title to indicate the nature of the study, it's not very meaningful to me.

Q. Do you know any of the gentlemen or it could be ladies I suppose who are listed in the journals as authors of either article 7 or 8?

A. I have met Joyce Goldstein at scientific meetings. I have also met Gene McConnell. J. A. Moore I believe is Jack Moore who is currently an assistant administrator of the Environmental Protection Agency. I know him quite well. The other names I do not know the individuals.

Q. Have you concerning the people that you actually know in this list of authors, did you meet

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them at any meetings of the Society of Toxicologists?

A. That is probably one of the more likely places that I did meet them.

Q. Do you sit in any kind of official capacity such as on the board or office?

A. I have been a member of committees and chairman of some of the committees of the society, yes.

Q. And do any of the people that we've just listed as being known to you amongst these authors also sit on committees that you sit on?

A. To the best of my recollection, I have never sat on a committee at the same time that these people are on that committee.

Q. Did any of these committees that you sat on, Society of Toxicologists, do any work on PCBs?

A. Not that I know of.

Q. Did any of the committees that you sat on do any work on dibenzofurans?

A. No.

Q. Dioxins?

A. No.

Q. Okay. Let's go on. The paragraph -- can we go back to the paragraph I just read? The last sentence I didn't read to you. This is Page 1578. "Like PCDDs, the PCDFs have been found to increase

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cytochrome P-450 activity and a number of drug metabolizing enzymes," and there's a reference to Footnote 8 which is the one which we looked at and Footnote 9 which is a new one to us and would you look at Footnote 9? Do you see the three names there, Poland, Glower, and Kende?

A. Yes.

Q. Do you know any of those people?

A. I have met Dr. Poland and been introduced to him at meetings where he presented talks. I do not know the other two individuals.

Q. Now, were any of these people that you've mentioned as people that you know, have you at any time discussed the subject of dioxins?

A. Poland is doing research in the area of dioxins and where I've met him is where he was talking on that subject.

Q. And where was that?

A. It's been at the Society of Toxicology meetings.

Q. Was he giving a lecture on the subject?

A. Yes.

Q. Did he relate that to PCBs?

A. I do not recall him relating dioxins to PCBs.

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Q. You mean in a seminar or his conversations with you?

A. In either.

Q. In either, okay. Was that talk that he gave published?

A. I cannot say. It may have been.

Q. Any others that you remember talking to about dioxins amongst this list of authors?

A. As I indicated earlier, no, with one minor exception. I have -- I was in a conversation when Dr. Moore approached the group with a couple other people and they were talking about dioxins. There had been a recent meeting in Germany -- when I say, "recent," just prior to the meeting, that was about a year and a half or so ago, and someone chided Dr. Moore that apparently the Germans were taking a much more realistic view in dealing with environmental problems than the U.S. and they chided Dr. Moore over that.

Q. Okay.

A. That's the extent of my discussions on dioxins.

Q. Are you aware that there are other Scandinavian countries, rather, other countries in Europe that have banned PCBs?

A. I believe I have read that in the

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newspaper. I don't recall specific countries, but I think I read this in the newspapers.

Q. Sweden?

A. I don't recall a specific country.

Q. What about The Netherlands?

A. I don't know.

Q. Is it a fact that the United States was not the only country in the world that took this approach to ban all PCBs?

A. I don't know specific actions taken by other countries, but the impression I get from newspaper readings as such and also some of the comments out of the World Health Organization, united organizations, there's no worldwide agreement on a ban.

Q. The Japanese ban PCBs at some point?

A. I don't know.

Q. You don't?

A. No.

Q. Did Monsanto not have a subsidiary affiliate called Monsanto Mitsubishi in Japan which was manufacturing PCBs at some point?

A. I have no knowledge. If there was a Japanese manufacturing venture, I don't have any knowledge of it.

Q. By the way, if one of those foreign

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affiliates of Monsanto manufacturing PCBs overseas needed toxicological information, did they come to Monsanto in St. Louis or did they do their own research?

A. I don't know that I can give a categorical answer. Since I have been with Monsanto, we have had more frequent contacts with people outside the United States on toxicity issues. What the practice was before I came here or even in the early years I was here, I cannot say.

Q. Have you ever traveled to Japan?

A. Yes.

Q. Did you ever meet anyone in Japan who was working for a Monsanto affiliate?

A. Yes.

Q. Did you ever meet anyone in connection with PCBs at that Monsanto affiliate?

A. No.

Q. Would you look again at Footnote 9 where it refers to Poland, Glower, Kende. There is a set of initials after their names which appear to be the initials of some publications, does it not?

A. It's the "Journal of Biological Chemistry."

Q. And is the date there?

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A. 1976.

Q. Would it appear to you that that is a publication therefore dated 1976?

A. That is evident, yes.

Q. Now, isn't it a fact that with scientific articles in many cases there's a period of gestation as it were when articles are put out for peer review?

A. If you're referring to an interval of peer review from the submission to the publication of the article --

Q. Right.

A. -- some journals have a review period and I suspect that the length of the review is quite variable depending on --

Q. I'm sorry, quite?

A. Quite variable depending upon the journal.

Q. Did you serve as any kind of editor of the publication of the Society of Toxicologists that we've been referring to?

A. No, I have not been an editor of any publications.

Q. Do you know how long it takes for peer review process to go through when an article is submitted for publication by the Society of Toxicologists?

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A. I have no basis for drawing any sort of average. It could be quite variable. If the article is well written and accepted, it could be quick. If it is returned to the author for clarification and revision, it could be protracted.

Q. What sort of standards do you know are set by the Society of Toxicologists of which you are a charter member for acceptance of articles for publication?

A. There is a board of publications in the society. The authority -- I shouldn't say the authority. I guess the operation under those guidelines which are set by the society is relegated to the editor and associate editors. How well they adhere to them I really have no idea.

Q. Do you remember what those guidelines were?

A. I do not recall the guidelines specifically.

Q. Do you know who in 1976 was the editor?

A. No, I don't. I don't recall.

Q. Could we look at the next sentence on that page on 1578? "Morita, et al.," and it quotes Footnote 10, "have reported increased amounts of PCDFs," that's polychlorinated dibenzofurans, is that correct? Isn't that the abbreviation for that?

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A. That is used as an abbreviation.

Q. Let me start again. "Morita, et al., have reported increased amounts of PCDFs in a sample of PCB sealed with air in a glass tube and heated at 300 degrees Centigrade for two weeks," and would you look at Footnote 10? What's the publication in Footnote 10?

A. That would be the "Bulletin of Environmental Contamination and Toxicology."

Q. Is that an American publication?

A. Yes.

Q. Again is that an article or rather a periodical that's taken by Monsanto on a regular basis?

A. Yes. It's the same as we've talked earlier on reference 5.

Q. Is that also another periodical that you would as a matter of custom and practice try to keep up with?

A. I would pay less attention to that than some of the other journals.

Q. Is there some reason for that?

A. Partly because of time limitations. The articles in that tend to be more in the chemical area which I have indicated is not my primary interest and and I do not believe it has the technical caliber of some of the other journals.

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Q. Okay. Have you heard the -- strike that. Have you heard from any source that polychlorinated dibenzofurans are toxic impurities in PCBs?

A. Yes. I indicated earlier that in reading particular reviews on PCBs, reference is made to the presence of impurities such as the PCDFs, the chlorinated dibenzofurans.

Q. Can you tell us how chemically it comes to get into the PCBs?

A. I can't tell you how it comes chemically. I don't know that chemistry well enough to define it.

Q. Are you aware that there's a chemical called sodium hydroxide that has to be used in the making of PCBs?

A. I do not know the process by which PCBs are made.

Q. Has anyone ever told you how they are made?

A. It may have been mentioned, but it certainly was not of particular interest to me.

Q. If you had to go to someone in Monsanto Company in the 1970s to find out how PCBs are manufactured from a chemical viewpoint, who would one go to?

A. I would probably, in terms of availability, either go to Dr. Bill Richards or Dr. John Herber.

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Q. Pardon me, his name?
A. John Herber.
Q. Are those two gentlemen still alive?
A. I have seen Dr. Herber recently. Dr. Richards left Monsanto. I don't know know where he is at or his vital status.
Q. Is Dr. Herber still with the company?
A. I believe he is.
Q. What capacity is he functioning in today?
A. I do not know his present title. He was in the area of functional fluids and this is the reason why I would go to him.
Q. Is PCBs one of the fluids under the functional fluids?
A. PCBs are a functional fluid.
Q. Is he located in St. Louis?
A. Yes, I believe he is.
Q. Now, I take it that Monsanto isn't in the business of selling dibenzofurans, is it?
A. That's correct.
Q. And if dibenzofurans are found in a PCB that's because that is a contaminant in the PCB?
A. It would -- if they occur, whatever their source, they are not what they intend -- they are not something that people want to be in the property.

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Q. It's a by-product impurity or somehow gets in there? They are not meant to be in there?

A. Yes.

Q. Have you heard from anyone whether it was in the 1970s technically feasible to manufacture PCBs without this impurity getting in?

A. I would not have a basis for commenting on the question. I have no knowledge of it.

Q. And Dr. Herber again you think is a person I could talk to on that subject?

A. Well --

Q. Let me start the question again. Was Dr. Herber with the company in the 1970s?

A. Yes.

Q. And in the 1960s?

A. I presume. He was here before I came and I came here in 1971.

Q. Fine. We're looking then at the toxicological effects rather than the chemical effects or chemical manufactured production of PCBs. Can we look back at BIR 001578 which we were looking at?

A. Okay.

Q. Let's look at the second sentence of Paragraph 2. "The toxic effects of the PCDFs are very similar to those reported for the polychlorinated

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dibenzo-p-dioxins." Does the "p" stand for para?

A. Yes, para.

Q. It's dibenzo-para, isn't it?

A. Yes.

Q. Have you read any articles comparing PCDFs to PCDDs?

A. There are a few -- let me say this. There are more references to the fact of the similarity in the relative toxicity to the PCDFs and the PCDDs, but insofar as I am aware, there is relatively little actual toxicity data on the chlorinated dibenzofurans.

Q. Okay.

A. So that the comparisons or generalizations are based on relatively little information.

Q. Okay. Well, let me refer you back again to Footnotes 7 and 8. You see in that same paragraph, it says, "In both cases,the 2,3,7,8-tetrachloro compounds are the most toxic isomers, having lethal dose 50-values in the range of 1 to 10 milligram/kilogram (guinea pig)." Do you see that reference?

A. Yes.

Q. It refers back to those two articles we were discussing in the Society of Toxicology magazine that you read?

A. Yes.

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Q. And does that indicate to you that there was some comparative study done with at least guinea pigs between dibenzofurans and dioxins?

A. First you made reference to milligram. That should actually be microgram which is smaller.

Q. What's the difference can you tell me?

A. A microgram is one one thousandths of a milligram so it's a much smaller unit.

Q. That's even smaller than a milligram, is that correct? I sold myself short on that one.

A. For the proper answer to your question, what I would like to do would be to read the two references and to see what information is there so that I could then make, you know, a response to the degree and the nature of the comparison.

Q. Okay. Have you heard of a process called gas chromatography?

A. Yes.

Q. Was that process in existence in the early 1970s when you joined Monsanto?

A. I don't recall exactly when, but I would think in the early seventies at least it probably was available, yes.

Q. Do you recall a machine developed by Finnigan, the Finnigan Corporation for detection of

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chemicals by gas chromatography in the seventies?

A. I have heard of the Finnigan Corporation, but I really don't know precisely what they do and I do not follow their methodology very closely.

Q. Have you yourself ever read any gas chromatographs after they've been printed out?

A. I have had them shown to me by the chemists and they have tried to explain to me the significance of all those wiggles and squiggles on the paper.

Q. Would you look at Plaintiff's Exhibit Number 28, Monsanto 28?

MR. KEARNS: We don't have it.

MR. DICUM: It's BIR 001681.

MR. FONTANA: Has it been marked yet?

MR. COMBS: 6181?

MR. DICUM: 1681.

MR. FONTANA: 1681?

MR. DICUM: Right.

(Plaintiff's Exhibits 28 through 34 marked for identification.)

Q. Do you recognize the title of this article, "Polychlorinated Dibenzofurans (PCDFs) Found in Yusho Oil and in Used Japanese PCB"?

A. I do not specifically recall that article.

Q. Leaving aside whether you remember the

STLCOPCB4027655

exact words, have you read this article before, do you know? Take your time to review it and see if you've read it before.

A. I do not recall reading this article before.

Q. By the way, was there anyone else in the medical department apart from yourself whose job it was to keep up with toxicological aspects of PCBs, furans, or dioxins?

A. I do not recall ever being told this was my specific job to keep abreast of them. I do not recall anyone else being given that as an assignment. I suspect that several people were attempting to keep up on literature.

Q. Do you know who else was?

A. Well, Elmer Wheeler was my immediate supervisor when I joined the department and he was at that time from my perspective, he had more to deal with the toxicology and the PCBs and the animal studies than anyone else.

Q. What position did he hold again in 1971?

A. I'm not sure of his precise title. At one time I think he was the associate director of the medical department and all of the nonphysician personnel in the department reported to him.

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Q. Okay. Did you tell me what degree Mr. Wheeler had?

MR. KEARNS: Mr. Wheeler is the one referred to as the doctor, but has only a master's.

Q. I referred to him in error as a doctor and it turns out he only had a master's degree.

A. I indicated I believe he had a master's. I'm not sure of that.

Q. Was that in pharmacology or in any such subject?

A. No, the professional working degree of most industrial hygienists is a master's degree and it's for that reason that I have made the assumption that Mr. Wheeler may have had a master's.

Q. I'm wondering if you know in what area?

A. As an old timer in that sense, he may have well entered the field before the master's degree was required. He may only have a bachelor's degree. I really don't know.

Q. Do you at least know in what field he did his studies in, whether he had a master's degree or not?

A. No, I do not.

Q. Professionally was he any more qualified than you were to assess the toxic effects of chemicals?

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You held a doctorate, do you not, and you've done animal testing?

A. Mr. Wheeler had been in the industrial hygiene safety business a considerably longer time than I had. He was older than I. He had worked for one of the state health departments, I believe, I'm not sure in New Hampshire or Vermont. He had quite a different and varied experience. I do not know that I would want to make comparisons between us.

Q. I understand.

A. I believe that he was qualified by experience and training to make judgments of this nature.

Q. Do you know if he himself ever did any animal tests?

A. I do not know.

Q. Ever heard him say that, that he had background in it?

A. I had no reason to believe that he did.

Q. Let's look back at the article which was marked as Number 28. Is Chemosphere a periodical that is taken by Monsanto for its library?

A. Yes. We have indicated this earlier.

Q. And who exactly publishes Chemosphere?

A. The copy of the article says Pergamon Press

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Limited in Great Britain.

Q. Are they an affiliate in some way of some learned society there?

A. The publishers of Chemosphere?

Q. Yes.

A. Insofar as I know Pergamon Press is a commercial publishing operation. I do not know the status of the journal.

Q. Have you yourself ever had anything published by Pergamon Press?

A. I can't recall who the publishers are of the journals that I've used, so I don't really recall.

Q. Have you ever submitted any articles to an overseas publisher in Britain, for instance?

A. I have never submitted an article to an overseas publisher.

Q. We have some names here. I believe you said you did not know Mr. Buser?

A. That's correct.

Q. Or Chris Rappe?

A. Right.

Q. What about Anders Gara with a little circle over the "a"?

A. I don't know him.

Q. Have you ever been to Sweden?

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A. No.

Q. Ever communicated with the Department of Organic Chemistry at the University of Umea in Sweden?

A. No.

Q. Or with any other university in Sweden about PCBs?

A. No.

Q. What about Switzerland? Have you ever communicated with the Swiss Federal Research Station about PCBs?

A. No.

Q. Or about furans?

A. No.

Q. Or dioxins?

A. No.

Q. Now, is this another of the journals that you try to keep up with, Chemosphere?

A. I would make comments very similar about Chemosphere that I did earlier about the Bulletin on Environmental Contamination and Toxicology. It has a tendency to have chemical articles. I don't think it is quite technically of the caliber of some of the other ones and it would be of lesser interest to me.

Q. Would it not be of interest to you to know how highly toxic products or products alleged to be

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highly toxic were getting into a product that was being sold by Monsanto?

A. My major interest would be in the toxicity or the biological effects of the material we were selling. How it got in, how it might get out, all of the other possibilities were secondary to the fact that we were selling a material and whatever was in that material, the total package is what I was looking at.

Q. Okay. Now, if the substance known as dibenzofurans did not exist in PCBs, there wouldn't have been a problem for you, would it?

MR. KEARNS: Just a moment.

Q. Let me try that question again. Let's forget about that question. Did you at any time ask anyone in the manufacturing end of operations whether it was possible to eliminate PCDFs or polychlorinated dibenzofurans from PCBs?

A. I do not recall ever asking that question.

Q. Isn't it a fact that if it was possible to eliminate PCDFs from PCBs it wouldn't have been a toxicological problem for you at all?

MR. KEARNS: The PCBs?

MR. DICUM: The PCDFs.

MR. KEARNS: If they weren't?

MR. DICUM: If they weren't there, they

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wouldn't have been a problem for him at all.

MR. KEARNS: You're assuming there was a problem for him to start with. He hasn't testified he has any problems along these lines. As I understood your question, it was basically if there weren't dibenzofurans in there, would the PCBs not be toxic? Is that what you're asking? I don't think -- let's get rid of the word "problem." That's assuming a fact.

Q. Let me substitute the word interest. Now, if PCDFs did not exist in PCBs, would there be something still about PCBs that would be of interest to you in your toxicological expertise?

A. I guess the way -- the thing called PCBs that Monsanto was selling with or without whatever was in it including dioxins -- not dioxins but furans, the thing that Monsanto is selling is of interest to me and the health effects.

Now, when something like an impurity question or any other question comes up and this would be true of any material, you want to look at it and say is that -- does that contribute to the problem or does it have a bearing on the problem, so the detection of furans will give rise to some questions, but those questions do not necessarily -- at least I do not equate those questions with problems.

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Q. Okay. Let's use the word questions if you want to use that word, okay? Do you recall if during the course of your work at Monsanto between '71 and today at any time anyone told you that dibenzofurans had been found in samples of Monsanto PCBs?

A. Do I recall if anybody told me that?

Q. Yes.

A. I don't have any conscious recollection of anybody coming up and indicating, telling me that.

Q. Did you ever ask?

A. I don't recall that I ever asked anybody either.

Q. Do you recall ever reading anywhere that dibenzofurans had been found in Monsanto PCBs?

A. I think in one of the articles you just showed me, there was a comment that said they have been found in American -- in the article -- which is exhibit, Plaintiff's Exhibit Number 27, if I may read this sentence. It says on Page 2, it started the second paragraph, "In 1970 Vos identified polychlorinated dibenzofurans (PCDFs) as toxic impurities in European PCBs at the ppm-level, and the same has also been reported for American and Japanese PCBs."

Q. What is the date of that article that's

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referred to there?

A. 1978.

Q. And the Vos article?

A. 1974.

Q. At that period of time, was there any other manufacturer manufacturing in the United States other than Monsanto manufacturing PCBs?

A. I think Monsanto was the only manufacturer in the United States.

Q. Would you look at the second page of the Exhibit 28 that we are reviewing, the first paragraph?

A. I'm sorry, which paragraph?

Q. The first paragraph. "In 1968, more than twelve hundred persons in southwest Japan were intoxicated by consuming a commercial rice oil contaminated with 1000 ppm of a PCB (Kanechlor KC 400). Nagayama et al. analyzed the rice oil (Yusho oil) and found 5 ppm of PCDFs." Look at Footnote 10. Ever heard of any of these gentlemen, Nagayama, Kuratsune, and Masuda?

A. I do not know them. I may have encountered their names in reading some articles.

Q. The bulletin that is referred to in Footnote 10, that's the same as the one that we discussed previously as a journal that's taken by

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Monsanto, is that correct?

A. That's correct.

Q. Are all the articles in that journal published in English?

A. I believe they are.

Q. Ever seen a journal article that's published in Japanese, for instance?

A. I'm sorry?

Q. Have you ever seen a journal taking an article that's published in Japanese?

A. I don't recall seeing the Japanese article in this journal.

Q. No. That isn't quite the question I asked. If an article is published in this journal, would it be published in English or Japanese assuming it was a Japanese author?

A. I thought I said earlier I believe all the articles in this journal are published in English.

(At this time, Susan Duvier entered the taking of the deposition.)

Q. Again, was there any reason why this article wasn't accessible to you in 1976, the article in Footnote 10?

MR. KEARNS: I'll object to the question, the form of the question.

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Q. Go ahead.

MR. KEARNS: I don't know how he could answer something like that.

Q. Do you know of any reason to prevent you from reading this article when it came out in 1976?

A. When you say, "accessible," the journal was received whenever it came through the mail.

Q. Right.

A. Was accessible?

Q. Let me try that again. Was there any reason in 1976 whether it was because Monsanto hadn't yet subscribed to the publication at that time or for any reason why it wasn't available for your use if you wanted to in the Monsanto library?

A. I was going to respond it was accessible. It was available. I do not know whether I read it then or some other time or particularly if I read it at all, but the distinction or the point is it was accessible. Whether I failed to see it or whether I did see it and forgot it, at this time I can't tell you.

Q. Other than in the material that we're looking at at this moment, have you heard from any other source that the Yusho rice oil was analyzed and found to contain polychlorinated dibenzofurans?

A. Yes.

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Q. From what source?

A. I believe I indicated earlier that in the toxicology articles or review articles reference is made to the fact that the presence of contaminating furans in PCBs and that the Yusho episode where the effects were attributed originally to PCBs are now largely if not almost exclusively considered to be the result of contaminants, one of which was the chlorinated dibenzofurans, so I can get the gist of this article or the part that I would want to carry weight without having read this entire article.

Q. Look at the next page, Page 443, second paragraph, "A similar cleanup was employed for the used PCB (Mitsubishi-Monsanto T 1248). This PCB had been used in a heat exchanger (operating conditions not specified) for two years. In the cleanup procedure the silica column was replaced by an additional alumina column to remove the bulk of the PCBs. The final sample extract contained significant quantities of the lower PCBs, but this again did not disturb the mass specific detection of PCDFs. Complete mass spectral analysis here too confirmed the presence of PCDFs, although the spectra for the earlier eluting PCDFs were partially obscured by co-eluting PCBs."

Have you ever heard before today that

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PCDFs were found in Mitsubishi Monsanto PCBs?

A. I do not recall hearing a reference to Mitsubishi Monsanto PCBs before today.

Q. Look at Page 445, third paragraph, "These results show a striking similarity between the PCDF isomers present in the Yusho oil and in the used Japanese PCB. The PCBs of these two samples (Kanechlor KC 400 and Mitsubishi-Monsanto T 1248) had the same chlorine content and both were used in heat exchange systems for long periods of time. The striking similarity in the PCDFs adds a new link between Yusho and PCBs."

Have you ever heard before today that there was a striking similarity between the PCDF isomers present in the Yusho oil and in certain used Japanese PCBs?

A. I guess the phrase "striking similarity" is what puzzles me.

Q. Well, it's not my word. I'm just reading from the article.

A. We've already discussed the presence of PCDFs of which there are several, in fact, and some or all PCDFs look alike chemically so to me the similarity is not striking. I have trouble with this comment, but we've already indicated that the chlorinated

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dibenzofurans may occur as contaminants in chlorinated biphenyls.

Q. You've testified you're not an expert on chemical analysis?

A. That's correct.

Q. And therefore you would not be in a position really to tell us whether it was striking or not striking?

A. Well, I've indicated the phrase "striking similarity" throws me because all polychlorinated dibenzofurans have a great deal of similarity to each other.

Q. The next one is 1677 bate's number.

MR. FONTANA: Henry, how far do you plan to go before we break?

MR. DICUM: I'm not very happy at the moment.

MR. FONTANA: Does that mean you're ready to give up?

MR. DICUM: We'll be here for another day at least.

MR. FONTANA: That's just it. It's noon. That's my only question.

MR. DICUM: Do you have any preference as to when to take a break?

MR. KEARNS: Now.

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(At this time a lunch recess was taken, after which the following proceedings were had:)

Q. Shortly before the recess, we had marked an exhibit and will you look at that exhibit? First of all, are you familiar with a reporter called the "Chemical Regulation Reporter"?

A. I have knowledge of it.

Q. Again, is that something that is taken by Monsanto?

A. I believe parts of Monsanto do look at it, yes.

Q. Do you know if -- have you seen it in the library at Monsanto at different times?

A. I have seen occasional articles from it that have been sent to me. I do not recall actually seeing it in the library.

Q. Would you look at Page 2 -- I beg your pardon, Page 941, the second page, BIR 001678?

MR. COMBS: What exhibit is this?

MR. FONTANA: Is this the one we marked just before lunch?

MR. DICUM: It's Exhibit 29.

MR. ROTHSCHILD: And the BIR number again?

MR. DICUM: 001678.

Q. Will you look under the section that

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says, "Chlorinated Furans Found in Fish"?

A. Uh-huh.

Q. Do you see the name of a gentleman called Mr. David Stalling?

A. Yes.

Q. Have you ever heard of him before?

A. Yes.

Q. Have you ever met him?

A. Yes, I did meet him years ago.

Q. Where?

A. At the Fish and Wildlife Laboratory in Columbia, Missouri.

Q. Is that the same as the Fish and Wildlife Service's National Fisheries Research Lab?

A. I believe it is.

Q. Do you see in the fourth paragraph down, will you look at that and it says, "He said the furans are as much as 500 times as toxic as their PCB precursors"? Do you see that?

A. Yes.

Q. Do you see the next sentence? "Transformer fires, in locomotive or electrical generation equipment, could cause the conversion of PCBs to the highly toxic furans, Stalling said." Will you look at the bottom and tell me what date that is?

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A. 1979 copyright.

Q. And --

MR. ROTHSCHILD: Excuse me, I can't hear your questioning.

Q. Do you recall talking with Mr. Stalling at any time about dibenzofurans?

A. No, I do not recall talking about it.

Q. By the way, have you ever talked to Westinghouse in the course of your work at Monsanto, to any persons at Westinghouse?

A. I may have. I do not recall any specific episode.

Q. Do you know of any individuals at Westinghouse who were in the 1970s were responsible for environmental control at South Boston, Virginia?

A. I would have no idea.

Q. Would you know who would know?

MR. KEARNS: Who at Monsanto would know?

MR. DICUM: Who at Monsanto would know.

A. I have no idea who -- what kind of contacts Monsanto had with Westinghouse. I wouldn't have the slightest idea of how to approach it.

Q. You mention that you had at some point met Mr. Stalling. Was it by any chance at this press conference of September 10th, 1979?

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A. It was before 1979 that I met him.
Q. Have you ever met him since?
A. I met with him two or three times, two, three, four times in the early seventies. We went up to the laboratory at Columbia, Missouri, to look at his testing facilities. We were debating whether to construct a fish toxicology testing laboratory in Monsanto and it was in connection with his general fish toxicity work that I met with him.
Q. And you don't recall him ever saying anything about the possibility of transformer fires causing generation of furans around that time?
A. I don't think we ever discussed transformers.
Q. Do you know if or have you heard from anyone at the medical department, anyone else ever talk to Mr. David Stalling?
A. There were other people at Monsanto involved in the discussions.
Q. Who were those?
A. This would have been some of the -- Mr. Wheeler my boss, probably some of the chemists, others who would participate in the general discussion as to whether or not Monsanto should undertake to construct a lab for doing fish toxicity testing.

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Q. Do you recall Mr. Stalling talking to you about the fact that he had discovered chlorinated dibenzofurans in fresh water fish in the central and northeastern United States?

A. I do not recall any discussion with Dr. Stalling regarding dibenzofurans.

Q. By the way, what sort of doctor is he? A chemical doctor or what exactly is he?

A. I do not know what he has his degree in.

Q. Will you look at Exhibit 30?

MR. COMBS: Can you identify Exhibit 30?

A. We don't have a 30.

Q. You don't? BIR Number 61001575.

MR. COMBS: BIR 61001575?

MR. DICUM: Correct. I should have said 001575.

Q. Have you seen this article before?

A. Again, I cannot recall specifically this article. I do read this journal and I may well have seen it.

Q. Do you recall at some point in the late 1970s a theory developed by the Dow Chemical Company that dioxins could be generated by combustion?

A. Yes, I have read of that.

Q. Did you agree with that theory?

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MR. KEARNS: What? Can I have the last two questions and the single answer read back again?

(Whereupon the following portion of testimony was read back by the Court Reporter: "Q. Do you recall at some point in the late 1970s a theory developed by the Dow Chemical Company that dioxins could be generated by combustion? A. Yes, I have read of that. Q. Did you agree with that theory?")

A. The -- what I have read of the theory makes it plausible, it sounds plausible. I have no means of verifying the validity or nonvalidity of the theory, but it does appear plausible.

Q. You haven't done your own independent tests on the theory?

A. No, I have not.

Q. Would you look at next in order which is 31?

MR. COMBS: What is that document? I think none of these have been introduced on the record.

MR. DICUM: Okay. We're having marked as Exhibit Number 31 a document which has a title of "Formation of Polychlorinated Dibenzofurans (PCDFs) from the Pyrolysis of Individual PCB Isomers" by Hans Rudolf Buser and Christoffer Rappe.

MR. COMBS: It has no BIR number?

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MR. DICUM: It is 001607.

Q. First of all, have you seen this article before?

A. Again, I do not recall whether I've seen this specific article or not.

Q. Would you look at BIR 001609? Do you see a term that appears on that page "pyrolysis"?

MR. KEARNS: I didn't hear that.

Q. Do you see a term that appears on that page "pyrolysis"?

MR. KEARNS: The word? Does he see the word mentioned there?

MR. DICUM: Yes.

A. Yes.

Q. Have you heard that term before?

A. Yes.

Q. What is your understanding of pyrolysis?

A. Lysis is destruction and pyro is fire so that the term would mean destruction, degradation, breakdown by fire.

Q. And again referring to some kind of change in chemical composition, is that correct?

A. A breakdown, destruction would be a change in chemical composition.

Q. Will you look at Number 32 which is

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entitled apparently "Christoffer Rappe: Dioxins and Dibenzofurans -- Focus on Two Groups of Substances" and there is a Swedish title after it as well.

MR. KEARNS: You're handing us the document?

MR. DICUM: Yes.

Q. And that's been marked as Exhibit 32.

MR. FONTANA: Does it have a BIR number?

MR. DICUM: BIR 001636.

Q. Have you seen this item before?

A. I do not recall having seen it.

Q. Would you look at the first page of the text? Do you see on the top right-hand corner something which is a code 239-2451?

A. Yes.

Q. Do you know if that is some kind of Monsanto code for materials brought into the library?

A. I do not know the significance of that code.

Q. Do you see Paragraph 3 below, "In recent years, there has been intensive discussion in this journal of certain effects of both phenoxyacids and hexachlorophene," and it lists a series of articles all in 1977 and 1978. "Since these substances have a direct association with dioxins and dioxin-like combinations, it may be relevant here to present an

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overview of the present state of knowledge."

Have you ever heard that before today that there is some kind of connection between certain effects of phenoxyacids and hexachlorophene with dioxins?

A. Would you read back the last part of the question, I'm sorry?

Q. Have you ever heard before today of some kind of connection in effects of phenoxyacids and hexachlorophene with dioxin?

A. I guess the word "connection" is the word that I'm having trouble with.

Q. Will you look and see? I think they are talking about toxicological effects.

A. Dioxins have been reported in phenoxyacids and hexachlorophene. That I have no difficulty with. The connection and effects is what I can't comprehend or I fail to grasp.

Q. Would you look at the last paragraph of BIR 1638, second sentence -- first sentence, "As far as sublethal and chronic effects of PCDDs and PCDFs are concerned, only 2,3,7,8-tetra-CDD has been investigated to any large extent. The typical effects in animal experiments are damage to the liver and thymus gland which, in turn, have caused effects upon enzyme

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activation and immunity defense. This may be the explanation of why the joint exposure to phenoxyacid 2,4,5-T and 2,3,7,8-tetra-CDD has been proved to produce vigorous synergistic effects in animal experiments. TCDD has also proved to be a very potent teratogen."

Do you agree with that, TCDD has been proved to be a very potent teratogen?

A. TCDD has been shown to be a teratogen in animal studies.

Q. Okay. Will you look at the third paragraph again on that page? "In the course of the evaluation, which was made at IARC in Lyon approximately one year ago, it was found to be difficult to establish any actual evaluation because data were lacking (IARC, 1977). Since that time, a number of animal experiments have been concluded and published. All of these demonstrate that TCDD in small doses can produce tumors," again listing a series of articles in 1977 and '78.

Have you read any of those articles or heard of any of the people involved?

A. I have read at least some of the articles and I do know some of the people involved.

Q. Do you know Dr. Norback?

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A. I have met him, yes.
Q. He's at the University of Wisconsin, right?
A. Yes.
Q. He's done some experiments in PCBs as well, is that the case?
A. Yes.
Q. And what other persons there have you met?
A. I've met Dr. Allen, Jim Allen who used to be at the University of Wisconsin.
Q. Okay.
A. I know Dr. Dick Kociba who was with Dow Chemical Company.
Q. Okay.
A. The Di Giovanni I do not believe I've met, but I'm not sure which -- without initials, I'm not sure which Di Giovanni that is.
Q. Had you met these people before 1983?
A. Yes.
Q. Do you remember discussing any studies that they had done investigating the effects of tetrachlorodibenzo-para-dioxin?
A. I don't believe I discussed tetrachlorodibenzo-para-dioxin with Dr. Allen. I know I have not discussed it with Dr. Norback. I don't know whether I've discussed it with Dr. Kociba at Dow.

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Q. Can you tell us the substance of the discussions with the persons you did discuss it with?

A. I said I don't know that I've discussed it with them.

Q. I'm sorry, I misunderstood it. Were there any of those people with whom you discussed the subject with?

A. I said I know for sure I have not talked about tetrachlorodibenzo-para-dioxins with Dr. Norback. I am not sure, I don't recall particularly having discussed it with either Dr. Allen or Dr. Kociba, though I might have possibly discussed it in the course of conversations with Dr. Kociba.

Q. Where is Dr. Allen?

A. At present, I do not know. He left the university under --

Q. Which university, I'm sorry?

A. University of Wisconsin at Madison under a cloud, questions.

Q. A cloud? What sort of cloud?

A. There was an article in the magazine "Science" which alleged that Dr. Allen had possibly misused some government funds that he was to have for his research purposes.

Q. Was that article in any way directed at the

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correctness or otherwise of his scientific work?

MR. KEARNS: I'm sorry?

MR. DICUM: I realize that the witness just testified that Dr. Allen left under a cloud because of some issue of funds. My question was whether that article also commented on the fact that his --

MR. FONTANA: What article?

Q. Let me go back again. Did you read about this matter about Dr. Allen leaving or did you hear about it from some source?

A. I indicated earlier that there was an article in the journal "Science" which indicated that Dr. Allen had left Wisconsin.

Q. That's what I thought you said. And do you remember if that article commented adversely on Dr. Allen from a professional point of view as opposed to just misuse of funds meaning from the point of view of the quality of his work?

A. I do not recall that point specifically. I believe, though, that in general the question having been raised in one area, there were questions directed or implied at least as to whether this did or did not have an effect or would or would not have had an effect on his other publications.

Q. Where was Dr. Giovanni?

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A. I have met a Dr. Giovanni who is with a different group and I'm not sure if it was the same one, in the absence of initials I can't be sure, but I don't recall a Giovanni who has worked with dioxins.

Q. You don't know. Have you read these articles?

A. Some I have read. I'm reasonably sure, but I can't say I read them all.

Q. Where is Van Miller?

A. I do not know Van Miller.

Q. Kociba?

A. Dick Kociba is at Dow Chemical.

Q. Did you say you knew Toth?

A. Toth I do not know.

Q. Now, look at the next paragraph. "Low general organ specificity has been observed in these experiments which may be interpreted to mean that TCDD has a general promotional effect. This is in good agreement with the results which were recently published by Kouri and Nebert (1977)." Do you remember any studies done by Kouri and Nebert about the toxicity of TCDD?

A. I do not recall Kouri and Nebert.

Q. Have you heard of them as opposed to knowing about that article?

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A. No, the names do not ring -- do not bring any recollections to mind.

Q. Do you agree with the statement that is made there on this page that a series of animal experiments in 1977, '78 that all of them demonstrated that TCDD in small doses can produce tumors?

MR. KEARNS: What sentence are you reading?

MR. DICUM: The last sentence of the third paragraph.

A. Immediately before the references to the literature?

MR. KEARNS: You're asking him if he --

MR. DICUM: I'm asking if he himself disagrees with that statement that the studies, all the studies that he has seen show that TCDD can produce tumors.

MR. KEARNS: All the studies he has seen, "he" the witness?

MR. DICUM: Yes, he the witness.

A. All the studies I have seen or the studies that are listed here?

Q. All the studies you have seen.

A. There are studies and some of the listed ones here, I can't recall every one of them, but of the listed studies here, some of these at least show that TCDD in small doses does produce tumors in laboratory

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animals. There may be studies other than those listed here. I do not recall whether there is a study that would show that TCDD did not produce tumors if that's the part. I don't recall one.

Q. Would you look at Page 4, the third paragraph down? "The greatest quantities and the products most likely containing the most dioxin were used in the war in Southeast Asia towards the end of the sixties (the defoliant Agent Orange)."

Have you heard before today that Agent Orange, the defoliant known as Agent Orange contained dioxins?

A. Yes.

Q. From whom?

A. Again, I can't recall specifically, but certainly there were several if not numerous newspaper accounts about the dioxin contamination of the defoliant Agent Orange.

Q. Other than newspaper accounts, have you found that statement anywhere else?

A. I'm sure it has appeared in different articles from time to time, but I can't cite specific sources.

Q. Have you ever heard from any source that that is not the case?

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A. At the risk of rephrasing the question --

Q. You want me to rephrase the question?

A. Yes, I would prefer you do it than I do it.

Q. That's fine. I think I understand your problem.

MR. KEARNS: What is the significance of Agent Orange to this lawsuit? I thought we were dealing with PCBs and perhaps their by-products.

MR. DICUM: You may think PCBs, but I believe that there will be substantial testimony to show that a product contaminated one part of the building included something call dibenzofurans and possibly dioxins.

MR. KEARNS: What does that have to do with Agent Orange, though?

MR. DICUM: I believe I'm correct in saying there has been substantial litigation in the United States involving Agent Orange and several studies done concerning the agent, to the dioxins in Agent Orange, the exposures of human beings --

MR. KEARNS: Is it your position that Agent Orange is involved in this lawsuit somehow or somewhere?

MR. DICUM: It's our position that dioxins were found in some of the buildings involved in this lawsuit at some point as well as dibenzofurans and it's my

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understanding that dioxins were the reason why Agent Orange was considered dangerous. It's not just because of Agent Orange. It's just because of the dioxins in it. It could have been called something else.

I'll just -- I don't intend to continue at further length on this. I just want an answer to that question if he knows it, any source from which he's heard that Agent Orange did not contain dioxins.

MR. KEARNS: You can answer that if you know.

A. I can recall as I indicated newspaper accounts and others indicating the presence of dioxins in Agent Orange. I do not recall, though I may have, but I don't recall the converse of someone saying there were no dioxins in the sample we looked at.

Q. Will you look at the next page, Page 7? Do you recall, sir, an incident in Seveso, Italy, in 1966 when dioxins got spilled?

A. I have read about it, yes.

Q. And do you recall there were certain follow-up tests that were done on that exposure?

A. There have been reports of continuing tests, yes.

Q. What have you heard?

A. The most recent things that I recall is that despite all of the questions raised by that

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episode, it occurred because of the questions being due to unknown amounts of material and the unknown effects and so forth that except for some residual chloracne, there has been very little evidence of residual effects in the people who were exposed.

Q. Have you heard of an institution called IARC?

A. Yes.

Q. What is IARC?

A. International Agency for Research Against Cancer.

Q. Where is it, please?

A. Lyon, France.

Q. Is the United States a member of that institute?

A. I believe the IARC is a part of the World Health Organization. How the United States filters back into the World Health Organization I do not know, but it is not a direct participating one-on-one membership.

Q. I direct your attention to Paragraph 4 and it seems to talk about a certain incident in Sweden and Seveso, Italy. "The number of workers exposed in these accidents is five hundred to one thousand. The most common symptoms are chloracne, liver damage, and heart

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and vascular diseases; however, a great variety of other symptoms have also been described."

Have you ever heard that liver damage was found in people exposed to dioxins from Seveso and in Sweden?

A. This paragraph says, "The number of workers exposed in these accidents," it says, "is five hundred to a thousand."

Q. Right.

A. I do not get the impression that they are talking about the civilian population in Seveso from that statement and industrial exposures would probably be the most severe exposures.

Q. Ever heard that heart and vascular diseases can be caused by dioxin exposure before today?

MR. KEARNS: Has he ever heard it before today?

MR. DICUM: Yes, before today.

A. The liver disease would be postulated on the finding of liver damage in animals. I am not as sure of the heart and vascular disease. I don't particularly recall those as being --

Q. Are you saying that the liver damage referred to in this sentence refers to liver damage in animals as opposed to the workers who were exposed?

A. I said the postulate for liver damage would

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be based on the animal studies. Again, without looking at the specific reference, I could not tell you whether the liver damage is a reference to the animal studies or whether it was observed in the human population.

Q. Do you know if Monsanto takes those in its library of IARC reports?

A. We have several publications, monographs that the IARC has issued. We probably have most if not all, but I can't attest to the fact that we have them all.

Q. Look at the next paragraph, please. "The group of workers that has been studied most intensively is the seventy-five who were hurt in connection with an explosion at the BASF factory in Ludwigshafen in 1953." Do you recall that incident in 1953?

A. No, I don't recall the incident. I have read very little about it.

Q. What have you read?

A. Well, not much more than appears here in the history, if you will, that there was an earlier exposure of people in Ludwigshafen.

Q. "Of the seventeen persons now dead, six died from various tumor illnesses (expected number: three). The number of stomach tumors was four, compared to the expected one to two (IARC, 1978b)."

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Do you see that statement?

A. Yes.

Q. Do you have any information to indicate that that statement is wrong?

A. I have no basis for judging right or wrong.

MR. DICUM: Exhibit 33 starts at 1649.

Q. Have you seen this article before?

A. As with many of the other chemistry articles, I do not specifically recall it.

Q. It's an article entitled for the benefit of others, it's called "Polychlorinated Dioxins (PCDDs), Dibenzofurans (PCDFs) and Other Polynuclear Aromatics (PCPNAs) Formed During PCB Fires." Do you know Stellan Marklund?

A. No, I do not.

Q. Or any of the other authors?

A. No, I do not.

Q. I think you testified earlier you had not been to Sweden, is that correct?

A. That's correct.

Q. This particular article appears to come from a volume called "Chemica Scripta," does it not, see, in the top left-hand corner?

A. The notation at the bottom of the page and one at the top is illegible, but that seems to be it.

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Q. Have you heard of a magazine called "Chemica Scripta"?

A. I do not recall having seen it before now.

Q. I'm referring to the kind of magazine as opposed to the specific one.

A. Insofar as it's a technical journal, yes, I have seen others.

Q. Fine. This is BIR 001588 and it's entitled "Contamination of an Office Building in Binghamton, New York, by PCBs, Dioxins, Furans, and Biphenylenes After an Electrical Panel and Electrical Transformer Incident." Have you seen this article before?

A. I may have. I do not specifically recall.

Q. Do you know Dr. Arnold Schechter?

A. No, I do not.

Q. Have you read or heard about an incident in Binghamton, New York, in 1981 other than from the source that we're looking at today?

A. Yes. This is one reason I'm not sure, but, yes, I have.

Q. It could have been this or something else?

A. (Nodding head.)

Q. What's your understanding of what happened there based on what you read?

A. There was a fire. The building filled with

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smoke, soot, and other material which is likely to follow in the wake of a fire. I'm not sure of the time sequence, but either then or at some later date because a PCB probably transformer was involved, the questions came up about the cleanup or the questions arose as to the effects of contaminants.

This led to a closing of the building and a long debate as to who, how, and what was to be cleaned up and to what extent it was to be cleaned up. I do not know whether it's ever been cleaned up and put back in service or not.

Q. Have you ever talked to any health officers in Binghamton, New York, for the State of New York about this incident?

A. I do not recall such a conversation.

Q. It's your understanding -- is it your understanding that the transformer was in a vault somewhere?

A. My recollection was a basement. Specifics I don't recall.

MR. DICUM: Marking next in order BIR 001692.

(Plaintiff's Exhibit 35 marked for identification.)

Q. Will you look at Exhibit 35? What is the letterhead that appears on the top right-hand corner?

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A. National Electrical Manufacturers Association.

Q. And on the left-hand corner?

A. Susan Phillips Read, Counsel - Environmental Protection.

Q. And the company?

A. General Electric Company.

Q. Have you seen this document before?

A. Not that I recall.

Q. Sir, do you know if Westinghouse is a member of the National Electrical Manufacturers Association?

A. I do not know the membership of the National Electrical Manufacturers Association.

Q. Have you heard of a statute called the Toxic Substances Control Act?

A. Yes.

Q. And will you look at the first sentence in the first paragraph, "Section 6(e)(2)(A) of the Toxic Substances Control Act ('TSCA') prohibits PCB uses except in a 'totally enclosed manner.'" Do you see that?

A. Yes.

Q. And is that also your understanding?

MR. KEARNS: Of that law?

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MR. DICUM: Yes.

MR. KEARNS: Does it make any difference?

MR. DICUM: It might if he doesn't believe it.

MR. KEARNS: Doesn't believe the law?

MR. DICUM: If he doesn't believe that that is what it says.

A. I mean we read this section which talks about exposures should be insignificant and that the administrator will determine the level of exposure. Yes, I accept that. It's a fact.

Q. Look at Page 3 and the bottom paragraph. "At the informal hearing, Dr. Ian Webber representing RTE Corporation asserted that concentrations of PCDFs in Askarel transformers," and there's a footnote, "increase with time in service." Do you see that statement?

A. Yes.

Q. Do you recall anyone ever telling you that PCDFs increase in the course of time in Askarel transformers?

A. I do not recall being told that.

Q. Ever been told that they do not?

A. I don't recall being told they do not.

Q. Do you see the next page, first paragraph? "By contrast, NEMA has consistently maintained that (1)

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there is no evidence that the conversion of PCBs into PCDFs occurs in PCB-containing electrical equipment." Do you see that statement?

A. Yes.

Q. "The causative circumstances for the production of high levels of PCDFs in the Yusho incident do not exist in the United States today." Do you see that statement?

A. I see that.

Q. Is that consistent with your understanding that it's impossible for PCBs to be converted into PCDFs in PCB-containing electrical equipment?

A. I don't know that I have a position.

Q. Okay. If you don't, you don't.

A. Those are two statements and I can read them, but from my perspective particularly in terms of toxicology I don't see that they have any bearing. I never gave it any thought.

Q. Do you see on Page 6 in the second paragraph, "Subsequently, GE submitted four (4) additional samples of used Askarel to the same industrial laboratory for PCDF analysis"? Do you see that?

A. Yes.

Q. Have you ever heard whether Westinghouse

has ever had Askarel from their transformers other than the One Market Plaza incident analyzed for contamination with PCDFs?

A. I'm not aware of any analyses that Westinghouse did on any samples including the one at Market Plaza.

(At this time a short recess was taken, after which the following proceedings were had:)

Q. Have you heard of something called Monsanto Research Corporation?

A. Yes.

Q. Do you recall any kind of studies done at the Monsanto Research Corporation on tetrachlorodibenzofurans?

A. I can't recall specific studies.

Q. Have you heard of someone called Mr. David Hileman, H-i-l-e-m-a-n?

A. Yes.

Q. Do you recall Mr. Dave Hileman doing some studies?

A. I'm sorry, you said Hileman?

Q. H-i-l-e-m-a-n.

A. There's a Fred Hileman.

Q. Fred Hileman, I beg your pardon.

A. Yes.

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Q. And has Fred Hileman do you recall done some studies at the Monsanto Research Corporation into tetrachlorodibenzofurans?

A. Dr. Hileman is an analytical chemist. He's done analyses of many materials.

Q. And have you heard that there is a special facility operated by the Monsanto Research Corporation for detection of TCDFs?

A. I'm not aware there's a separate facility. Because of the sophisticated analytical methodology they have, I would assume they are capable of doing the analysis.

Q. Sir, do you recall at some stage some monkey tests on PCBs as opposed to dioxins being carried out?

A. I have done some studies with PCBs. I have not done any studies with dioxins in monkeys.

Q. I mean tests where monkeys were exposed to PCBs?

A. Yes, studies with monkeys and PCBs, yes.

Q. Do you know if anyone at Monsanto Corporation has ever done any studies of the toxicity of dioxins as opposed to of PCBs?

A. The animal testing would have been done through the medical department. We have done no animal

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testing on dioxins that I can recall. Whether someone in Monsanto may have done some other kind of testing with dioxins, I'm less cognizant of, but I do not recall any animal testing with dioxins that Monsanto did.

Q. Do you know if Monsanto ever commissioned anyone outside to do testing of the toxicity of dioxins?

A. I have no knowledge of such.

Q. Sir, going back a little ways, can I have this marked next in order?

(Plaintiff's Exhibit 36 marked for identification.)

MR. DICUM: I should say this is a document that was not provided us by Monsanto and therefore I'm making a copy available for circulation around the table so that counsel can review it and it's not very long. There aren't very many of us. Maybe we can take half a minute to look at it before I ask questions.

For identification, it is entitled "Program for Monitoring Potential Contamination in the Laboratory Following the Handling and Analyses of Chlorinated Dibenzo-P-Dioxins and Dibenzofurans," and the authors are F. D. Hileman, H-i-l-e-m-a-n, T. Mazer,

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and D. E. Kirk, Monsanto Research Corporation in Dayton, Ohio, and it bears a production code number of 510 04527 which is just an internal code number, but it is -- we did not obtain it from Monsanto. We obtained it from other sources and I want to caution you that the source that we got it from did not give us a very good version of the second to the last page. I draw that to your attention so somehow if someone says we fudged a copy, that's not the case and, Counsel, perhaps it's my request at this point for a clean copy if it can be located of this.

MR. KEARNS: I've never seen it. I'll read the thing.

MR. DICUM: I think it falls into some of our requests categories.

Q. Sir, have you reviewed the document?

A. Not yet.

MR. DICUM: I ought to say since I don't think it should be a big secret who we got it from, this was found in the files of the San Francisco Department of Public Health.

MR. ROTHSCHILD: You're revealing the source?

MR. DICUM: Yes, of this particular document.

MR. COMBS: Public Health you say?

MR. DICUM: Yes.

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Q. First of all, have you seen this document before?

MR. FONTANA: I'm sorry, I didn't have a chance to read it yet either. It's still working its way around the table.

MR. DICUM: I'm sorry.

Q. Have you had a chance to read this document?

A. (Nodding head.)

Q. Have you seen it before?

A. No, I did not see it before.

Q. Let me go through it and take it apart piece by piece, all right? The first paragraph talks about "A program of safety wiping has been established to monitor the workplace for polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans." Have you heard of such a program at Monsanto?

MR. KEARNS: Before reading this paper?

A. No, I have not heard of such a program.

Q. What exactly does the Monsanto Research Corporation do?

A. My recollection is it was set up as a separate corporation who's -- with the two aims of either providing a contract laboratory service for those who want to or have need for technical expertise

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and yet the need was not so frequent that they would want to develop their own internal capabilities so it was a contract service or service offered for contract work with others and also was a means of entry into possible government contract work. That's my understanding of it.

MR. ROTHSCHILD: Pardon me?

A. Possible government contract research work where the company could use its expertise, but I believe it has been dissolved. It no longer exists.

Q. The Monsanto Research Corporation?

A. I believe that's correct, but I think I saw a notice that it's been disbanded.

Q. Do you remember a Mr. or Dr. T. Mazer, M-a-z-e-r, Dr. Hileman's co-author?

A. Mazer I did not recall.

Q. D. E. Kirk?

A. Nor do I recall Kirk.

Q. Is Dr. Hileman now working for Monsanto Company?

A. Yes, he's still working for Monsanto.

Q. In what department?

A. He is in St. Louis. I believe we have a laboratory called the Environmental Science Laboratory as part of the environmental policy staff and I think

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he is in that laboratory.

Q. Do you know if Dr. Hileman has continued with his work on dibenzo-p-dioxins and dibenzofurans at Monsanto Company since leaving Monsanto Research Corporation?

A. He has continued to do analyses in this area, yes.

Q. And that's with the research unit you mentioned, is that correct?

A. Yes.

Q. Have you talked to him about his research in this area?

A. I have listened to him present his data at a seminar or two. I have not discussed it in a one-on-one conversation with him.

Q. Other than this document, have you ever seen any results or studies prepared by Dr. Hileman concerning dioxins or dibenzofurans?

A. I may have seen a report or two or three. I don't recall specifically.

Q. Did you attend the International Symposium on Chlorinated Dioxins and Related Compounds that was apparently held on October 25 to 29, 1981, in Arlington, Virginia?

A. I don't think I went to that meeting.

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I don't recall going to it.

Q. Did you go to other meetings at which Dr. Hileman addressed an audience, a public audience concerning this subject?

A. I have never heard Dr. Hileman present a paper at a public meeting. Whether he and I were at the same meeting and he was talking elsewhere, I really don't know.

Q. Has he presented his research studies or results inside Monsanto at a meeting you attended?

A. Yes.

Q. When?

A. I can't recall. When he moved to St. Louis, when they received new instruments and they talked about the improved sensitivities capabilities of newer instruments, this sort of general discussion but I can't recall.

Q. Was that a discussion inside a formal meeting or not inside a formal meeting?

A. More or less a meeting.

Q. Do you recall anyone else -- was it one meeting or more than one that you were present at with Dr. Hileman?

A. There's been more than one, but I can't give you specific dates or times.

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Q. Can you recall any other person who was present when you were present listening to Dr. Hileman present his findings?

A. There could have been other members of the medical department of the environmental policy staff.

Q. By the way, is Mr. Wheeler retired?

A. Yes.

Q. Did anyone replace him?

A. Jack Garrett who was here at the time sort of assumed Mr. Wheeler's duties.

Q. Is Mr. Garrett --

A. Or at least the industrial hygiene portion of it.

Q. Is he still with the company?

A. He retired three years, two or three years ago.

Q. Do you recall if Mr. Garrett ever told you that he was in communication with Dr. Hileman about a program of safety wiping to monitor the workplace in polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans?

A. I do not recall Jack Garrett saying he had discussed this with Hileman, no.

Q. At the meeting that you attended or the meetings that you attended perhaps with Dr. Hileman,

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do you recall if Dr. Hileman talked about safety wiping to monitor the workplace for this purpose?

A. No, I do not recall that.

Q. What studies did Dr. Hileman talk about at the general discussions that you mentioned?

A. My general recollection is that he talked of the either improved or newer capability to detect progressively or increasingly smaller volumes of chemicals of interest and the areas that Dr. Hileman was focusing on was the chlorinated dibenzofurans and the chlorinated dibenzodioxins trying to identify them and to determine the amounts of them which were present.

Q. Do you know if the conversation you had or conversations you had with Dr. Hileman occurred before or after October of 1981?

A. They could well have occurred both before and after.

Q. Do you see in the first paragraph, it says, there, "Detection limits of five nanograms per wipe are routinely obtained for the tetrachlorodibenzo-p-dioxins and tetrachlorodibenzofurans"?

MR. KEARNS: Where are you?

Q. The last sentence of the first paragraph, do you see that sentence?

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A. Yes.

Q. Do you recall Dr. Hileman telling you that in person?

A. That specific sentence, no, I do not recall.

Q. Do you recall -- first of all, what is a nanogram? It's difficult, isn't it, when it gets real small?

A. A nanogram is a hundred -- no, it's a billionth of a gram.

Q. A billionth of a gram, not a millionth but a billionth?

A. A billionth of a gram.

Q. Look at the next sentence after the word, "Introduction. As a major chemical manufacturing company, Monsanto has established a facility for the trace analysis of contaminants which may be present in products and waste streams." Then it has the name Throdahl and 1980.

A. That would be Monty Throdahl, yes.

Q. Is that a Monsanto employee?

A. He is a former senior vice president who is now retired.

Q. Do you know where he now lives?

A. He lives in the St. Louis area.

Q. And of what was he vice president?

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A. When he retired, he was the vice president of the environmental policy staff. Prior to that, I believe he was the vice president for research for the company.

Q. Do you recall the program that is referred to here or facility that is referred to here for trace analysis of contaminants which may be present in products?

A. The facility described here by Dr. Hileman was in Dayton, Ohio. It talks to the procedures they took in the laboratory, that about as important as anything was to keep the samples they were analyzing from becoming contaminated so that they would not be reporting spurious or erroneous results. I do not know what materials or the source of the materials that they were analyzing.

Q. Do you know from what source they were concerned that the contamination might come?

A. It could be from the last sample they had analyzed. You could spread the contamination from the last sample to the next sample.

Q. Any other sources?

A. Well, what you bring into the laboratory, if they are bringing in new materials that they are to analyze for dioxins and dibenzofurans, the concern

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is that the last material I brought in is not contaminating the next one I bring in.

Q. Will you look at the last page of this document at the footnote at the bottom where it says, "References"?

A. Uh-huh.

Q. Do you see a publication, Throdahl, M. C., that's Monty Throdahl again?

A. Yes.

Q. It's entitled "Practical Implications of Risk Management in Industry, Presentation to the New York Academy of Sciences, New York, New York, March 18, 1980." Do you recall attending that in your capacity as a member?

A. I did not attend that meeting.

Q. Do you recall reading that publication by Dr. Throdahl at any time?

MR. KEARNS: This particular one?

MR. DICUM: Yes.

MR. KEARNS: Hasn't that been asked and answered?

MR. DICUM: It's getting late in the afternoon, but maybe it has been. I don't know. I'm not talking about this publication. I'm talking about what's in the footnote on the last page, Dr. Throdahl's

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material.

MR. KEARNS: I'm sorry.

A. I do not recall reading that article by Mr. Throdahl.

Q. Do you know if Mr. Throdahl was doing work in the area of contamination of PCBs during manufacture?

A. I do not know what -- you say, "doing work." He's a senior vice president and specifically how he occupied his time during the day, I do not know.

Q. Let me try again. Do you know if Mr. Throdahl had some kind of director capacity or was directing a group of people doing work in the area of contamination of PCBs during manufacture?

A. I do not know whether there was such a group or whether he had any connection with them.

Q. Have you ever heard of anyone doing such work in Monsanto during the years you've been with Monsanto Company now?

A. I do not know what they were doing in the manufacturing end of the business with respect to the product.

Q. Do you see the next couple of sentences in the same paragraph, "Particular attention has been given to the analysis of polychlorinated

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dibenzo-p-dioxins (PCDDs) and polychlorinated dibenzofurans (PCDFs). Performing these analyses necessarily involves handling analytical standards which contain PCDDs and PCDFs."

Do you recall ever visiting the site in Dayton, Ohio, where these studies were being conducted by Monsanto Research?

A. I visited the laboratories in Dayton probably two or maybe three times. I am sure that I toured or was given a tour of portions of the facility each time. I do not specifically recall -- and this would have been the early to mid seventies. I do not specifically recall any discussions at that time on dioxins or furans.

Q. What was the first time that you do recall discussions about dioxins or furans during visits to the Dayton facility?

A. I don't think I ever discussed them in the Dayton facility.

Q. What is the first time you recall discussing dioxins or furans in the context of analyses at Monsanto Company?

A. I don't recall a time. The discussions probably would have been more -- I can't recall specific instances, but someone with respect subsequent

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to the Yusho incident, for instance, when the questions of contamination with chlorinated dibenzofurans and other substances came up and people, technical people not just within Monsanto, but technical people generally began wondering, raising a question as I indicated earlier as to how much of that toxicity could be due to the furans instead of the PCBs, so it's in this connection that things being reported may have been attributed to one thing or another and the presence or knowledge of composition were causing people to change their minds. It's in this context that I pay attention to the contamination levels.

If someone were giving a seminar talking about analytical methods, I might well attend the seminar just to listen, but I don't recall any dialogue or discussion on the subject.

Q. Would you look at the last sentence in that second paragraph, "The extreme toxicity of certain of these compounds creates a potential health hazard for personnel involved in the analyses." Do you see that?

A. Yes.

Q. Do you recall Dr. Hileman ever mentioning to you about the toxicity of certain of the compounds of dibenzo-p-dioxins and dibenzofurans?

A. I do not recall his ever telling me

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specifically toxicity data on any of these compounds.

Q. Did he ever say to you in a general way that they were very toxic?

A. I think the same sort of statement as made here he would make in an oral presentation.

Q. Would you look at the next paragraph? "To facilitate the safe handling analysis of these compounds, Monsanto has established isolated sample storage, workup and analysis facilities. These include a Chemical Safety Laboratory where standards are stored and dilute standard solutions are prepared."

Do you recall if there was a Chemical Safety Laboratory where standards were stored?

A. As I indicated, I toured the laboratory, been given tours of the laboratory, and I do not specifically recall that kind of detail.

Q. Now, when it says here "standards," they are referring to some kind of sample that is supposed to be pure as opposed to contaminated, are they not?

A. In virtually every form of analysis, one has to have some idea of the response or characteristics of the instrument and one way to do this is to calibrate it against known amounts of material. These are your standards, so that would say to me that again to avoid this contamination as I mentioned earlier, to

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be as certain as one could that the response of the instrument was calibrated to a precise amount of a known material, you would have to take exceedingly strong precautions to avoid spreading contamination from one sample to another by way of dirty fingers, dirty glassware, sloppy technique, any one of a host of things and that's what that section conveys to me.

Q. Look at the next sentence. "An isolated Sample Preparation Laboratory has also been provided which is used solely for the workup of samples which could contain PCDDs or PCDFs."

Have you ever heard before today of some kind of isolated Sample Preparation Lab run by Monsanto to provide solely for workup of samples which could contain PCDFs or PCDDs?

A. Not specifically, but that would be what he calls the isolated Sample Analysis Facility counterpart of what he said on the preceding page of Chemical Safety Laboratory. All of these are measures to avoid spreading contamination of either the standards that are used to calibrate your instrumentation or the unknown samples that you're trying to analyze for the presence of contaminants.

Q. Did Dr. Hileman ever tell you that somewhere in his Sample Preparation Laboratory there

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was a standard sample of Aroclor 1242s against which other samples could be tested?

A. No, he never told me that.

Q. Did he ever tell you that somewhere in his isolated Sample Preparation Laboratory there was any kind of Aroclor which was in the form of a standard against which others from the field could be tested?

A. I have no recollection of ever discussing the standards of any kind with Dr. Hileman.

Q. Look at the next paragraph -- I beg your pardon, the next sentence. "Finally, an isolated Sample Analysis Facility has been established in which the instrumentation has been specifically designated for the analysis of these chlorinated compounds." Do you see that?

A. Yes.

Q. Do you recall if Monsanto at any time invented any devices or instrumentation specifically for the analysis of PCDDs and PCDFs?

A. I do not recall that Monsanto invented any instrumentation.

Q. Look at the next paragraph. "Access to all of these facilities is strictly limited. The only people who may use these laboratories are those whose work is directly related to the analysis of PCDDs

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or PCDFs." Do you remember that from Dr. Hileman?

A. I do not recall that, but that would be consistent with everything else that's been said about avoiding contamination, cross-contamination.

Q. The next sentence is "These individuals participate in a health monitoring program involving annual physical examinations and they are thoroughly indoctrinated into the safe handling of these compounds." Do you remember that?

A. I read it there.

Q. Well, you were in the medical department, were you not?

A. Yes, but I have also indicated that I do not practice on humans. I do not perform physicals.

Q. Do you recall if between 1971 and 1980, during that period of time the medical department at St. Louis was the one that was always called upon by other Monsanto companies such as Monsanto Research Corporation for advice in medical matters?

A. The corporate medical department in St. Louis my understanding had general responsibility for all Monsanto locations. How they interacted with specific locations with respect to people and practices, I do not know.

Q. Do you know if the Monsanto Research

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Corporation had their own health or medical department?

A. I just indicated I do not know how and to what extent they interacted.

Q. Do you recall any specific persons or names of medical doctors at the Monsanto Research Corporation?

A. I do not.

Q. Have you ever seen any written reports of any kind of health monitoring program involving annual physical exams of Monsanto personnel for exposure to PCDDs or PCDFs?

A. Personal health records are confidential. I would have no occasion to see them.

Q. Do you see the next sentence? "This indoctrination includes the viewing of a special videotape that summarizes all the precautions that are taken in the handling of PCDDs and PCDFs."

A. Yes.

Q. Have you ever seen that videotape?

A. No.

Q. "In addition, this videotape is shown to any other interested individuals throughout the laboratory who do not have a direct involvement in the PCDD and PCDF program but who want to know what steps are being taken to protect them from any potential

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exposure."

Did Dr. Hileman ever tell you that videotape was available to you if you wanted it?

A. He may have. I do not recall.

Q. Did he ever describe what was on that videotape?

A. I have no knowledge of it or what's on it.

MR. DICUM: Counsel, I would at this point request a copy of the videotape and I'd like you to review my request to see if they reach the videotape as apparently referred to in this document.

MR. KEARNS: I hear you.

MR. DICUM: Thank you.

Q. Look at the next paragraph. "In view of the precautions being taken, one might question why it is necessary to have a contaminate monitoring program. The prime reason for such a program is that it confirms the belief that adequate precautions are being taken. In other words, it is proof that the system works. This is particularly necessary when dealing with a multiplicity of workers involved in the PCDD and PCDF projects."

Do you ever recall Dr. Hileman stressing to you the importance of why there should be such a contaminate monitoring program?

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A. No, I do not recall the conversations on that.

Q. By the way, have you ever heard of any monitoring program run by any other company manufacturing chemicals for PCDFs and PCDDs?

A. My knowledge of medical monitoring in other companies is limited. Within the confines of that knowledge, I am not aware that anybody is doing anything particular or special for either one of those classes of compounds.

Q. Look under the section "Procedures."

MR. FONTANA: Mr. Dicum, we have been on this document for forty-five minutes reading sentence after sentence asking questions of the witness who says he does not recall ever having seen it before and my patience I think is exhausted.

MR. DICUM: Sir, if your patience is exhausted, you can quit the room and we can continue without you.

MR. FONTANA: We have not come two thousand miles for what appears to be little more than games on your part. What point is there to proceed in this fashion? If the witness has knowledge about a subject or has knowledge about a document, it seems to be appropriate inquiry if that document is relevant.

This witness has testified repeatedly that

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he has no knowledge of having read this document in the past and you're having him sit here today years after it was prepared and asking a bunch of what I would view as ostentatious questions.

Dr. Hileman is presumably available to you if you want to ask him. He authored the document and he's apparently still available. What's the point of proceeding in this fashion?

Q. Mr. Levinskas, is that the case? The medical department at Monsanto had no idea about the monitoring program that's going on at Monsanto Research Corporation?

MR. KEARNS: That's quite a different question than that which Mr. Fontana just made mention to you. He testified earlier that he had never before read this document.

MR. DICUM: I understand.

MR. KEARNS: This is a different question.

MR. DICUM: I'm reading this in order to know specific facts as mentioned --

MR. FONTANA: Ask him about the facts, ask him about the medical program, ask him about his job, ask him about his responsibilities, but don't ask him about a document that he has never read nor seen before.

Q. Mr. Levinskas, let's continue, please.

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Did you ever inform any customers of Monsanto that Monsanto had a medical monitoring program at its research corporation for PCDDs and PCDFs?

A. I do not recall telling anyone that Monsanto had a medical program for monitoring those materials.

Q. Did you yourself know other than in the somewhat general terms that Dr. Hileman talked to you about it, about the medical monitoring program?

A. I have indicated that I -- I think I've indicated earlier that the central medical or the corporate medical department St. Louis had a responsibility for the health of Monsanto employees.

How and by what means they implemented that and particularly in these cases I do not know. My area of expertise was animal experimental toxicology. Things that would have been done or could have been done on people or the results of personal medical evaluations would be confidential and I would not be informed of them.

I don't recall if Dr. Hileman ever told me he had these procedures. In conversation reference might have been made to them. I don't recall any details of them. I certainly did not provide him with information from which he could set up these

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procedures.

Q. By the way, do you know if the Monsanto Research Corporation was a subsidiary of Monsanto Company at the time that it existed?

A. I think I indicated that it was set up as a part of Monsanto and that it has since been disbanded.

Q. At some point in time, did you recall Monsanto commissioning a company called Litton Bionetics to do certain studies on PCBs as opposed to dioxins and dibenzofurans?

A. Yes, we did PCB studies at --

MR. ROTHSCHILD: What was the name of the company?

Q. Litton Bionetics I believe, am I correct?

A. Right.

Q. And where was it located?

A. It's in Virginia. They have a couple different locations. I don't recall the specific one.

Q. Can you tell me, sir, if there was just one study that was done with monkeys?

A. There was only one study that Monsanto sponsored with monkeys, yes.

(At this time a short recess was taken, after which the following proceedings were had:)

(Plaintiff's Exhibit 37 marked for

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identification.)

Q. Have you seen the document marked as Plaintiff's Exhibit Number 37 which appears to be on Bionetics letterhead addressed to a Paul L. Wright, Ph.D.?

A. Yes.

Q. When did you get to see it?

MR. COMBS: Does this have a BIR number?

MR. DICUM: BIR 007551 and there's a second page 552. It's part of the same letter. It was produced in production folder 4C.

A. I saw this about the time it would have been received by Dr. Wright.

Q. First of all, who is Dr. Wright?

A. Dr. Wright as indicated in the letter was the manager of toxicology at the time with Monsanto Company.

Q. Is he still with the company?

A. No, he is not.

Q. Do you know when he left?

A. I do not know the specific date, but it was probably in the late seventies.

Q. Late seventies?

A. My guess is late seventies maybe early eighties somewhere.

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Q. We may get the chance to look at some other letters to establish that.

MR. ROTHSCHILD: Who was it from, Mr. Dicum? It was to Dr. Wright.

Q. Do you know who the author is of this letter?

A. I do not know Richard Borghese who signed this, no.

Q. Did Dr. Wright ever talk to you in or around 1976 about this letter?

A. Yes.

Q. And, first of all, do you know if this proposal was the result of a contact by Dr. Wright to Litton Bionetics or vice versa?

A. No. The contact was made with Litton by Monsanto.

Q. Were there discussions before this letter in which Monsanto decided it wanted to commission a study about PCBs?

A. Yes, there were discussions which led to the decision to undertake the study.

Q. Did you attend any of the meetings concerning the discussion?

A. Yes, I participated in discussions.

Q. Do you recall how many discussions occurred

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before the decision was taken to use rhesus monkeys?

A. No, I do not recall the number of discussions.

Q. Do you recall whether there was any specific decision where rhesus monkeys should be used rather than any other animal?

A. The desire was to do a study in a nonhuman primate. The rhesus monkey was not selected as such. It happened to be a test animal available from Litton.

Q. Was there some reason why the decision was taken to do it on nonhuman primates rather than some other class or order of animal?

A. The study was to attempt to determine whether things that Dr. Jim Allen whom we talked about earlier, whether some of the information he had published appeared to be valid, an attempt to determine whether his data were reproduceable.

Q. Were there any specific studies that was directed to that?

A. There are studies that are scattered in different papers by Dr. Allen, which I think that Aroclor 1248 is the one that he reported monkey findings which led to these studies.

Q. Do you recall any specific persons being present at these meetings before the decision was taken

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to use these nonhuman primates?

A. It could have been any or several of the people in the medical department, possibly some of the operating personnel.

Q. Can you tell us amongst whom it should have been?

A. Well, in general because I don't recall specific meetings or specific things, there could have been Dr. Wright himself. I would have participated, in '76 probably Dr. Roush, our current medical director, I think Elmer Wheeler was still with Monsanto. He could well have participated.

Q. Was Garrett still there?

A. Jack Garrett was with Monsanto.

Q. What about Dr. Kelly?

A. It's less likely he would participate. Dr. Kelly was retired by then.

Q. Do you know who replaced Dr. Kelly?

A. Dr. George Roush.

Q. There's a name in this letter called Dr. David Martin. Have you ever met Dr. Martin?

A. I have not met him. I have talked to him on the telephone.

Q. Was that in the context of this study?

A. With respect to this study, yes.

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Q. Was any special reason why it was decided that it should be as opposed to, let's say, fish or rats that it should be primates?

A. I indicated that Dr. Allen had done studies in primates and to check his work, we worked in primates.

Q. Was that work on PCBs rather than dioxins or furans?

A. I think I said he was Aroclor 1248.

Q. Meaning that was the study of PCBs?

A. That was the material Dr. Allen studied that was of interest to Monsanto.

Q. Now, was there a time when subsequent to February 16, 1976, Monsanto agreed to go ahead with this study?

A. Yes, we did.

MR. DICUM: Will you look at BIR 007553 which we'll mark next in order Number 38.

MR. ROTHSCHILD: What is this document? Can you tell us after this document has been marked what this document is?

(Plaintiff's Exhibit 38 marked for identification.)

Q. Do you recall seeing this letter?

A. I believe I did.

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Q. By the way, do you know how you received this letter or a copy of this letter?

A. I may have been sent a copy by Dr. Wright. He may have sent a copy he received to me. I do not recall.

Q. Did you discuss this proposal with Dr. Wright?

A. He was among the people involved in discussing it, yes.

Q. By the way, do you know where Dr. Wright is today?

A. The last I knew he was in the St. Louis area.

Q. Okay. Would you describe this test as a mutagenic test?

A. No, this would not be mutagenic.

Q. Into what sort of category would you place it amongst the various types of scientific testing you would have?

A. Just an ordinary reproductive test.

Q. And what scientifically speaking was the purpose of the test other than seeing if you could reproduce certain results by Dr. Wright?

A. In outline it was quite simple. It was to dose animals with different amounts of polychlorinated

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biphenyl mixture and then to see whether that affected the reproduction of the treated animals.

Q. I'm sorry, there should be a Page 3 attached to that exhibit. Now, would you look at the standard contract provisions? Do you recall seeing these before?

A. I presume I did see them.

Q. Would that have been around the time that the agreement was entered into between Litton and Monsanto?

A. I would have seen it about that time, yes.

Q. Now, first of all, do you recall if all the samples that were taken by Litton Bionetics were retained by Litton?

A. When you say, "all samples," I would ask samples of what?

Q. Okay. Let's look at the last page, Page 3. Do you see that? I'm referring to the paraffin-embedded tissues that are referred to in the first sentence.

A. Insofar as I know, Litton would have retained those samples. They may have been sent to Monsanto since then. I do not know that.

Q. Okay. Was there a particular department at Monsanto which as a matter of custom and practice

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received tissue samples upon request from outside testing laboratories?

A. At present, we have a procedure for collecting samples and having them returned to Monsanto from animal toxicity tests. I do not know, do not recall a time, whether it was operational at the time of this correspondence which is 1976.

MR. DICUM: Before we continue further, it's been drawn to my attention by Mary Oliver just a moment ago that I'd overlooked the fact that two of the exhibits in particular that we marked, unfortunately that the reverse side of them was not copied. Can you tell us which those were?

MS. OLIVER: Exhibit 26 and 28.

MR. DICUM: And they are, in fact, a couple of the articles that we discussed. We will try to get the reverse side copied and obviously what happened was the copy company failed to copy the reverse side when they made copies.

Q. Would you look at next in order BIR 007558?

(Plaintiff's Exhibit 39 marked for identification.)

Q. Have you seen this document before?

A. I do not recall, but I may well have seen it.

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Q. Do you recognize Paul Wright's signature?
A. I think I probably would.
Q. Do you believe this is Paul Wright's signature?
A. No, I do not and the parenthetical ALW is I would guess the secretary's initials.
Q. Do you recall if it was the custom and practice in 1977 for Monsanto to send out samples of chemicals on occasions when it contracted for testing?
A. When we undertook testing on our materials, yes, we supplied samples of that material to the testing lab.
Q. Do you know of any records that are kept as from where those samples came?
A. Records were kept. The scope and such at this time I do not know.
Q. Do you know where they were kept as opposed to how extensive they are?
A. The effort was made in the medical department to keep a record of what we had or what we received as a sample and from whom it was received. I have less knowledge of the records that the original submitter of a sample may have retained.
Q. Was there a particular name for these records?

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A. No, not that I recall.

Q. If I wanted to ask for these records, is there a particular way I should describe them by in order to obtain them?

A. I can't think of any. One would have to look under Aroclor 1254.

Q. Now, did you yourself at any time have any involvement with the preparation of samples going outbound to testing laboratories?

A. The only preparation I would have had would be that I would have picked them up and put a cover memo on them and had them mailed off.

Q. Do you know who would have been responsible for at this time preparation of samples?

A. Somebody in the operating unit, the unit responsible for making and manufacturing that product would have supplied the sample.

Q. Do you know that person's name?

A. No, specifically I do not know.

Q. Was there someone in charge of an operating unit that you recall in that time?

A. We would either have asked one of the research directors or one of the -- whoever we were -- we don't operate in a void. We have contacts with people in Monsanto who have an interest in the product

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so one of those individuals we would have inquired about they would have been told would be the person to supply the sample.

Q. Do you recall if the medical department had set any kind of standards for those samples?

A. I do not recall that we did set a standard.

Q. Do you recall if there was any specific person who had responsibility for running tests on the sample before it got sent out?

A. No, I do not know.

Q. Do you know as a situation today whether the sample that was sent out on this monkey test contained chlorinated dibenzofurans?

A. Other than the fact that it was representative of Aroclor 1254, I do not know the actual composition of it.

Q. Well, do you know if chlorinated dibenzofurans were a normal component of Aroclor 1254s?

A. I do not know.

Q. Do you know who would know?

A. Earlier I had indicated the people that I would inquire about manufacturing and I guess I would go back to those same people and ask them who could I contact regarding composition.

Q. I take it that Dr. Allen had found some

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kind of evidence of toxicity in the tests he had done, is that correct?

A. Yes.

Q. And do you recall what evidence that was or alleged evidence?

A. Dr. Allen has published to this effect that he found imparitability to conceive or imparitability of the pregnant female in the rhesus pregnant monkey to carry the infant to term.

Q. Do you remember whether these were tests involving oral administration of PCBs?

A. I believe he had mixed it with applesauce or with something and it was then eaten by mouth by the monkeys, yes.

Q. Do you know if he did those tests also by using vaporization?

A. I'm quite sure he did not do anything other than feeding studies.

Q. Do you know where those studies were conducted?

A. They were conducted at Madison, Wisconsin.

Q. Do you know if they were published?

A. Yes, they had to be published.

Q. Do you know where?

A. I can't recall specifically, but they

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appeared in several different journals.

Q. Sometime before '77 I take it?

A. Yes, before we did our studies.

Q. And indeed sometime before '76, November or February?

A. Yes.

Q. Do you recall another group of tests on rhesus monkeys done by a researcher called Barossiti?

A. I'm sorry?

Q. A researcher, B-a-r-o-s-s-i-t-i.

A. Barossiti. The studies done by Allen have been reported -- portions have been reported in several different places. One of Allen's co-authors for one of those portions is a man named Barossiti.

Q. So insofar as Barossiti was writing up materials, it is a reference to the same tests?

A. Essentially the same studies, yes.

MR. DICUM: We're going to mark next in order BIR 007759 and 7560 all the way through 7567.

(Plaintiff's Exhibits 40, 41, and 42 marked for identification.)

Q. Just to back up a moment on something else, Dr. Levinskas, do you recall before the initiation of these studies some rather earlier studies done by a company called Industrial Bio-Test for Monsanto on

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PCBs?

A. Yes, they did.

Q. And do you recall any specific ones of those studies with which you are particularly familiar?

A. I have some knowledge of all of them. I guess I have the greatest involvement with the long term rat feedings.

Q. The rat feeding studies?

A. Yes.

Q. Do you know if Dr. Kelly had also knowledge of these studies?

A. I assume he did.

Q. Has he ever talked to you about these studies?

A. Not that I particularly recall.

Q. Will you look first at Monsanto -- Plaintiff's Exhibit Monsanto Number 40, okay?

A. (Nodding head.)

Q. Now, do you recall seeing this document before?

A. I assume I did.

Q. It says in this document something called "revised materials and methods protocol." Do you know what a protocol is in the meaning of this letter?

A. Protocol would be what I would call a

roadmap, a description of the proposed study and how it is to be conducted.

Q. And is that quite a standard way for establishing the relationship between an outside testing lab and a company that wants to do some tests at no expense?

A. At this time because of the advent of the so-called good laboratory practice regulations which either had been enacted or were proposed for enactment by regulatory agencies, from that time forward I'd say yes, this would be a standard procedure. Prior to that time, not necessarily standard and, in fact, quite variable procedure.

Q. Do you know if this standard procedure that was set up was actually laid out somewhere in the government regulation?

A. I indicated in my answer that either the enactment or the proposed enactment of supposed good laboratory regulations, this is where they would be spelled out.

Q. Have you yourself read those regulations at some time?

A. I read them sometime in the past, yes.

Q. And they are still a guideline for studies for Monsanto products?

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A. With variations and changes, yes, they are still used as a reference by Monsanto and other laboratories.

Q. I take it that PCBs were not the only product that was ever studied by some kind of outside animal testing lab on behalf of Monsanto, is that correct?

A. Prior to the development of its own laboratory, Monsanto did all of its testing-- toxicity testing outside.

Q. Do you know when that in-house laboratory was established?

A. I believe it started operation in about August of '78 somewhere. I believe that was about the time. It might have been August of '77, but it was about ten years ago.

Q. Are all the studies now conducted in that lab?

A. No. A substantial number are, but not all of them. We still use outside contract facilities.

Q. Is there some kind of criteria for differentiating between in-house and outside work?

A. One is capability. This monkey study is an example. It takes specialized facilities to handle monkeys.

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Q. Do you know if there were any other reasons?

A. The other is that in my judgment, my experience, and what we proposed for Monsanto when we built the lab is that we undersized it with respect to our anticipated needs.

Q. Do you know if any tests were actualiy undertaken of PCBs or dioxins or furans in that inside lab?

A. I do not recall any in-house animal testing on dioxins, furans, or PCBs, any in-house animal toxicity testing.

Q. Where was the facility located?

A. It's located about two blocks from the Washington University Medical School here in St. Louis.

Q. Would you look at Plaintiff's Exhibit 42 first? Is this the protocol that is referred to as being a revised protocol, "revised Part II, Materials and Methods," in the February 24 letter?

A. I assume it is.

Q. Have you seen this document before?

A. Again, I assume I did see it. I do not recall it specifically.

Q. By the way, do you know who actually drafts

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up the protocol as between the company and the outside testing lab?

A. It could be either party or the result of a joint effort by both parties.

Q. Do you know, for instance, in this particular case who revised the protocol for this proposal?

A. The initial proposal was advanced I'm quite sure in this case by Monsanto because we had a specific question we were attempting to answer and we directed, as I said earlier, a protocol in an attempt to develop information to answer that question.

The laboratory by virtue of its own practices, techniques, experiences may have made some suggestions in terms of a revision. If they had, we would have looked at them and then gone back and either agreed to accept, based on what they added to our discussion, their proposals or we may have had some second thoughts and made some changes in our proposals, so it's a long answer, but I really can't say specifically what the revisions were or where they originated.

Q. Is it a custom and practice that the earlier versions of the protocol get destroyed as the revised versions come into existence?

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A. I'm not sure it's a practice in the sense of a policy, but as a matter of expediency to keep from cluttering up and having to sort through documents and papers, the tendency is to throw away the early versions and stick with the last version.

MR. DICUM: Counsel, at this point I would make a request for any earlier versions of protocol of Monsanto.

Q. Would you look at the next document which is Number 41 going back one? Do you remember seeing this letter?

A. Again with respect to this study, I do not recall it specifically but I may well have.

Q. And there's a reference to report cards. Do you know what those are?

A. It says, "record cards." In the earlier documents that you showed me discussing a particular monkey study, there was reference to using females which had had a proven pregnancy so that we knew before we started those females were capable of conceiving and the way this reads, he says the number of available females has been reduced because several have gotten pregnant since the last time they counted score on them.

This would be an indication of basically a

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card that documents the age, weight, prior mating history, et cetera of the monkeys. These would be the candidates available to choose from for the study we were proposing.

Q. Okay. Do you know if all the animals were started at the same time?

A. My general recollection is that with respect to starting them on tests, they all started at the same time, yes, that's my general recollection.

Q. Do you recall from your experience prior to joining Monsanto whether it was customary and considered a good practice to start all animals in a particular test at the same time?

A. If I may qualify some words "customary and good practice."

Q. Okay.

A. More commonly than not from my own preference and my own dealings, all animals would be started on tests at the same time. It was not, however, unheard of and this would include some of the publications coming out of our own Food and Drug Administration that animals might be started on tests somewhat in different groups or that individual animals might be replaced after a study had started.

Q. On those occasions where individual animals

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were replaced after the study was started, would it be fair to say that that fact would as a matter of good practice be noted in the report?

A. In the absence of reference standards, I could only comment that had I done it or when I have done it, I have so indicated in a write-up of the results.

Q. And that is your own practice?

A. That is my practice.

Q. And is that from your substantial experience at different times of working in this field also considered good practice to note the fact that an animal had been started late if it was started late?

A. At the risk of sounding trite, everything I do I consider to be good practice.

Q. Thank you. Now, the reason that it is good practice is because of the fact that if you didn't note that down, you would not be able to determine the precise time at which an animal would start being exposed to test material, is that correct?

A. If the -- yes. The answer to your question is simply yes.

Q. Do you know if this is required in the current regulations that animals which have been started late should be noted somewhere as to when they

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were started late?

A. Current regulations describe or require that you have a protocol which stipulates how you will conduct the study. Any deviations from that protocol have to be marked or noted as protocol changes and there are certain requirements, if you will, for approval of such changes, so it would be possible to start animals at different times even under today's practices as long as this was properly documented and noted. I think that would be consistent with existing regulations.

Q. Okay. But not if it was not properly documented I take it?

A. Well, any deviation from the initial protocol which was not documented would be a violation of good laboratory practice regulations.

Q. Now, do you recall if this particular study, the monkey study, in fact followed those regulations?

A. This is a part of the -- I'm not sure whether this is a -- I'm not sure whether this is part of the protocol which was developed prior to the study or whether this is a recapitulation, if you will, of the protocol which appeared as part of the report.

That's why my hesitancy, but the

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requirement that we made of Litton Bionetics is that the studies be conducted consistent with good laboratory practices and, as I say, I'm not sure at this time whether the actual regulations at issue had or were in the throws of being issued.

Q. Now, did you yourself ever visit Litton Bionetics?

A. I had visited it many years before this, not prior to or not at the time of these studies being conducted.

Q. Sir, could you look at the next in order which we will have marked as BIR 007 -- begging your pardon, let me go back one more. Look back at Number 42, the very last page of Number 42. It appears to be a letter of some kind attached there. Do you recall seeing this letter which appears to bear a cc to you?

A. I believe I did see it, but again I don't recall it specifically.

Q. And again your testimony is that the protocol referred to is the revised protocol in the form that we have it here as far as you know, is that correct?

A. Yes.

Q. By the way, is it the custom and practice for the money to be paid in advance or was it the

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custom and practice in 1977 for money to be paid in advance for a test of this kind?

A. The practice was variable depending on circumstances. Part of the cost might be advanced for purchase of animals or supplies. At this time we were not prepaying the full costs.

Q. Was anything in the regulations that you reviewed at sometime governing the payment by corporations manufacturing of outside testing laboratories?

A. I do not recall any section of the good laboratory practice delving into the nature of the financial arrangements between a contractor and a contractee.

Q. Now, did that test or protocol, was that ultimately carried through to a conclusion?

A. Yes.

Q. And did you ever see the test report that came out of that experiment or series of experiments?

A. Yes.

Q. Do you recall in a general way what the conclusion was?

A. Summarizing up the impression I carried away from the studies would be that we agreed or we confirmed Dr. Allen's findings. We also confirmed the

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fact that he had made some statements which were highly erroneous regarding the level, the dose required to produce -- he misstated his dose or misrepresented his dose, if you will.

Q. Go ahead.

A. And that there was a lower level at which the polychlorinated biphenyl mixture was without effect.

Q. So your disagreement in the results was not in the fact of effect, but in the level at which it was arrived at, is that correct?

A. That's correct. It was a question about the levels in addition to the observed effects which led us to undertake the monkey studies we did.

MR. DICUM: At this time I'd like to have marked a copy of what appears to be the Litton report. I'm going to ask Dr. Levinskas to look at it and see if indeed that's what it is. It will be Exhibit 43, 004385 to the end of that volume.

MR. ROTHSCHILD: 004385 through?

MR. DICUM: Right through the end of that volume which means all the way through 004584 and in addition BIR 004585 through 004944.

MR. FONTANA: All that is going to be one exhibit?

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MR. DICUM: That's the final report.

MR. ROTHSCHILD: Final number is?

MR. DICUM: 04944. We want you to identify it to make sure you're looking at the right document.

MR. ROTHSCHILD: The Litton report is six hundred pages.

MR. DICUM: Let's ask Dr. Levinskas.

THE WITNESS: It's probably longer than that.

(Plaintiff's Exhibit 43 marked for identification.)

MR. ROTHSCHILD: What's the date on it just out of curiosity, Doctor?

THE WITNESS: April 30, 1981, is the date of the report.

Q. It's obviously fairly voluminous, Dr. Levinskas, the materials we've just had attached. Would you just check it out and make sure that as best as you can within the limited time frame whether this represents the Bionetics report accurately?

I also add that there appears to be some kind of appendix that starts at BIR 004586. That might help expedite your review as to the completeness of the materials.

A. Looking at the summary, it is consistent with my recollection of this study and the appendices

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generally recall the sort of thing -- the nature of the kind of report that Litton submitted so I would assume that this is a copy of the actual report.

Q. Okay. Would you look at Page 2 which is BIR 004390 under the heading called "Summary"?

A. Yes.

Q. You testified I believe a little bit earlier that some effect was observed albeit at a lower level or higher level, I beg your pardon, than Dr. Allen had found, is that correct?

A. I think I said that we were in general agreement with Dr. Allen's findings, but I think I used the word he misrepresented the dosage or the level at which this occurs. We disagreed with him over the interpretation of the amount of material it took to produce these effects or how he interpreted the amount of material involved.

Q. Okay. When you say, "he misrepresented," are you saying that he actually falsified his test results or are you simply saying this was some kind of mistake that was found?

A. I'm saying that the words he used conveyed a mistaken impression.

Q. Have you met Dr. Allen since this test report came out?

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A. No. It was sometime prior to the initiation of these studies that I first met Dr. Allen. I had occasion to meet him once or twice subsequently at some scientific meetings or gatherings of this nature. I have not seen him since a couple years before he left the university.

Q. Do you know if the meeting that you had with Dr. Allen previously was before or after he had come out with his test results?

A. It was because of his test results that we met with him.

Q. Was anyone else present when you met with him?

A. Dr. Wright was with me and I made arrangements to meet with Dr. Allen and Dr. William Ribelin who was at the University of Wisconsin at Madison at that time and at least part of the time Dr. Ribelin was probably present.

Q. Dr. Wright?

A. Ribelin and then there were people from Dr. Allen's staff who would have been present. Specifically I don't recall, but there were other people from the university present.

Q. You mentioned several times the references to people at the University of Wisconsin. Were there

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any particular researchers that you were in contact with concerning PCBs in that facility?

A. Dr. Allen is the one that we were in contact with.

Q. And I believe you testified earlier you also met Dr. Norback?

A. I met Dr. Norback subsequently.

Q. Any others from that university?

A. Dr. Ribelin was there at the time. Those would be the three.

Q. Looking again at Page 2, second paragraph, "No effect upon fertility occurred among the adult males in any dose group." Do you recall what the dose groups were?

A. There were three dose groups and as indicated in the first line of the second paragraph under "Summary," the treated animals received five, twenty-five, or one hundred micrograms per kilogram per day of the Aroclor 1254.

Q. And the next sentence reads, "A significant effect upon fertility was observed in the females receiving a hundred micrograms per kilogram per day of the test compound, but no effect upon fertility was observed in the lower dose groups."

Is that what makes you believe that up to

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a point it corroborated Dr. Allen's results, but at the same time it disagreed with his results?

A. That sentence that you read refers to the ability of the young -- of the pregnant female to carry the young to term.

Q. Okay.

A. It encompasses Dr. Allen's study because if one recalculates his data to make them comparable to the way we did our study, his lowest dose would correspond to our hundred micrograms per kilogram per day. The lowest dose we used and the highest dose he used were basically the same and produced the same effect.

Q. Now, the next sentence, "A depression in red blood cell values PCV," do you know what that means?

A. Packed cell volume.

Q. Pardon me?

A. It's the packed cell volume of the blood.

Q. What is RBC?

A. Red blood cell.

Q. And what is Hgb?

A. That's hemoglobin in shorthand.

Q. And platelets, is that the ability of the blood to clot?

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A. Those are formed elements in the blood that are involved in the blood clotting process.

Q. "Probably the result of test compound effect on the bone marrow, occurred in the medium and high dose adult animals. A decrease in serum cholesterol values in high dose female animals and an increase in serum iron values in high dose males and females and in medium dose females was considered to be treatment related."

Is that also your understanding of the effect of these tests?

A. That is the conclusion that was reached by the people who did the study and examined those particular values. I think the statement "was considered to be treatment related" is somewhat speculative, but that's a judgment call they made and we accepted it.

Q. Then it goes on to talk about alterations in albumin. What is the significance of that?

A. Albumin and globulin are two proteins that occur in blood and both either the absolute amounts of them or the ratio which is the A/G, albumin-globulin ratio are sometimes measured, they are rather insensitive indices of possibly changes.

The fact that we're dealing with a

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relatively small number of animals and they do not as closely resemble each other as the rats and mice would in the study would make interpretation of those relatively minor changes somewhat difficult, but again they say, "were considered to have a causal relationship" or to be related to test compound administration.

Q. And then it says next, "A dose-dependent effect upon physical changes in the adults and infants was noted with the majority of all effects to be upon the skin and its --" and what's the next word?

A. Adnexa.

Q. What's that?

A. It's the skin and the adjacent tissues to the skin.

Q. "Body weight loss in the treated adult animals was considered to be dose dependent." Is that also your understanding?

A. The last two sentences I would not dispute. There were changes in the skins of the animals and the higher dose animals did lose body weight.

Q. Is there anything else in this report that you would dispute or would not dispute?

A. That I would what, I'm sorry?

Q. I'm sorry, strike that question. It was

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confusing. Is there anything in this report in the summary that you would dispute?

A. Substantially I would not dispute this. I have indicated earlier that some of these things are judgment calls. They are reflections of the person's experience, judgment, and I might have looked at them a little bit differently, but substantially I would not --

Q. Okay.

A. -- disagree with the report.

(At this time a short recess was taken, after which the following proceedings were had:)

MR. DICUM: Back on the record.

Q. Sir, we were looking at some correspondence earlier about this test, okay?

A. Yes.

MR. DICUM: Mark next in order a letter which bears a date of April 11, 1977, 007569.

(Plaintiff's Exhibit 44 marked for identification.)

Q. Have you had a chance to look at the document which has been marked as Plaintiff's Number 44 being a letter dated April 11th, '77?

A. Yes.

Q. And do you recognize that letter?

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A. I do not recall it specifically, but I may well have seen it.

Q. Again is it or was it the custom and practice in 1977 for the raw materials, the swab cards in this case, for certain animals to be sent from the testing lab back to Monsanto?

A. There would be many circumstances in which one would want either a periodic report or updating on a portion of a study and the laboratory would supply the information. The letter says, "copies" of the records which indicates the lab retained custody of the original records.

Q. Do you know if in the course of this experiment with Litton Bionetics any other raw material cards or underlying cards of the raw data was supplied to Monsanto for review?

A. I would assume that before the final report was written, we had made several requests for information.

Q. Sir, do you recall if in the previous experiments that were referred to sometime ago, the Industrial Bio-Test experiments, do you recall if underlying raw material data was supplied by Industrial Bio-Test to Monsanto?

A. There were days -- there were occasions,

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rather, when some underlying material was requested from IBT or Industrial Bio-Test.

Q. Do you know if in the case of Litton and Bio-Test that all the underlying material was supplied to Monsanto?

A. I think I said in response to an earlier question that good laboratory practice required retention of records. Litton was contracted to do the study in compliance with good laboratory practice regulations. I would not know if they still had custody of the information or whether Monsanto had custody of it.

Q. By the way, did there come a time when you reviewed the underlying raw data for the Industrial Bio-Test rat tests?

A. I did look at records that I had available with respect to the three lifetime rat feeding studies that Bio-Test did on PCBs.

Q. Let's move on to the next document in order.

(Plaintiff's Exhibit 45 marked for identification.)

Q. Do you remember this document? Do you remember Exhibit 45?

MR. KEARNS: What do you mean by remember it?

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Has he ever seen it before?

MR. DICUM: Has he ever seen it before.

A. I would give you the same response I did earlier. I probably did. I cannot recall specifically the details of it or when.

Q. Do you ever remember Dr. Wright telling you that there was some kind of question about gastric problems amongst the monkeys that were being used?

A. We did have some -- in the course of the monkey studies, some of the animals did die for different reasons which were not related to PCBs and we had discussions about the study and its progress. Again specific details of those discussions I cannot recall.

Q. Do you know if any animals were replaced when those monkeys became sick or died?

A. This would indicate that one of the animals was replaced.

Q. All right. Now, do you know is it good custom and practice in animal testing studies, the standard today, to note down the replacement of an animal that had to be removed from the study because of sickness?

A. I believe I indicated earlier that under the requirements of good laboratory practices, that

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would have to be stated or stipulated. Prior to the enactment of the good laboratory practice regulations, there was no requirement for such and in some instances I presume it was noted and in others it probably was not.

Q. Leaving aside the question of whether it was required or not, do you consider that before all these regulations came into effect it was good practice not to mention the replacement of an animal which had fallen sick?

A. I believe I indicated that that would be the way I would handle it. I consider everything I did to be good practice. I am unable to generalize and say that everybody else did or did not.

Q. Can you tell us why you considered it to be good practice?

A. My basic premise in studies that I do, this is going back to my early days in this business, is to describe to people what I did, how I did it, and the conclusions I drew so that if they wished to follow my reasoning, they can and they can accept my conclusions or if they decide to disagree with my conclusions, they've been provided with what I did and how I did it and they can draw their own conclusions.

Q. In other words, you want third parties

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receiving the report to be able to form an independent judgment, is that correct?

A. That is what I desire and I might add that frequently the information I get does not meet -- I'm unable to do that with information that's provided to me by others.

Q. For example, if there was an animal that was replaced part way through a study because it fell sick and that fact wasn't noted, you wouldn't know that the animal that replaced it had been started late, would you, without knowing that fact?

A. I would -- had I done this, I would make a notation to that effect. The information I receive frequently in other studies from other sources is lacking in information that I can evaluate or draw conclusions from.

Q. Do you know if that was also Dr. Paul Wright's custom and practice to note down animals that were replaced in the middle of a study because they had fallen sick or for other reasons?

A. When Dr. Wright was working with me at Monsanto, he was aware of my views and beliefs and insofar as I know, he followed similar practices.

Q. Was he actually working under you, do you know?

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A. At this time, yes.

Q. You say that when Dr. Wright was working at Monsanto, was there a time when Dr. Wright worked for some other organization?

MR. KEARNS: Will you repeat the question?

Q. Dr. Levinskas, you say that -- you mentioned that at a time when Dr. Wright was at Monsanto to the best of your knowledge, he followed this good practice you described. Was there a time when he was not at Monsanto and worked for some other organization for testing of Monsanto products?

A. When I joined Monsanto, I met Dr. Wright who was then working at the Industrial Bio-Test Laboratories.

Q. Do you know if he followed that custom and practice you described of noting --

A. I do not know what his practice is.

Q. You got to let me finish the question. Do you know if he followed that custom and practice of noting down replaced animals when he was in Industrial Bio-Test working independently for Monsanto?

A. Your conclusion was "working independently."

Q. I meant working as an independent contractor.

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A. I do not know Dr. Wright's specific practices when he worked at Industrial Bio-Test Laboratories. I do know that Industrial Bio-Test Laboratories was regarded as a competent laboratory, that many companies used its facilities including several of the federal agencies.

Q. Okay. Well, let's go on to the monkey tests at this point. By the way, is each animal in a test of this nature such as the monkey test routine here somehow recorded as a matter of good custom and practice with a number?

A. Yes, each animal has a number by which it may be identified.

Q. And what's the reason for that?

A. I indicated by which it may be identified.

Q. Is that a number that's physically affixed to the animal?

A. There are different ways of doing it. In the case of the monkeys, they may well have been tattooed, an ear tattoo. I specifically do not recall.

Q. Is there also as a matter of good custom and practice some kind of number on the cage which the animal is kept inside?

A. That would be frequently done.

Q. Do you know if Litton did it?

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A. I assume they did. The room number is easier to see and identify than the marking on the animal.

Q. Do you happen to know if looking at Exhibit 45, the death of Animal Number 296-I was actually noted in the Litton report?

A. I believe it is noted in the report.

Q. And what about the replacement of that animal by Animal Number 483-F, was that noted in the report?

A. Both events would be noted; namely, that an animal had died shortly after the study had begun and that a replacement animal was put in its place.

Q. And the fact of the replacement I take it?

A. Both events.

Q. And dates of the replacement as well?

A. Beg your pardon?

Q. The dates of the replacement as well, would that be part of the report?

A. Yes. I think it's been a long time since I looked at it. I think the individual pathology sheets would show an extra animal or one that died and another indication of an animal being a replacement for it.

Q. Let's move on. Next in order is BIR 007583.

STLCOPCB4027763

(Plaintiff's Exhibit 46 marked for identification.)

Q. BIR 007583 is Exhibit Number 46. Do you recall this letter, seeing this letter before?

A. It has -- I probably did, though, I specifically do not, you know, recall it in detail.

Q. Did you ever see drafts of interim reports as progress was made on this monkey study?

A. I believe I did.

Q. Do you know if those drafts were retained?

A. Again, I don't specifically know for all cases, but I think the tendency would be that drafts or interim reports would be discarded when the final report came out and it's predominantly a logistics problem, that much more paper to keep around and shuffle through. Since the final report is available, the tendency would be to discard the drafts of the earlier interim reports.

Q. Suppose I wanted to check on the accuracy of the final report, wouldn't I need to have the draft reports to make a judgment regarding whether or not the proper numbers were being kept?

A. If I wanted to check on the accuracy of a report draft or final, I would not check it against another report. I would go back to the records

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generated by that study.

Q. And in this case, it is still your belief that Litton Bionetics did follow this practice of keeping the original records, is that correct?

A. They were required by contract to do so and I believe, my expectation is that they would do so.

Q. Do regulations incidentally require the maintenance of these records in addition to contract?

A. The good practice regulations prescribe how records are to be archived from the studies conducted under good laboratory practice regulations.

MR. DICUM: Mark this next in order.

(Plaintiff's Exhibit 47 marked for identification.)

Q. Sir, would it be fair to describe the study we're looking at as a chronic study rather than an acute study?

A. Yes, it would be considered as a chronic study.

Q. Can you tell us what your understanding is of the term chronic study?

A. The terms are relative. I tend to regard any study over six months of duration as a chronic study.

Q. Is a chronic study essentially one that

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tries to check out the cumulation of a product, let's say, in an animal?

A. A chronic study is designed to give the animal a prolonged exposure to the compound. It may or may not involve a determination of accumulation.

Q. Is there also something called an acute study?

A. Yes.

Q. What is the difference between the two?

A. Acute study is one in which the animal is given one or very few doses usually over one day or at most a few days, so it's a short term. Commonly it's a single dose study, but on occasion they may give a few doses over a few days.

Q. Now, would you say that in general the studies conducted on PCBs that you've been involved in, meaning the monkey studies and your review of the rat studies, were chronic studies rather than acute studies?

A. They would all be chronic studies, yes.

Q. That again is because they were conducted over a long period of time, is that correct?

A. Yes.

Q. Do you know who did the analysis of the tissues? Was it Monsanto or Litton Bionetics in this

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monkey study?

A. Analysis for what?

Q. Well, for instance, let's take a look at Exhibit 47. The fourth paragraph reads, "Finally, I am curious as to what levels of PCBs are being accumulated in the body fat." It's a letter from a gentleman called Mr. David Martin addressed to a senior toxicologist of Monsanto Company.

Do you know if it was custom and practice for Monsanto to do the analysis of PCBs inside the body fat rather than the outside testing laboratory?

A. In connection with these studies, we did some analyses of tissue samples for PCBs. The analytical expertise in Monsanto existed to do such analyses or if not existed, it was a better level of expertise and the contract laboratory not only did not have experience, but would have had to set up trained people, develop expertise or capability to do such studies, so the decision was made we would do them in Monsanto.

Q. Do you remember if there was a particular department that was responsible for doing such analyses inside?

A. I'm not sure. We may have decided to have them done at the Monsanto Research Corporation at that

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time. I think they probably developed a backlog and did not get around to them and they were finally done by people in the research center here in St. Louis.

Q. Did you with your knowledge of testing procedures ever conduct any such analyses yourself?

A. I have not conducted analyses, chemical analyses.

Q. Do you know of anybody else in the medical department at Monsanto during your tenure who conducted chemical analyses from tissues received from outside testing laboratories?

A. We in the medical department do not have the equipment nor the facilities, at least the toxicology group doesn't and I don't think anybody in the medical department has done such actual analyses.

Q. Do you know if in the earlier stage of your tenure with Monsanto in the early 1970s, was that also the custom and practice for the tissues to be sent in to the department responsible for testing those tissues?

A. I do not know nor can I readily think of compounds that the question of doing tissue analyses came up on, so --

Q. Do you know where this facility was located which did the tissue analysis if you recall?

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A. I indicated I believe they were finally done by the research, Monsanto's research facilities here in St. Louis.

Q. In St. Louis, okay. And at sometime you think in Dayton, Ohio, with the Monsanto Research Corporation?

A. I think the intent was to have them done -- the initial intent was to have them done at Monsanto Research Corporation.

Q. Taking the earlier period in 1971 through the time of the commission of this monkey study in '76, do you recall who was the person in charge, if there was one, for analysis of tissue studies at Monsanto?

A. I've indicated I didn't know they were doing tissue analyses, so I can't tell you who would be in charge of something I didn't know.

Q. Do you recall a gentleman called Dr. Scott Tucker?

A. I knew Scott Tucker when he worked for Monsanto.

Q. Do you know if Scott Tucker was doing tissue analysis for Monsanto on materials sent from outside testing laboratories?

A. I knew he was doing chemical analyses, yes.

Q. Now, after the analysis was completed, would

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these materials be maintained by Monsanto or would they be sent back to the testing lab? Let's take the earlier part first, '71 through '76.

A. I would think that as a general rule, samples sent to Monsanto for analysis would either be consumed in performing the analyses or would be retained here until disposed of and not returned to the originator of the sample.

Q. And not returned?

A. Not returned to the originator.

MR. DICUM: Next in order is BIR 007586.

MR. KEARNS: What was the number again?

MR. DICUM: Number 48. BIR 007586 is Plaintiff's Exhibit Monsanto Number 48 consisting of a two-page document. The next in order after Number 48 will be Monsanto 49 and 49 will be 007588.

MR. COMBS: 75?

MR. DICUM: 7588 also consisting of a two-page document. 50 is 7590.

(At this time a short recess was taken, after which the following proceedings were had:)

(Plaintiff's Exhibits 48 through 73 marked for identification.)

Q. Sir, we've had marked a long series of correspondence backwards and forwards between Litton

STLCOPCB4027770

and Monsanto. Would you look at the items in order as they are marked?

MR. KEARNS: What does "look" mean?

MR. DICUM: Have them in front of him so he's ready.

Q. Sir, first of all, would you review the document that is identified as 49? Have you seen this document before?

A. I believe I have, but I don't recall a specific time.

Q. And was this in the course of your ordinary business activities at Monsanto?

A. This was in connection with the monkey study that the Litton laboratory was conducting for Monsanto.

Q. Now, do you know why this additional testing was required in Paragraph 2?

A. Not specifically. I don't recall. It probably was indicated on the basis of what had happened to the monkeys up to this time and someone thought that it would be useful to include those measurements.

Q. Any results already supplied you in that time from previous tests, do you know?

A. There would have been some observations in

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the interim reports that had been supplied to date.

Q. Now, if, in fact, a result did not show an effect at a certain level, would you simply accept that result?

A. We accept the results that are reported. We may discuss the significance or the interpretation of the results, but the recorded results are accepted without regard to their nature.

Q. If you receive results that did show an effect, would that also be the same? You would just accept the result without asking for further retesting?

A. In general, the results are accepted. As I said the significance of the interpretation of them, the meaning of them may differ or because of the results, additional testing -- additional things may be measured in an attempt to determine whether that reported result is real or whether it's just an artifact.

Q. Do you know if that was also the custom and practice in relation to the Industrial Bio-Test rat tests that were referred to earlier?

A. I do not. I can only speak to my own practice. I don't know what others did before that.

Q. Did you not do a study at some point of the Bio-Test rat tests around 1981?

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A. In 1981, I reviewed available records for studies which had been done approximately ten years earlier. The opportunity to do anything with respect to further studies or to look at the animals obviously did not exist.

Q. Do you recall supervising any kind of review of those rat tests around 1975?

A. I reviewed reports and I made comments and raised questions about some of the reports in about '74, '75.

Q. Do you remember what sort of questions you raised at the time?

A. Basically I had compared drafts of reports that the IBT people had submitted. I indicated since they had drawn virtually -- since the three reports were virtually identical that they ought to use consistent language in expressing their findings in all three reports.

Q. Do you recall at any time having some problem with numbers in those rat tests back in '75?

A. In two different versions they had -- you're talking about three lifetime feeding studies in rats and I believe I indicated that one time they said they were ranked 1, 2, 3 and the second time I thought they were ranked 3, 2, 1. They inverted the numbers on

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two of those studies.

Q. Was there one study in which you could never account for what exactly happened to those numbers?

A. I'm not -- I don't recall how the specific instance I mentioned was resolved. I believe ultimately we got three reports with numbers that corresponded with the earlier versions of the reports. I did raise questions on some of the numbers, yes.

Q. Now, looking at the next document, it says, "Enclosed is a draft copy of the fourth quarter report." Do you recall seeing this document?

A. Again, I probably did.

Q. Do you recall seeing the draft report attached to it?

A. I probably did.

Q. Were you asked to give any kind of input into it?

A. Dr. Berteau is reporting to me at the time of this and he would have called the report to my attention.

MR. FONTANA: Excuse me just a second. You said the report that's attached to it. My record doesn't show it long enough to have a report attached to it.

MR. DICUM: I'm inferring from the fact that

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David Martin says, "Enclosed is a draft copy of the fourth quarter report."

MR. FONTANA: You mean the report that's referred to?

MR. DICUM: Exactly so.

Q. Do you know where the fourth quarter report is that's referred to in David Martin's letter?

A. There may be a copy of it in the medical library. More than likely it was superseded by later reports and there is no copy available, but I do not know specifically.

Q. It was destroyed at sometime?

A. Yes, it would have been destroyed at some time.

Q. What about 51?

A. Again, same answer. The tables would have been incorporated into the final report and any earlier copies would probably have been discarded.

Q. Now, when you did your review of the rat studies in the Bio-Test studies back in 1981, did you actually look at any of the raw data?

MR. KEARNS: This is '81 as opposed to '75?

MR. DICUM: Exactly.

A. What I looked at was the records we had regarding the animals which had been placed on tests

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and the findings, microscopic findings in particular that related to the possible carcinogenicity. Those I did review.

Q. Do you recall if you had a complete set of records to review in 1981?

A. My general recollection is I felt I had a sufficient number of records to feel reasonably confident of the report or of the conclusions put in the report. In those instances where I had questions, I noted in the report the questions that had occurred to me or where I had inadequate records to be able to answer the question.

Q. Do you recall who signed the report, the rat test reports, the initial reports?

A. Not specifically. I believe virtually all of them came to Monsanto under the signature of a cover letter under the signature of Dr. Calandra who's director of the laboratory. Specifically who signed the actual reports, the other reports, I do not recall.

Q. Do you recall a Dr. Paul Wright signing any reports in the course of those rat tests?

A. I do not recall whether Dr. Wright signed any of the PCB reports.

Q. Do you recall someone called James Plank signing those rat test reports?

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A. I do not recall Jim Plank signing any of those rat PCB reports.

Q. Isn't it a fact, sir, that at some point in time Dr. Paul Wright was prosecuted for falsifying test results under the racketeering act?

A. I do know that Dr. Wright stood trial and the charges involved submission of falsified data.

Q. Dr. Wright was, in fact, convicted after a jury trial?

A. The statute under which the trial took place I don't know the legal aspects of. This I'm not familiar with.

Q. Do you recall that Dr. Wright was, in fact, convicted by a jury after a trial on that matter?

A. Yes, he was found guilty.

Q. And, in fact, he was sent to prison?

A. I do not know that he was sent to prison.

Q. Have you met him since he left Monsanto?

A. No, I have not.

Q. Do you recall whether any of the studies that he was prosecuted for involved studies for Monsanto?

A. One of the studies was a Monsanto sponsored study, yes.

Q. That was a study involving TCC, wasn't it?

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A. Yes.

Q. When did you last meet Dr. Wright?

A. Either late seventies or early eighties, somewhere in that interval.

Q. And what about the other people who signed the rat test report? You mentioned Dr. Calandra. He was prosecuted as well, wasn't he?

A. My recollection is that Dr. Calandra was severed from the trial during the trial because of open heart surgery and as far as I know, nothing has happened since then with respect to Dr. Calandra.

Q. And what about Mr. Keplinger, he was prosecuted, too?

A. Yes.

Q. And also convicted?

A. He was found guilty.

Q. And also sent to prison?

A. I do not know that any of these people have served in prison.

Q. Was it because of that incident that further tests were required involving rhesus monkeys?

MR. KEARNS: The rhesus monkey?

Q. Let me restate that question. Did any government agency require Monsanto to retest any products after the prosecution of Dr. Paul Wright

STLCOPCB4027778

for falsifying test results?

A. When questions were being raised about the proprietary -- the appropriateness or the procedures used at IBT regarding studies, Monsanto product managers decided that those studies which had been submitted to a regulatory agency by and large would be either validated which means that they would be reconstructed to determine if the records existed to support the conclusions made to a regulatory agency or in some cases where individuals were more concerned about their products and did not want to wait for the validation process, the studies were -- repeat studies were initiated.

Q. Okay.

A. These were all done before any request for same from the government.

Q. Do you recall Monsanto hiring a consultancy firm called Booz, Allen, Hamilton to do those reports all over again?

A. After we had developed procedures in which I personally was largely involved on how we would approach the issue of validation, we then hired Booz, Allen, and Hamilton to speed up the rate at which this could be done.

Q. Who was Booz, Allen, Hamilton, do you

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know?

A. Booz, Allen, Hamilton is a management consulting firm as far as I know.

Q. Do you recall Booz, Allen, Hamilton going to Industrial Bio-Test to check out the accuracy of the reports that were done?

A. I do not recall that they did that. We worked with copies of material that we had received from IBT.

Q. Sir, do you recall any specific person -- did you yourself have any dealings with Booz, Allen, Hamilton in that review of the IBT tests?

A. Yes. As I indicated they were using a procedure which we had developed, which we had discussed with the Environmental Protection Agency for the adequacy on registered products with the agency in which they concurred in.

Having developed that procedure ourselves, we then engaged Booz, Allen, Hamilton and we instructed them in that procedure so they would be operating according to our wishes as well as in a manner acceptable to the Environmental Protection Agency.

Q. Before this particular assignment, had Booz, Allen, Hamilton done work for Monsanto?

STLCOPCB4027780

A. Not that -- not in my area. Whether the company had consulted with a management consulting firm over the years, I really don't know.

Q. Did you ever yourself talk to Booz, Allen, Hamilton in connection with those restudies, IBT tests?

A. I've indicated that we had developed a procedure which was acceptable to an agency, that we passed on that information or that procedure, trained Booz, Allen, Hamilton in its uses, and then when they did the validations using that procedure, we then checked their results to be sure that they had not deviated from the procedure which was laid out, so to that extent, yes, we had many discussions with them.

Q. Do you recall any specific persons at Booz, Allen, Hamilton that you yourself dealt with?

A. Myron Weinberg, Dr. Myron Weinberg was the person who headed that group.

Q. Now, did you tell us which office of Booz, Allen, Hamilton you conducted those repeat studies or rather the review of the Bio-Test reports?

A. Dr. Weinberg was in the New York office or they've got more than one, one of the New York offices, and he had different people at different times that he had recruited or trained or brought along to work on this.

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Q. Anyone else at Booz Allen?

A. Well, I said he had different people at different times that would come down and discuss these.

Q. Do any names ring a bell?

A. The only one is a fellow named Joel whose last name escapes me right now.

Q. Did any of these gentlemen have any expertise in reviewing animal testing reports?

A. At this time probably no one really had expertise because it was a new concept. They certainly did gain a lot of expertise while consulting for us.

MR. DICUM: There are a couple of more questions I have to finish off this session and finish him up.

MR. COMBS: Are we going to be on schedule tomorrow?

MR. DICUM: I don't see why not. I have some documents of interest to show Mr. Levinskas.

MR. KEARNS: How long are you going to go tonight? We were going to finish the monkeys at 5:30 and we got --

MR. DICUM: We got sidetracked onto another issue.

MR. KEARNS: We didn't get sidetracked. After marking all this, then he was asked about two documents and then we went to rats for twenty-five minutes while

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we were all waiting for the monkeys to start.

MR. DICUM: We'll go back to the monkeys and finish off the monkeys today.

MR. KEARNS: So you're looking at 6 o'clock because at 5 o'clock, ten minutes to 5 you were going to finish the monkeys and then we spent the time on rats and now it's 5:30.

MR. DICUM: We can adjourn and come back tomorrow. I'm sure I will be able to complete whatever I need to do before Dr. Kelly and then start on him.

MR. KEARNS: Does finishing the monkeys mean having this witness go through all of these documents?

MR. DICUM: No, I'm not going to go through every single document, no.

MR. KEARNS: Why don't we take it five minutes at a time, sort of an ad hoc basis?

MR. DICUM: Where were we?

MR. KEARNS: 51 was the last one.

Q. Now, sir, looking at the next in order, 52, have you seen this document before today?

A. I remember this aspect of the study. The specific memo I don't particularly recall.

Q. Do you recall the subject matter described in Paragraph 3 to the effect that feeding of the PCBs be discontinued?

STLCOPCB4027783

A. Yes.

Q. Do you know what the purpose of that was, why discontinue feeding the animals even though they were continued to be maintained?

A. This was essentially a change in protocol. We had fed the animals PCBs. We had mated them. The timing of the fertility of a monkey varies from time to time, so we decided to stop mating them or to stop feeding them and if we had an opportunity because of the fertility cycles of these particular monkeys, we would attempt to breed them again. That was basically it.

Q. Was there any thought that discontinuing the feeding of the monkeys with PCBs that the PCBs would not be discoverable after the time for sacrifice came around?

A. The idea was to see if we could follow a decrease in PCBs over time since we had measured PCBs during this study up to the time they were being fed to see whether discontinuance would cause a fall off in PCB levels.

Q. Was that noted in the report, do you know, that the purpose was to see a fall off in PCBs rather than in order to show that there were no PCBs at the final sacrifice?

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A. How this was worded and the nature of the protocol change reflecting this, I do not recall.

Q. Do you recall if the fact that the feeding had been discontinued for six months was noted in the report?

A. That was noted, yes.

Q. Now, sir, reviewing these materials, I see that in some cases, there are various changes suggested by Monsanto to the drafts. Will you look at the next in order, for instance, Number 53 and again later on towards the end, Number 70?

MR. KEARNS: Would you say that again, Mr. Dicum?

MR. DICUM: I think it's Plaintiff's Exhibit Number 70.

MR. KEARNS: You want us to go forward to 70?

MR. DICUM: Yes, these are in a certain category.

A. Okay.

Q. And also looking at those documents, does it indicate that there have been certain changes made in drafts by Monsanto that was supplied by Litton Bionetics?

A. We are requesting that -- in the first one, very specifically he's saying that he has found errors in simple arithmetic in the tables and he's asking them

STLCOPCB4027785

to correct the errors. We are also raising questions about some of the things like spelling and dates and things which are obvious which are transcription errors at least. We are also raising questions about interpretations and significance of findings.

I do not see anything in there asking them to change the underlying data base from which their conclusions or opinions or judgments are being drawn. We are taking exception with some of their judgments.

Q. Will you look at Exhibit 70?

A. Yes.

Q. Have you seen this document before?

A. Yes.

Q. Now, do you see that it states, "Enclosed is a suggested rewriting of Page 31 of the main section of the report --"

A. Yes.

Q. " -- entitled 'Effect of PCB on the Reproductive Performance of the Rhesus Monkey'"?

A. Yes.

Q. Do you know what the original version was that was rewritten by Monsanto at this point?

A. The original version of this report, the high dosage, the hundred microgram per kilogram, we had one pup which was obviously and definitely malformed,

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no question about it. What they had done was score every individual feature that they could detect on that young monkey that was abnormal and they assigned a weighting score to it and then they added up the weighting score and they said we have developed a system for scoring these lesions and it works because when we go through this procedure, it points back to that worst monkey of the bunch and I said, basically, that's sophistry or circuitous reasoning which I don't accept.

What it tells me you have one seriously malformed pup at the high dosage level. Don't give me this nonsense about developing a new procedure and a weighting and scoring system which allows me to identify it. I can tell it's a lousy pup by looking at it. I don't need a soph sticated form.

Basically what we were asking them to do was to reduce the description and this big discussion of this new, novel procedure they discussed which was simply telling of the fact that the high dose pup was obviously malformed and it had several things wrong with it.

Q. Do you know if the original version of this draft still exists?

A. I do not. It's a comment I made on other

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drafts and versions.

Q. Did Litton Bionetics ever actually agree that your version or your way of presenting that information was correct as opposed to their way of presenting it by putting it in a draft?

A. The final version as I recall was closer to our interpretation. There were one or two people who had helped develop this system I just described who felt quite offended that we were not enamored of their system.

Q. Do you know who those persons were?

A. To some extent, Dr. David Martin was one of them because he had done much of the pathology and I don't recall his immediate supervisor at the time. I think probably there was another one and I don't recall his name.

Q. Have you ever met Dr. David Martin after the final report was prepared?

A. I have talked to him on the phone several times. I have never met him personally.

Q. Would it be fair to say that Dr. David Martin ultimately went along with the version that you preferred or Monsanto preferred of the monkey tests more or less under protest?

A. I think Dr. Martin -- it's fair to say Dr.

STLCOPCB4027788

Martin recognized, objectively recognized that his original idea was really not that good of one and that he accepted it as we discussed it further.

Q. But nevertheless did he continue to protest that his version was the correct one?

A. He did not protest that his version was the correct one.

Q. How do you know that he was offended by the idea that he had to change his original draft?

A. Well, I'll go back. Our objection was to their statement that they had developed a new and novel procedure for detecting PCB intoxication and our objection to it was the fact that they developed a procedure on one animal and the fact that that procedure then referred them back to that animal was in no way a new or novel means of identification or proof of anything and I think he recognized that that reasoning was a bit of sophistry and was somewhat fallacious and he accepted that.

Q. Does Dr. David Martin still work for Litton Bionetics, do you know?

A. No, he does not. He took an assignment -- the last I knew, he was heading for Germany. This is a couple years back. I don't know whether he was working for -- on a fellowship or something, but he was heading

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for Germany and he was going to be out of the country for a year or two and that's really the last I heard of him.

Q. Were there any other areas where Dr. David Martin at least initially disagreed with Monsanto's assessment of the tests?

MR. KEARNS: Just a moment. Objection. You say errors?

MR. DICUM: Areas, a-r-e-a-s.

MR. KEARNS: Areas, all right, I'm sorry.

MR. DICUM: It's my way of speaking.

A. I do not recall a great deal of discussion other than their insistence or their initial proposal of this procedure. I do not recall any substantive disagreements, though undoubtedly there were discussions on several parts of the report.

Q. Would you look at Item 57, Exhibit 57? Have you seen this document before?

A. Again, I presume I have, though I don't recall it specifically.

Q. Do you remember an Animal Number 841-H, who died during the course of a test?

A. Not particularly.

Q. Do you know if -- do you have any belief as to whether that death is recorded in the test results

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as put in the final form by Litton Bionetics?

A. This animal and its ultimate death should be in that final report.

Q. Would you look at an item marked Exhibit 59? Have you seen this document before?

A. I believe I did see it.

Q. By the way, is Dr. Berteau still with the company?

A. No, Dr. Berteau left. He's with the State Health Department in California I think.

Q. In California?

A. Yes.

Q. Does the reference here to "Impact of GLP proposed regulations on study price quoted to Monsanto," do you know what the significance is of that comment?

A. I think I said earlier that when these studies were initiated by Litton Bionetics, the EPA or FDA good laboratory practice regulations either were in being or being proposed and they were to conduct that study in compliance with those regulations. This would say to me that those regulations either were issued or modified and Litton is informing us that if they are to comply with such regulations, they will have to do some additional work or some recordkeeping and there will be additional costs.

STLCOPCB4027791

A. Yes, some monkeys did die during the study.
Q. Were those recorded, do you know?
A. Those should all be recorded in that final report.
Q. Do you know if, in fact, they were recorded?
A. It's my best recollection that every animal that was on the study including the one that was replaced after the first week and its replacement are all recorded in the pathology section, the last section of that report.
Q. Isn't it a fact that when you did your review of the Bio-Test results that you found some animals that were marked extra?
MR. KEARNS: Wait a minute now. We're changing. You're changing gears on us here, aren't you?
MR. DICUM: Indeed I am.
MR. KEARNS: Ah-ha, very subtly.
MR. FONTANA: We've just gone from a monkey to a rat.
Q. I just want to see if there's a difference between the two.
A. One obvious thing is that we're dealing with a smaller number of animals when we're dealing with monkeys and they are much bigger and much more

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expensive and so one spends -- one does a lot more testing on a large animal that one can get tissue samples and such from. It's pretty hard to get a half a pound of fat out of a rat that weighs a quarter of a pound. Now, there are certain things that can't be done with small animals.

Q. Would you look at Item 62, Exhibit -- I beg your pardon, Exhibit 63 which is a one-page letter dated January 19, 1979? Have you seen this document before?

A. I recall the general nature of this discussion, yes.

Q. Are you familiar with a requirement under the new GLP regulations that "test and control articles or mixtures have been appropriately tested for identity, strength, purity, stability, and uniformity, as applicable"?

A. Yes, that's a requirement.

Q. Do you know in connection with the monkey studies whether that was actually done in this case?

A. I believe we gave Litton Bionetics a description of the test material and we have records of the material that was sent to them. We did not since the study was conducted -- it says the final regulations. Basically the study was done before the

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regulations became final. We did not think that that was an important enough feature to include in this report.

I do not think that we have done that, that is, go back and inform Litton as to the additional information. The information we have given them at the beginning and collected when we started the study we think is adequate to say -- to comply with the applicable part of the regulation.

Q. Okay. Is it fair then to say that, in fact, the food mixtures you used for these monkey tests were not tested in compliance with the regulations that subsequently came into effect?

A. I do not recall that the regulations spell out specifically what kind of testing should be done. My recollection of this study is that we provided the laboratory at Litton Bionetics with the corn oil suspension or solution of the polychlorinated biphenyl and that at intervals, they sent portions of those samples back to Monsanto for analysis. That would certainly adequately satisfy any kind of good laboratory practice requirement for assurance of stability, reliability, and so forth of the test material.

Q. During the course of your investigation of

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the Bio-Test rat test, did you come to any conclusions as to whether the test mixtures in those tests had been sampled or tested in conformity with the way that the practice nowadays is?

MR. KEARNS: The IBT test completed some years before these regulations went into effect?

MR. DICUM: The IBT test.

A. In viewing the information from the rat feeding studies where the material was put in the diet, I made an effort to determine whether there were records available to show these animals had been placed on test and they had been fed diets which were supposed to contain PCBs. I did not make an attempt nor do I think anyone else did to determine or to analyze those diets for PCB levels.

Q. I take it then the answer to that question was no, is that correct?

A. I would like to have the question read back.

Q. Okay. Why don't we have the question read back.

(Whereupon the following portion of testimony was read back by the Court Reporter: "Q. During the course of your investigation of the Bio-Test rat test, did you come to any conclusions as to whether the test

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mixtures in those tests had been sampled or tested in conformity with the way that the practice nowadays is? MR. KEARNS: The IBT test completed some years before these regulations went into effect?
MR. DICUM: The IBT test. A. In viewing the information from the rat feeding studies where the material was put in the diet, I made an effort to determine whether there were records available to show these animals had been placed on test and they had been fed diets which were supposed to contain PCBs. I did not make an attempt nor do I think anyone else did to determine or to analyze those diets for PCB levels.
Q. I take it then the answer to that question was no, is that correct?")

A. My answer to the question I think was -- that's my answer.

Q. Okay. Would you look at Plaintiff's Exhibit 64? It's a one-page letter. Do you see the second sentence? First of all, have you seen this document before today?

A. I presume I have.

Q. As a matter of custom and practice, would Peter Berteau have circulated copies of the documents to you when he received them?

A. I'd indicated earlier that at this time

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Peter Berteau was reporting to me. In all probability he would have showed me the draft report.

Q. The second sentence, "We are prepared to issue this report in final form when it has been reviewed and accepted by you." Do you see that? Do you know if it was customary in 1979 for the corporation to review and accept the conclusions of the outside testing lab before the result was put in final form?

A. It's been my experience throughout my career and my knowledge of other people that reports are always reviewed for consistency, logic and technical validity.

Q. Has it ever been in your experience the case that a company which wants a product tested and disagreed with the results that came in from its outside testing lab, under those circumstances the outside testing lab went ahead and issued the report anyway?

A. The outside -- I do not know of any case where a laboratory issued a report as you described. There undoubtedly are times when the findings may not be what the sponsor wanted, but every time that I'm aware of they've accepted the findings, that the findings are not in dispute. The interpretation, the

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significance of the findings may be disputed, but the actual measurements, findings, underlying data base are rarely, if ever, a source of dispute.

MR. KEARNS: What do you think about stopping?

MR. DICUM: We obviously have a lot to do in another area tomorrow and I'm not against that idea. We're almost at the end. That's all I have for the monkeys.

MR. KEARNS: Can we stop now and finish off the monkeys real early tomorrow morning?

MR. FONTANA: And then we'll go to the sheep or fish or something.

MR. DICUM: I think they are rats.

MR. KEARNS: More rats, huh?

MR. FONTANA: Have we agreed that overnight you'll try to mark all of the rat documents so we don't have to spend time during the deposition?

MR. DICUM: It depends on how long our court reporter is willing to stay.

MR. FONTANA: I'm certain she can work out an arrangement with your associate to do that.

(Plaintiff's Exhibits 74 through 104 marked for identification.)

(At this time, the deposition of George Levinskas was adjourned until 9:00 a.m., August 6, 1987.)

STLCOPCB4027798

I, George J. Levinskas, do hereby state that I have read the foregoing questions and answers appearing in this transcript of my deposition Page 4 through and including Page 232; that this is a true and accurate (corrected) report of said answers given in response to the questions appearing herein.

_____

George J. Levinskas

CERTIFICATE

STATE OF MISSOURI)
) SS
COUNTY OF ST. LOUIS)

Before me personally appeared George J. Levinskas to me to be known to be the person described in and who executed the foregoing instrument and acknowledge to and before me that he executed the said instrument in the capacity and for the purpose therein expressed.

WITNESS my hand and official seal this _____ day of _____, 1987.

_____

NOTARY PUBLIC

My Commission expires:

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NOTARIAL CERTIFICATE

STATE OF MISSOURI)
) SS
CITY AND COUNTY OF ST. LOUIS)

I, CAROLYN S. HOWSER, a Certified Court Reporter and Notary Public in and for the State of Missouri do certify that pursuant to the foregoing stipulation, taken at the Holiday Inn, 7730 Bonhomme Avenue, Room 407, in the County of St. Louis, State of Missouri,

GEORGE J. LEVINSKAS

came before me, was by me duly sworn to testify the whole truth of his knowledge of the matters in controversy aforesaid, was examined and his examination then written in stenotypy by me, and afterwards typed, and signed, as hereinbefore set out, on the day in that behalf aforesaid, and said deposition is herewith returned.

I further certify that I am not counsel, attorney, or relative of either party, or clerk or stenographer of either party, or of the attorney of either party, or otherwise interested in the event of this suit.

GIVEN under my hand and notarial seal at my office in the County of St. Louis, State of Missouri, on the _____ day of _____, 1987.

My Commission Expires: January 22, 1988.

_____
Carolyn S. Howser,
Notary Public in and for the
State of Missouri

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