UNITED STATES DISTRICT COURT
DISTRICT OF NEVADA

NEVADA POWER COMPANY, a Nevada corporation, Plaintiff,	:	
VS.	:	CV-S-89-555-LDG-LRL
MONSANTO COMPANY, a foreign corporation; GENERAL ELECTRIC COMPANY, a foreign corporation; WESTINGHOUSE ELECTRIC CORPORATION; a foreign corporation; and DOES I XXV, inclusive, Defendants.	:	

READING COPY

DEPOSITION OF ROBERT EMMET KELLY, M.D.
VOLUME II
TAKEN ON FEBRUARY 16, 1994

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WATER_PCB-00051322

I N D E X

THE WITNESS: ROBERT EMMET KELLY, M.D.
VOLUME II

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NO EXHIBITS MARKED

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ALSO PRESENT:

Ms. Lynette Weldon

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The oral videotaped deposition of ROBERT EMMET KELLY, M.D., was continued on February 16, 1994, beginning at 9:16 a.m., in the offices of Husch & Eppenberger, 100 N. Broadway, Suite 1300, St. Louis, Missouri, before Irma L. Reyes, a Certified Court Reporter and Notary Public in and for the State of Texas, pursuant to Notice and Agreement, the Federal Rules of Civil Procedure, and the following stipulation and waiver of counsel:

IT WAS STIPULATED AND/OR AGREED that the deposition is to be signed by the witness before any Notary Public or officer authorized to administer oaths.

IT WAS FURTHER STIPULATED AND/OR AGREED that the court reporter could swear the witness with the same force and effect as if she were a Notary Public in and for the State of Missouri.

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THE VIDEOGRAPHER: Today is the 16th of February, 1994. It's 16 minutes

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after 9:00 o'clock. We're back on the record.

ROBERT EMMET KELLY, M.D.,

was called as a witness and, having been previously duly sworn, testified as follows:

EXAMINATION (Continued)

BY MR. BAUER:

Q. Dr. Kelly, I'd like to continue with your testimony about the Industrial Bio-Test's toxicity testing of PCBs in the 1969 through 1970's -- the time period.

A. Yes, sir.

Q. You already testified yesterday about the summaries that you received from Industrial Bio-Test.

A. Yes, sir.

Q. In the early 1970's did Monsanto also receive a set of final reports from Industrial Bio-Test?

A. Yes, sir.

Q. Do you recall approximately when those reports were received?

A. In November of 1971.

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Q. Do you have Exhibit 35 in front of you?
A. Yes, I do.
Q. Can you identify that for us, please?
A. This is a report from Industrial Bio-Test of a two-year chronic oral study, toxicity study, with Aroclor 1260 in albino rats. This was supported by Monsanto.
Q. Did you receive in the 1970 to 1971 time period similar reports for all the other studies conducted by Industrial Bio-Test, such as the three-generation reproduction study and the mutagenicity -- mutagenicity studies?
A. Yes, sir.
Q. Now, were copies of all the final reports shared with the Federal Government?
A. Yes, they were.
Q. With whom in the Federal Government?
A. We sent some to the -- we sent all of them to the FDA. We sent some to Dr. Berger, who was -- he was the President's chief scientist on -- I don't know what. But he was -- he was chief scientific adviser. And some were sent to the agriculture department. I say "some," all of them. Everybody got the same

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package, which was everything we had.

Q. Do you recall whether anyone from Industrial Bio-Test also presented summaries of the information learned in the tests at any conferences?

A. Yes.

Q. Could you describe those, please?

A. The conferences?

Q. The conferences.

A. I was not at the conferences.

Q. Do you recall --

A. Yes, but --

Q. -- when and where any of them were?

A. Yes.

Beg pardon?

Q. Do you recall when and where any of those conferences were?

A. Sometime, I believe, in 1971 or early '72, after he finished his work.

Q. In your judgment, Dr. Kelly, did the various reports -- well, strike that.

Let me start with this: Did you personally review the various IBT reports with respect to PCBs?

A. Yes, I did.

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Q. Did others within the medical department also review them?
A. Yes, they did.
Q. Who else do you recall?
A. Wheeler did. Levinskas did. Hunt -- Hunt did. I don't recall when Hunt died; but if he were living, he were -- I don't know. He died just around that time.
Q. In your judgment, Dr. Kelly, did the IBT studies that you received in 1970 and 1971 demonstrate that PCBs were highly toxic on an oral chronic basis?
A. No, they were not.
Q. Did you personally tour the Industrial Bio-Test facilities while the studies were being conducted?
A. Yes. Frequently.
Q. Do you recall approximately how often you were there?
A. Sometime twice a year, always one a year. I would say I was there about -- a three -- a two-year study takes about three years by the time you do the preliminary work, by the time you do the pathology after the two years' testing. So in those three years, I was

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probably up there five times.

Q. Did you ever form the opinion that the PCB studies being performed for Monsanto by Industrial Bio-Test were being conducted in a less than a professional manner?

A. No. I've been to several toxi -- no, I did not. I've been to several toxicological laboratories, both in England and in the United States; and these facilities and the way the -- I saw the housing of the animals and the housekeeping of the -- of the animals that were used was top drawer, as far as I was concerned.

Q. Did Monsanto ever instruct Industrial Bio-Test to fabricate data for the PCB studies?

A. Absolutely not.

Q. To your knowledge, did Industrial Bio-Test fabricate -- fabricate any data for the PCB studies?

A. I have no knowledge of such action.

Q. I'd like to go back now, Dr. Kelly, to where we left off in the chronology of the reports of PCBs being present in the environment.

When we left off with that topic

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awhile ago, we were at the -- we had talked about Jensen and Widmark and the early reaction to -- within Monsanto to those findings. Do you recall any significant events in the 1968 time period with respect to PCBs in the environment?

A. Well, there were quite a few significant things. They found them to be more spread -- widespread. The presence was more widespread than we thought. Also, in 1968, if I'm not confused about the dates, Dr. Risebrough found that there was some thinning of egg shells in avian species that might be attributed to the ingestion of PCBs.

Q. Do you recall reviewing Dr. Risebrough's paper in 1968?

A. Do I recall?

Q. Did you read Dr. Risebrough's paper when it was published?

A. I don't know whether I read it '68 or '69.

Q. But at some point in time, shortly after Dr. Risebrough published his paper, did you read that?

A. Yes, I did.

Q. All right. And did others within Monsanto

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read that paper, as well?
A. Yes, they did.
Q. Was Dr. Risebrough's paper the first publication that reported finding PCBs in the environment in the United States?
A. Yes. To the best of my knowledge.
Q. Who within the medical department had the most day-to-day involvement with respect to the issue of PCB in the environment in the 1968-1969 time period?
A. Elmer Wheeler.
Q. Was he working closely with someone from the business group that dealt with PCBs?
A. Oh, yes. The business group was very, very involved. I don't know the name of the individual. It could have been Bergen, it could have been Springgate. I just don't know. But he was certainly involved all the time.
Q. Do you recall attending a meeting in November of 1969 where the topic of PCBs in the environment was discussed with Monsanto's senior management?
A. Yes, I do.
Q. Would you turn to Exhibit 37, please?

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A. Yes. I have it.
Q. Could you identify that document for the record?
A. Yes. This is "Minutes of the Meeting of the Corporate Development Committee" of the Monsanto Company, November the 17th, 1969.
Q. Were you present at that meeting, Dr. Kelly?
A. Yes, I was.
Q. Did -- were you distributed copies of the minutes after the meeting was concluded?
A. Abstract parts of the minutes. Anything dealing with PCBs, I was; but they -- I'm sure they had other things on their mind at that time.
Q. The Exhibit 37 lists Mr. E. J. Bock as the chairman of the corporate development committee in November of Nineteen Sixty -- in November of 1969. How far up in Monsanto's management was Mr. Bock?
A. As high up as you can go. He was the CEO.
Q. And what was the "corporate development committee"?
A. It was a group -- I'll read their titles. Bible was -- these were all officers of the copy. Bible was head of administration. Eck

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was head of manufacturing. Gillis was head of sales. Charlie Sommer was the chairman of the board. Putzell was a general counsel, and Ehlers was also -- he was a secretary to the assistant. These are the people that ran the company.

Q. What was the purpose of this meeting in November of 1969?

A. We wanted to bring the management of the company up-to-date on what the problem was, what we were going to do about it, and what the ramifications may be for the company.

Q. Who -- strike that.

Was there a presentation given by the medical department at the November of 1969 meeting?

A. Yes, there was. In addition to presentations by the organic division, which -- you want me to tell who these were at the bottom that were present? C. J. Smith and Mason were management of the organic division. Tom K. Smith was a vice-president in charge of the organic division. Bergen was probably product manager of the -- of the fluids department. Springgate was in some -- same

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similar situation. Rodney Harris was a lawyer. I don't recall who Miller and Robinson were.

Q. Who in the medical department gave the presentation of the medical department's portion of the meeting?

A. The best to my recollection, I started off and turned it over to Wheeler.

Q. The second page of Exhibit 37 has an item on the bottom entitled, "Plan of Action." And then there are 12 numbered paragraphs on the next page. Was that 12-point plan of action approved by the corporate development committee in November of 1969?

A. Yes, it was.

Q. The first point of the program is to "appoint a Project Manager responsible for" all -- "for the overall management of the Aroclor pollution problem." Was that done?

A. Yes, it was.

Q. Who was given that position?

A. William Papageorge.

Q. Do you recall when he assumed that position?

A. I thought it was January the 1st, 1970.

Q. Thereafter, was Mr. Papageorge the person

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within Monsanto who had day-to-day responsibility for the problem of Aroclor being in the environment?

A. Yes.

Q. Was he also the one with the most day-to-day responsibility for disseminating information to customers about that problem?

A. Yes.

Q. Did you ever learn that Monsanto was protecting its profit from Aroclor regardless of the expense to the environment?

A. No, sir, I never did.

Q. Did you ever hear Mr. Bock make a statement to the contrary?

A. Very much so. I can't forget that because after we laid all this thing out on the table, then Bock, who was the CEO, said, "If we can't beat this problem, we're going to just give up the ship as far as PCBs are concerned and stop manufacturing them." He was quite emphatic. He said, "We want to be a good neighbor. We're" -- "we want" -- "we're just as worried about the bald eagle and the peregrine falcon as the next person." So he was very cognizant of the

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problems of environmental pollution at that time.

Q. Let's back up again to 1968.

Do you recall learning of a problem in Japan that related to a PCB product there?

A. Yes, I did.

Q. Could you describe that for us?

A. This was termed "Yusho," Y-u-s-h-o. It appeared that a Japanese PCB called Canaclor, which was manufactured in a somewhat different process that Monsanto did their PCBs -- it also was proved later to have contaminants to a degree that were not present in any of the Monsanto products -- was used as a heat transfer agency to do something with rice oil, to warm it up or something. Obviously to warm it up. And it leaked in it. And how long this leak occurred and how hot the temperature was, I don't know.

But it was then used -- it was sold -- the rice oil was sold with no knowledge that -- the leakage of the fluid into the material. And people used it to cook soy bean pancakes or some staple of the

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Japanese diet. I don't know. But they used it very frequently over a period of months; and about a thousand people developed problems, mostly dermatological. There were no deaths, as I recall; but the dermatological manifestations were pretty severe. There were some other systemic things. There were pains in peripheral duritis, some pains in the extremities, as I remember. And it was quite a problem.

Q. Do you recall approximately when you started hearing reports about what you've identified as the Yusho incident?

A. Sometime after -- sometime in 1969. Because we didn't have a very large presence in Japan at that time like we did in Europe where we heard things pretty early. And I don't think anybody in St. Louis subscribed to Japanese newspapers. And we didn't subscribe to the Japanese scientific literature. So it was -- it wasn't an awful lot in the United States until, I think, '69, sometime in '69.

Q. Did you and others within the medical department make efforts to learn more about the Yusho incident after you got the first

reports?

A. Well, we did. But our resources were pretty limited. There wasn't much to learn until we got some translations of the Japanese article. We did have some connection in Japan with some of the Japanese companies; and we had a regional vice-president over in Japan, a John Durland, whom we would write to and say, "What's going on? Where do you find out about this?"

Q. Did you and others within the medical department at Monsanto review English language publications about Yusho as they came out in the later years?

A. Yes. Certainly did.

Q. You mentioned in your answer describing the Yusho incident that there were -- it later developed that there were some impurities in the rice oil, as well as PCBs. Was one of those impurities known by the name "polychlorinated dibenzofurans"?

A. Yes.

Q. For the sake of brevity, I'm going to refer to that as "furans" in the rest of your deposition. So if I use the word "furans,"

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will you understand that I actually mean "polychlorinated dibenzofurans"?

A. Yes.

Q. Did you and others in the medical department read articles in the 1970 time period by Dr. Vos about the identification of furans in some peak commercial PCB mixtures?

A. Yes, I did.

Q. What do you recall generally about Dr. Vos' report?

A. Well, Dr. Vos was a European. I think he was Swedish or Hollandsch. I don't know where. Certainly Western Europe. He analyzed PCBs manufactured by Monsanto; PCBs manufactured by a German organization Vateche, V-A-S-F; and some French PCBs. I don't know if it was French or Italian; but there was several European manufacturers, as well as Monsanto.

He found furans in the European samples from the two manufacturing companies in Europe that he examined. He did not find any and did not report any and reported a negative finding of furans in the Monsanto product.

Q. Did Dr. Vos identify furans as a more toxic

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compound than PCBs?

A. Oh, several magnitudes. Probably 500 to a thousand times as toxic as PCB.

Q. After learning that Dr. Vos had detected levels of furans in European PCBs but reported that he had not been able to detect them in Aroclors manufactured by Monsanto, did Monsanto undertake its own efforts analytically to look for furans in its PCBs?

A. Yes. Starting sometime in 1970, up until I retired in '74 and afterwards, it was my impression they continued looking. By the time I retired, up till November the 30th, 1974, I have no recollection of any reports that we found any, even though we were looking in our particular product.

It's my understanding also that afterwards, after their analytical, expertise became more exact. They were able to find some small amounts in our particular product.

Q. All right.

A. But I have not seen those reports. But up till the time I retired, all the reports were negative.

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Q. Let's go back, Dr. Kelly, to Exhibit 36, which is an October 21, 1968, memorandum from Elmer Wheeler to W. R. Richard. And there are carbon copies to a number of other people.

Do you recall receiving a copy of this memorandum in 1968?

A. After looking at it, I recall it, yes.

Q. The attachment to this memorandum, which is not in the exhibit, is described as Risebrough's presentation. Was this the first time you received a copy of Dr. Risebrough's paper showing the presence of PCBs in the American environment and reporting finding them in various fish and birds in California?

A. The best of my recollection, it was.

Q. Dr. Kelly, I started this examination by mentioning to you that the plaintiff in this case was Nevada Power Company, which is a utility in Nevada.

A. Yes, sir. I recall that.

Q. To your knowledge, did Monsanto ever make any misrepresentation about PCBs to Nevada Power Company?

A. No, sir.
Q. To your knowledge, did Monsanto conceal any information about PCBs so as to deceive Nevada Power about the risks or hazards of PCBs?
A. No, sir.

MR. BAUER: That's all the questions I have for direct examination.

EXAMINATION

BY MR. KIM:

Q. Dr. Kelly, can you hear me?
A. Yes, I can. Thank you.
Q. My name is John Kim.
A. Yes, Mr. Kim.
Q. And I'm a lawyer who, along with Mr. Gallagher, has been hired by Nevada Power Company. You understand by virtue of this lawsuit our company has sued Monsanto Chemical Company, General Electric, and Westinghouse for what we allege to be the fraudulent sale of dielectric fluids containing PCBs?
A. Yes, sir.
Q. As a result of that, we are in somewhat of an

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adversarial position today. I only say that because sometimes, as your attorneys will tell you, I can ask convoluted or confusing questions. And I'd like to reach an agreement with you that if I do so, that you and I can understand that all you have to do is tell me you don't understand and I'll try again.

A. Yes, sir. Thank you.

Q. Have you given your deposition before?

A. Yes.

Q. And I will tell you up front, to be frank, that I've read some of your past testimony. So perhaps a lot of this can go quickly.

A. Yes, sir.

Q. But as of 1990, I understood that you had gived 50 prior depositions -- you had testified 50 times either by deposition or trial. Is that your recollection?

A. I don't think so. I think 50 is high. I think --

Q. Correct me.

A. I think it would be in the 20's to 30's, would be tops. I don't think it was 50.

Q. Okay. Do you have a recollection of in your

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deposition in a case -- do you remember testifying in a case called "In re: Paoli"?

A. I remember the term. This was with Pennsylvania, but I don't remember when I -- I do not recall my deposition, and I have not seen my Paoli deposition. If I was deposed in it, I haven't seen it for quite some time.

Q. I understand, Doctor. The confusion that I have is in the Paoli deposition, you had indicated that as of that date, you had testified approximately 50 times. And I don't mean to dispute that number. But let's take your number of only testifying 20 times. Does that number --

A. Twenty to 30, I said.

Q. Up to today's date?

A. Yes, sir.

Q. And in each of those instances, how many times did you testify on behalf of Monsanto Chemical Company?

A. I don't exactly know your term, "on behalf of Monsanto." I was testifying in some of those as to the facts that I knew them. Those facts were on behalf of both sides,

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obviously. I was --

Q. Certainly you've never been critical of Monsanto Chemical Company's testing and protocol, have you?

A. I haven't finished yet.

Q. Excuse me, Doctor.

A. I was -- I was also testifying sometime as an expert in PCBs.

Now, I'm sorry I had to interrupt you. I'm finished with that answer.

Q. How many times have you testified, in those 20 to 30 times, has Monsanto Chemical Company been a party to the litigation?

A. Probably 16 or 17 times. If over 25, there were probably 22 times. I testified once in a case with Illinois Central. There was another case involving PCBs. I forget who the defendant was, but they are not all Monsanto cases.

Q. Of the 20 -- let's use 25.

A. Yes, sir.

Q. Can we use that?

A. Yes, sir.

Q. And I'm not going to hold you to that number.

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Of the 25 times, how many times have you testified as an expert on behalf of Monsanto Chemical Company?

A. I find it hard to make -- to remember that. I would say probably half the time.

Q. In the other instances --

A. As a fact witness.

Q. In your testimony as a fact witness, have you ever given any criticism as to the testing and research protocol employed by Monsanto Chemical Company in the production and sale of any of their industrial chemicals?

A. Wait. Repeat that. That's a little convoluted.

Q. I agree. It was.

Have you ever criticized Monsanto Chemical for their research and testing protocol pursuant to any industrial chemicals that they sold?

A. No. I don't -- are we talking now about research as far as the toxicological -- well, no, I haven't. Because I was in charge of that. I'd be criticizing myself.

Q. And we certainly don't want you to do that, Doctor.

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A. I won't.
Q. Your testimony is, as I understand it, then, that of the 25 times you've testified, 22 times Monsanto has been a party?
A. Yes.
Q. Have you ever testified on behalf of a plaintiff in any of the 25 times?
A. No, sir. I was never called.
Q. And you've never testified different to that?
A. I've never testified different to what?
Q. To never testifying on behalf of a plaintiff?
A. In anything?
Q. In anything.
A. Oh, yes. I've testified for the plaintiffs in other cases outside of PCB.
Q. From the time period of 1936 up until 1990, how many times have you testified on behalf of a plaintiff?
A. Two or three, I believe.
Q. And again, I guess my confusion comes, Doctor, in that that answer differs with the answer that you gave in your Paoli deposition.

MR. BAUER: Objection. Lacks foundation.

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MR. KIM: Well, I'm sure it does, Scott.

Q. (By Mr. Kim) The testimony you gave there was --

MR. KIM: And I'm not trying to impeach him. I'm just trying to clarify something.

Q. (By Mr. Kim) The testimony that you gave there was you had only testified one time on behalf of a plaintiff. Do you have a recollection of what other instances that you have testified on behalf of a plaintiff?

A. Yes. Once was a case with an engineer for a railroad, was exposed to diesel fumes in a roundhouse. I remember that quite a bit. That was one time I testified on behalf of the defendant.

It may be some of the confusions with -- because sometimes the plaintiff would send me a medical report and I would send it back to them with a -- or rather, I'd tell them, "My opinion is different than what you are going to want." And he would call me up and say, "Send me the report back."

So, I mean, I may have been asked

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to testify by the plaintiff, preliminary request; but then on further thinking, after feeling what my thoughts on the matter was, he decided I would not be helpful to his case.

Q. And those would have been instances where they would have asked you for some sort of causative correlation between some health problem he had and a chemical or a producing agent?

A. That's correct.

Q. And in those two instances where you did not testify, you gave a preliminary opinion that you could find no causative factors?

A. That's correct.

Q. And so they asked you not to testify?

A. That's correct. Well, they -- not to testify. They just didn't ask me to testify.

Q. Have you had occasion to testify before any governmental agencies, whether it be Federal or state?

A. No, sir, I have not.

Q. Have you had occasion to file any affidavits on behalf of Monsanto Chemical Company in any insurance coverage litigation concerning

polychlorinated biphenyls, furans, or dioxins?

A. None that I can recall.

Q. Between the years of Nineteen Thirty -- I believe you told us you started in '36?

A. Six.

Q. -- and 1974, Monsanto Chemical Company was your sole employer with the exception of your stint in the Armed Forces?

A. As far as employee -- being an employee was concerned, yes. I did do -- I did see an occasional case for a diagnosis for various people around St. Louis.

Q. For the most part, for those 38 years the only paycheck you really ever drew was from Monsanto Chemical Company?

A. That's correct.

Q. Today are -- after you retired in 1974 from Monsanto, I believe you testified that you did some consulting work?

A. Yes. I did -- I was -- for a year I was retained as a consultant. I believe that was to back up Dr. Rousch if he needed any backup, which he didn't need much. I saw a couple of plants, investigated problems in a

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couple of plants, none of which had to do with PCBs. One was a Texaco plant, and the other was a -- an insecticide operation.

Q. Kind of a transition period?

A. I think so.

Q. Did you do any other work as a consultant in that year for any other companies outside of Monsanto?

A. Which years? In that one year?

Q. In that one year after your retirement.

A. '75?

Q. Yes, sir.

A. No, I did not in '75.

Q. From 1976 forward, did you do any consulting for any other companies outside of Monsanto?

A. Well, at some time I was a medical director of the Consolidated Aluminum Company. That was -- took about 30 days a year. And this was an organization that had three smelters and some smaller manufacturing units. I was associated with the Sutter Industrial Occupational Medical Clinic, which eventually became the Barnes Health Service. I was there till -- three mornings a week until, I guess, sometime in the late Eighties, I

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believe.
Q. During that time period, were you also still doing some consulting work for Monsanto Chemical Company?
A. I was -- I was given -- I did some work on -- that wasn't consulting work. It was case basis -- on a case basis in legal things like this, in legal situations.
Q. And that's -- would that have been the time period in which you testified that approximately 25 times that we've talked about earlier?
A. Yes, sir.
Q. When is the last testimony, prior to this case involving Nevada Power Company, that you gave concerning PCBs?
A. Frankly, I don't remember. It was sometime in 1993, but I don't remember.
Q. On approximately how many occasions have you testified on behalf of Monsanto Chemical Company on issues concerning polychlorinated biphenyls?
MR. BAUER: Object to the form.
A. Well, all the times I've testified in cases involving Monsanto at Monsanto's behest was

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the 20 to 22 that I mentioned. Sometimes I was subpoenaed by the plaintiff. I don't know if that means I'm testifying for Monsanto or not.

Q. (By Mr. Kim) In those 22 times you certainly never criticized your work?

A. Didn't criticize myself. No, I did not.

Q. Did you -- were you critical of anyone at Monsanto Chemical Company?

A. In depositions?

Q. Or court testimony.

A. In court testimony? I don't recall doing it, no.

Q. Okay. Are you still a shareholder in Monsanto Chemical Company today?

A. A very moderate shareholder.

Q. When you say "moderate," could you amplify for this jury how much stock you own in Monsanto Chemical Company?

A. Yes. About a thousand shares.

Q. And what is, in dollar amount, that interest in Monsanto Chemical Company today?

A. Today? Seventy-eight thousand -- it's 78 to 78,000.

Q. Do you have any involvement from a financial

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standpoint with Westinghouse Electric Company?

A. No, sir.

Q. General Electric?

A. I did have some shares at GE which I have gave to my children about ten years ago.

Q. Outside of that, you have no --

A. I have no shares in GE.

Q. Have you ever testified in cases in which Westinghouse and/or General Electric have been parties?

A. I think there was one, but I don't remember the details. I don't know the name of it.

Q. They've never hired you?

A. No. I've never received a check from Westinghouse or GE.

Q. Okay. Mr. Bauer went through your background a little bit. One thing I wanted to ask you was -- and we don't have the benefit of your CV today -- is whether you have ever published any articles on the subject of polychlorinated biphenyls.

A. I have not.

Q. Have you ever published an article concerning polychlorinated dibenzodioxins?

A. No, I have not.
Q. How about polychlorinated dibenzofurans?
A. I have not.
Q. Your testimony and the basis of your testimony concerning PCB, then, is primarily based upon the studies that you ordered, as well as your experience over the thirty-eight some years that you were at Monsanto Chemical?
A. As well as reading all the literature on the material in the English language. Yes. Most of the literature -- I can't say I read all of it. Most of the literature related to PCBs in the English language.
Q. And you began to read most of the English literature concerning these subjects sometime in 1936 and forward?
A. '36, '37, yes, and forward.
Q. Certainly you would have read the litany of literature in the Forties?
A. Well, not in the four years I was in the Service, I wasn't -- didn't. But certainly in the Forties, I read it, yeah. The others -- periods I was gone from '42 to '46. And so the other years I read it.

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Q. When you came back from the Service in '47, did you make some attempt --
A. '46. I came back in the middle of '46.
Q. Excuse me, Doctor. When you came back from the Service in the middle of '46, did you make some attempt to review the literature that had been published during the time in which you served?
A. Yes, I did. There wasn't much. In fact, there was very little of new literature. There was an awful rehashing of the literature by various people, but nobody had done any new work on it.
Q. Prior to your deposition today, have you had an occasion to talk with any of the fine attorneys in this room?
A. Yes. I've talked to Mr. Scott -- Mr. --
THE WITNESS: What's your last name?
MR. BAUER: Bauer.
A. -- Bauer.
Q. (By Mr. Kim) The gentleman who questioned you earlier in this deposition?
A. That's correct. That's correct.
Q. Have you had occasion to speak with anyone

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else?
A. About this case or about the weather or about I talked to --
Q. About this case. I'm sorry, Doctor.
A. No, I have not.
Q. Was Mr. Bauer the only person present in your meeting?
A. Well, sometime I think Mr. Featherstone put his head in the door once in a while. Sometime some of the counsel, in-house counsel at Monsanto, put their head in the door, too. But Mr. Bauer was the man I was talking to.
Q. Had -- did a gentleman by the name of Bob Kaley stick his head in the door while you were having conversations with Mr. Bauer?
A. No. But I've talked to Bob Kaley quite frequently.
Q. You've talked to Mr. Kaley, in fact, on numerous occasions concerning your testimony, have you not?
A. Not concerning my testimony. I've talked to him about information that -- chemical information that I was not cognizant of.
Q. You are not a chemist, are you?

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A. No, I'm not.
Q. Nor are you an analytical chemist?
A. No, I am not.
Q. And you have previously relied upon Mr. Kaley for such information as that which concerns the creation of furans?
MR. BAUER: Object to the form.
A. Not necessarily Mr. Kaley because there's been information in the literature about the creation of furans. And Mr. Kaley came, as I remember, rather late in the -- I don't know when he first came to Monsanto, but Bob was a relatively recent addition to Monsanto. As far as I know.
Q. (By Mr. Kim) Part of the job responsibilities and duties that you described for Mr. Bauer included the ordering and review of all toxic properties of -- with respect to any industrial chemical manufactured by Monsanto Chemical Company; is that correct?
A. Yes, sir. To see if -- to see what information there was and whether any more information was needed.
Q. Indeed, part of your responsibilities would

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include looking at the toxic properties of new materials prior to manufacturing; is that correct?

A. Yes, I think that's true.

Q. In other words, you would want to look at the raw materials that form the feedstock of that chemical?

A. Yes, sir.

Q. And look at their toxic propensities?

A. Yes, sir.

Q. You would also want to look at the by-products of that product to see if there were any toxic properties there?

A. If any by-products were known.

Q. And by "by-products," we're talking about such things that may happen with heating; is that correct?

A. Well, a chemical reaction, yes.

Q. How about the metabolism process within a human body?

MR. BAUER: Object to the form.

A. No, sir. I do not believe that that was reviewed for industrial chemicals because the theory in industrial -- in occupational medicine is to keep it out of your body.

Q. (By Mr. Kim) Would you agree with me that Monsanto Chemical Company has a corporate philosophy that it wants to manufacture and market safe products?
A. Yes, it does.
Q. They want to manufacture and market safe industrial chemicals?
A. Yes, sir.
Q. Part of that analysis is a concern for the health of individuals who may be exposed to that industrial chemical; is that correct?
A. Yes, sir.
Q. Another factor that Monsanto Chemical Company wishes to consider or should consider is the environmental concerns of that industrial chemical?
A. You're talking about right now? Or what are you talking about? What time frame?
Q. Well --
A. Because environmental concerns were not a big problem in the 1930's and Forties or Fifties. They certainty have been in the Seventies and Eighties and Nineties.
Q. I understand that they weren't a problem in the Thirties, Forties, and Fifties; but my

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question, Dr. Kelly, is: During that time period of 1930, 1940, and 1950, did Monsanto have a corporate philosophy that it did not want to introduce an industrial chemical that may cause environmental contamination?

A. They did not knowingly want to introduce it.

Q. Would you agree with me that it would be prudent manufacturing and marketing practice on the -- on behalf of Monsanto Chemical Company to have done prior testing as to the raw materials that made up the feedstock of the chemical sold?

MR. BAUER: Object to the form. Lacks foundation.

A. Let me get this straight. Monsanto buys a product from Supplier A.

Q. (By Mr. Kim) No, sir. And let's just use --

A. How do they get the feedstock? They don't make it themselves.

Q. Sure.

A. We have to start with something.

Q. Right.

A. What's your question?

Q. I'm -- my question, Dr. Kelly, is: Would Monsanto undergo efforts to determine the

WATER_PCB-00051362

toxicity of all the individual compounds that make up the feedstock of the final product?

MR. BAUER: Object to the form.

A. I'm -- we try to find out what the toxic properties of the chemicals that we use to make our finished product. These chemicals were bought from somebody. They were bought from oil companies, or they were bought from other chemical companies. We didn't go out and drill a hole for the chemical for ourself. We did try to find out what information was available on -- from the toxicological point of view on these raw materials. Yes, sir. We did that.

Q. (By Mr. Kim) And as I understand your testimony, then, Monsanto never did any independent testing on its own of the raw materials that made up the feedstock?

MR. BAUER: Object. Object to the form. Mischaracterizes his testimony.

A. I can't answer that because I do not believe that is correct. We did -- if we got a product from somebody else, we would write them and say, "What do you know about the toxicological properties of this product?"

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If they answered, which usually happened, "We don't know anything about it," then we would look to see if there was anything in the literature to see -- then I would talk to my conferrers in the same business who might be using the product. If this were a "me, too" product -- in other words, some other company had been making it first -- I would talk to the medical director of Dow or DuPont to say, "What do you know about this? You've been making this for a long time. Have you had any problems?" And he'd say, "No." Well, then, I wouldn't go any further than that.

If there was nothing known about it, we would run our basic tox -- our acute toxicity studies on this particular product, even though it was not our product. Yes, sir.

Q. (By Mr. Kim) Would you run those studies in-house at Monsanto?

A. No, we did not run them in-house. We ran them at Scientific Associates and Younger Laboratories, which were two relatively small toxicological laboratories in St. Louis.

Q. The reason I ask that, Doctor, is in the

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stack of exhibits that your attorney went through -- that Mr. Bauer went through with you earlier, I didn't notice any tests with respect to the toxic properties of any of the raw materials that make up the chemical compound known as "polychlorinated biphenyl." Were those tests done at Monsanto Chemical Company?

A. Well, let's take what is used for -- to make up polychlorinated biphenyl. You take benzene. Certainly there's lots and lots of information on benzene in the literature. We didn't have to run any tests on benzene.

Q. And that literature indicates that benzene is highly toxic?

A. Well, it's a toxic compound, certainly.

Q. Has a propensity to cause some forms of leukemia?

A. Yes, it does. We're talking about benzene, yes.

Then chlorine, certainly everybody knows what chlorine is. It's a war gas. It's used also in other areas, like making pure water. Chlorine in the acid form is in everybody's stomach.

WATER_PCB-00051365

So we do the toxicity of those things. We weren't going to investigate the toxicity of chlorine or benzene.

Q. Doctor, let me interject right here. Did Monsanto ever investigate any of the toxic propensities of chlorinated benzenes prior to the sale of polychlorinated biphenyls?

A. Now, there's a whole group of chlorinated bi -- of chlorinated hydrocarbons, the chlorinated benzenes. There's monochlorobenzene, dichlorobenzene, trichlorobenzene. No, I don't think we manufactured -- I don't think we manufactured any of the chlorinated benzenes. We may have manufactured trichlorobenzene for a short period of time, but there was literature on that. We -- no. The answer is "no," we did not.

Q. And what did the literature indicate to you with respect to the toxic potential of trichlorobenzene?

MR. BAUER: Object to the form. Indefinite as to time.

A. Well, it's a solvent.

Q. (By Mr. Kim) During the 1930's.

WATER_PCB-00051366

A. It's a solvent that is -- can be absorbed by inhalation. It's a material that can cause liver damage if you absorb enough of it, either by swallowing or inhalation. I'm not certain about its absorption through the skin.

Q. You would agree with me that some of the products that were used in the dielectric fluids by Westinghouse and General Electric were a combination of approximately 70 percent polychlorinated biphenyls and 30 percent trichlorobenzene?

A. Yes, sir.

Q. Did Monsanto ever undergo any tests as to whether there was a synergistic effect by the combination of such chemicals?

A. Yes, we did. We ran -- as I testified yesterday, we ran on Inerteen and a -- a Westing -- of Pyranol PPO, if that's -- or maybe it was Inerteen PPO.

Q. Monsanto never tested with respect to Inerteen or Pyranol, how that broke down in the human body?

A. No, we did not.

Q. You never ran a study that would look at the

WATER_PCB-00051367

blood or urine in the metabolized residues found in such?

A. No, we did not.

Q. Before we get any further into the testing, would you agree with me that a manufacturer who is selling industrial chemical compounds must foresee its reasonable uses and potential exposures to humans?

MR. BAUER: Object to the form.

A. I do not know how a manufacturer can foresee how a product is going to be used. We know that it's going to be used in some cases. We know if it's a dielectric, it's going to be used in an electrical application. But we don't know what a manufacturer is liable to use a product for. There are secrets in the -- proprietary secrets in the chemical industry.

(Whereupon Mr. Gallagher leaves the proceedings.)

Q. (By Mr. Kim) Your testimony is that it was prudent on the part of Monsanto to sell chemical products without an analysis of its

WATER_PCB-00051368

foreseeable uses?

MR. BAUER: Object to the form.

A. No.

Q. (By Mr. Kim) Is that correct?

A. No.

MR. BAUER: Object to the form of the question. Mischaracterizes his testimony.

MR. KIM: Hey, Scott, he can correct me.

MR. BAUER: Mischaracterizing his testimony is an objection to the form, Mr. Kim. And if you mischaracterize his testimony, I will object.

A. Will you repeat the question, Mr. Kim?

Q. (By Mr. Kim) You bet.

As I understood your answer -- and correct me if I'm wrong -- you testified that Monsanto could not and did not necessarily foresee all intended uses of its chemical product?

A. That is correct. Somebody could call up Monsanto and say, "I want a taker of 'X,' Product X." We would send them a bulletin that would show what we knew about the

WATER_PCB-00051369

toxicological properties of it. We would send them information about the safe handling data. But we would not require them to tell us what they were using it for.

Q. Would you send information along with that product to whatever manufacturer saying, "You should not mix this chemical with the following because it produces these toxic results"?

A. If we knew it did, we would tell them that; but there was no way we were going to take this product and mix it with every known chemical that could possibly be mixed with it.

Q. Did Monsanto -- with respect to polychlorinated biphenyls --

A. Yes, sir.

Q. -- during the time period you were at Monsanto, did Monsanto ever engage in any analysis that sought to identify reasonable and foreseeable uses of the product?

MR. BAUER: Objection. Lacks foundation.

A. We -- when the environmental aspects of PCBs became prominent, we stopped selling the

WATER_PCB-00051370

material for -- in areas that we thought we could not control the dissemination of the product.

Q. (By Mr. Kim) That would have been in 1967, somewhere in that time?

A. A little later than that.

Q. Prior to 1966, Monsanto Chemical Company did not engage in such analysis; is that correct?

A. The medical department did not. I'm not -- I cannot speak for Monsanto.

Q. During the time period that you were at Monsanto, were you aware of any corporate effort to identify the foreseeable means of exposure to humans of polychlorinated biphenyls?

A. Say that over. I --

Q. That was a bad question.

During the time period you were at Monsanto, did the company engage in any analysis with respect to the different ways in which a human may be exposed to PCBs?

A. Well, there are only three ways you can get exposed. You can swallow it. You can get exposed through the skin. It can be exposed by breathing the vapors. We recognize the

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fact that we did not recommend it to be taken internally. It was not a food chemical. We did --

Q. It's not like table salt?

A. No, it isn't. But table salt isn't so good, either. So if you're talking about -- if you want to get down to the nits and gnats of LD_{50} and stuff like that. But we did recognize the fact --

Q. Well, just out of curiosity, Doctor --

A. 4. It's 4. 4 grams per kilo for salt.

Q. Salt?

A. Yes.

Q. Is salt more toxic than PCB?

A. No, of course not.

Q. Is PCBs more toxic than salt?

A. Yes, certainly.

Q. Any representation to the contrary you would find a misrepresentation?

A. Yes. But what I am representing is that all chemicals have a toxic potential. Now, getting -- what was your question again? We got off on a sidetrack.

Q. We did. I'm very interested about salt. Did Monsanto during the time period

of 1930 to 1974, when you retired, ever engage in any analysis concerning the mechanisms of exposure to humans?

A. I don't know what you mean by "the mechanisms."

Q. It's not clear.

What I'm talking about are instances, for instance, where an occupational worker may work on a daily basis with his hands in the chemical. Or did they engage in any analysis on whether capacitors and transformers could leak and the type of exposure a worker would be exposed to in that instance?

A. Well, we took that into consideration when we said, "Do not" -- "avoid repeated or continuous skin contact." We took the possibility of leaks into consideration when we stated it in our literature and on our labels, "Do not breathe in confined spaces or in elevated temperatures." The material at ambient temperatures, at room temperature, does not present a danger.

So we took it to the -- account those particular possibilities and so warned

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them about it. We didn't go out and make an investigation of where the material could leak or be open -- leak in the industry.

Q. Certainly Monsanto Chemical Company knew of the potentials for leaks and accidental exposures to polychlorinated biphenyls?

A. Yes. There are always leaks.

MR. BAUER: Mr. Kim?

A. The chemical industry --

MR. BAUER: I'd like to continue the practice of breaking Dr. Kelly's deposition approximately every hour or when you reach a --

MR. KIM: No problem.

MR. BAUER: -- convenient breaking point.

MR. KIM: I'm here.

THE VIDEOGRAPHER: We're going off the record. It's 12 minutes after 10:00 o'clock. This is the end of Tape No. 3.

(A recess was taken.)

THE VIDEOGRAPHER: It's 28 minutes after 10:00 o'clock. This is the beginning

WATER_PCB-00051374

of Tape No. 4, and we're back on the record.

Q. (By Mr. Kim) Doctor, I understand that recently you testified on behalf of Monsanto in a case involving the Brio dump site in Texas; is that correct?

A. I testified in this case. I have to object to it on behalf of Monsanto.

Q. Sure. You --

A. I don't know -- I don't know by whom I was subpoenaed.

Q. You gave testimony in that case?

A. Yes, I did.

Q. Can you amplify for me on what subjects you testified on?

A. I really can't. I mean, I don't think I read my deposition in that case.

Q. Do you have a recollection of some of the topic areas?

A. Well, I think they were on the general toxicity of PCBs, what we -- what we did about them. There was considerable discussion about PCBs in landfills, but that's all I remember.

Q. Would your testimony have been to the aspects that PCBs were safe?

WATER_PCB-00051375

MR. BAUER: Object to the form.

A. "Safe" is a term that needs more definition.

Q. (By Mr. Kim) You understand that the Brio case involved a landfill or an allegation of dumping of wastes that included PCBs that may have migrated to the groundwater in the surrounding neighborhoods?

A. That was a supposition, yes. It was brought up. I have no evidence of that.

Q. I assume your testimony was that PCBs and the other compounds associated with that dump could not have caused the harms that were being alleged by the children and the families in that case?

MR. BAUER: Object to the form.

A. They never -- that was never brought up in my case, in my deposition. They didn't -- I had never seen any of the medical records. So that was not brought up.

Q. (By Mr. Kim) Is this a deposition that Mr. Jamail took?

A. Yes.

Q. Do you have a copy of that deposition?

A. No, I do not.

Q. Okay. When we took our break, we were

talking about foreseeing reasonable uses of chemical compounds. Can we agree that it's also prudent on the part of a manufacturer, prior to marketing and selling a chemical -- industrial chemical, to foresee the hazards associated with such chemicals?

A. Hazards to whom or to what? What hazards?

Q. Any hazards associated with that chemical. In other words, we don't blindly want to sell industrial chemicals without knowing what their toxicity or reactions may be?

A. Well, that's true, yes.

Q. Okay. And can we agree that it would be prudent on the part of a manufacturer if after identifying such hazards, that we seek to eliminate those hazards to the extent that we can without compromising the utility of the industrial compound?

A. Well, remember now -- that can't be answered "yes" or "no" because that's a little confusing to me. The hazard is in the customer's plant; is that correct? Is that what we're talking about?

Q. No, sir. Let's take, for example, benzene.

A. Yes.

WATER_PCB-00051377

Q. And we know that -- we can agree that benzene is toxic?
A. Yes, sir.
Q. And that it forms cancers and certain forms of leukemia?
A. I don't know about cancers. It does form certain forms of leukemia.
Q. Can we agree that if a manufacturer is going to sell benzene compounds, that, to the extent possible, it should try and eliminate through the development of that chemical those mechanisms that cause that harm?
MR. BAUER: Object to the form. Vague.
A. I'm confused about the mechanism. Are you talking a mechanism of the chemical itself? You should somehow withdraw the ability of benzene to cause leukemia?
Q. (By Mr. Kim) Absolutely. If you can.
A. It would be nice if you could, but --
Q. Sometimes you can't?
A. Well, I don't know anybody who -- yes, there's certainly an awful lot of times. Most of the times you can't.
Q. Well, if you can't, can we agree that it

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would be prudent on the part of a manufacturer to at least guard against or inhibit exposure to that particular mechanism which may cause the harm?

A. Yes. But we -- you do that by telling the worker or the customer how to avoid problems. You do not police his area.

Q. Exactly. If you cannot eliminate the hazard or harm and you cannot guard against it within the instructural integrity of the product, then at the very least you should warn them --

A. Yes.

Q. -- about the possible harms?

A. Yes. You warn about the properties of the material. He -- the user is the one that knows what his exposure is.

Q. In order to do such and to identify such hazards, can we agree that it's important to have some testing done on the product prior to its sale?

A. Yes, sir.

Q. And that testing, from a prudent manufacturing standpoint, should include, to the extent possible, acute exposures?

WATER_PCB-00051379

A. Yes, sir.
Q. Chronic exposures?
A. No. No, sir. No. Because by and large, an industrial chemical is not tested for chronic exposure because you do not want chronic exposure. You -- you can warn against chronic exposure; but you cannot warn against acute exposures because you know you're going to have spills, you know things are going to happen where you get an acute exposure. But you cannot --
Q. Well, Doctor, how can you warn against chronic exposures when you don't know the effects of that exposure because you've done no testing?

MR. BAUER: Object to the form. Calls for speculation in the -- this hypothetical whatever. You moved from all products down to some specific hypothetical product, I take it.

A. Will you repeat your question, please?
Q. (By Mr. Kim) You bet. And your attorney is going to object to about every question; but as long as you and I have an understanding, we'll try and get through this.

WATER_PCB-00051380

Can we --

MR. BAUER: Move to strike the characterization of counsel about my conduct.

MR. KIM: Is there anything else you have, Scott? Anything else?

MR. BAUER: Go on.

Q. (By Mr. Kim) Doctor, how can you warn about the effects of chronic exposure if you undertake no chronic testing to determine what the effects of chronic exposure are?

A. Because you can make a judgment call from the acute testing of a product and from the experience of the people who have been exposed to that during the past years. You can make a judgment call. You do not have to have chronic animal testing.

Q. And Doctor, I think this is where you and I are having difficulty is because I'm talking about prior to the sale commercially of a product. Do you agree that testing should be done prior to the introduction of an industrial chemical in the commercial market?

MR. BAUER: Object to the form. Calls for speculation.

A. Yes, some testing should be done.

WATER_PCB-00051381

Q. (By Mr. Kim) And we can agree that at least acute testing should be done prior to the commercial sale of products?
A. Yes, sir.
Q. But we have a difference on whether chronic testing should be done prior to the --
A. Yes.
Q. -- sale of a compound?
A. Yes.
Q. Because as I understand your testimony -- and your attorney will object as a mischaracterization, and you correct me if I'm wrong. But as I understand your testimony, it is because we can draw inferences from the acute testing?
A. And the experience of the exposure to humans in our manufacturing, yes.
Q. But prior to the sale of such compounds, there will be -- there would be no such manufacturing experience?
A. Oh, yeah.

MR. BAUER: Object to the form. Calls for speculation. Is an incomplete hypothetical.

A. No, that is not correct.

WATER_PCB-00051382

Q. (By Mr. Kim) Okay. Do you think it's necessary within the acute testing to do exposure modalities?
A. What do you mean by "exposure modality"?
Q. The mode of exposure.
A. Yes.
Q. We can agree that toxicity may vary depending on the route of exposure?
A. Somewhat, yes.
Q. Sometimes -- what are the routes of exposures you understand?
A. Well, it's either you take it orally, it's absorbed through the skin, or absorbed through the lungs.
Q. Can we agree that at least acute testing should be done with respect to all three modes of exposure prior to the commercial sale of industrial chemicals?

MR. BAUER: Object to the form.

A. If there is a possible -- the answer is "yes."

MR. KIM: And Scott, I'll give you a running objection to the form on every question if you want it.

MR. BAUER: I'll state my

WATER_PCB-00051383

objections to the form to questions that have problems with them so that you have an opportunity to correct them.

Q. (By Mr. Kim) Do you feel that it's also necessary to provide adequate warnings and labels to the customers and end users of industrial chemicals?

A. You have two questions there. One is customers.

Q. You're right. Let's break that down.

A. Yes.

Q. Customers first.

A. Yes.

Q. How about end users?

A. I think that is a customer's responsibility. We give him the information, and it's up to the customer to give his customers the information.

Q. Would that be your opinion even if in its hazard analysis Monsanto Chemical Company knew that end users would be exposed to such chemicals?

MR. BAUER: Objection. Calls for speculation.

A. That's really a speculation. I can't -- I

WATER_PCB-00051384

can't answer an assumption. I just don't know.

Q. (By Mr. Kim) Do you know if during the time period when -- as you testified earlier, you had access to some of the corporate executives at Monsanto Chemical Company; is that correct?

A. I had access to the people?

Q. Yes.

A. Yes.

Q. And you entertained dialogue in correspondence to your duties as medical director of Monsanto Chemical Company?

A. With whom?

Q. With some of the corporate executives.

A. Yes.

Q. Such as Mr. Bock and those gentlemen.

A. Yes.

Q. Do you have any recollection if you engaged in conversations concerning the type of people who may possibly be exposed to polychlorinated biphenyls?

A. Yes. It varied with the time frame.

Q. In the 1930's did you foresee that industrial workers in the Monsanto plants or

WATER_PCB-00051385

Westinghouse plants or GE plants would be exposed to polychlorinated biphenyls?

A. I did not know what circumstances in Westinghouse or GE was -- were that might expose them. I just did not know. I knew what happened -- would happen at Monsanto, yes.

Q. Based upon your knowledge of what happened at Monsanto, did you arrive or did you even think about any conclusions as to whether Westinghouse or General Electric workers may be exposed to such chemicals?

A. Well, I thought about it; but I knew nothing about their operations. I was never in a Westinghouse plant or GE plant.

Q. Did you seek to investigate the occupational settings of those companies to whom you sold polychlorinated biphenyls?

A. No. Because I knew that these were both sophisticated companies. I knew they both had industrial hygiene people. I knew they both had a very excellent reputation in their medical department, and I knew also they knew as much about the material as we did. After all, this was General Electric's product.

Q. Then you foresaw that General Electric or Westinghouse would take the polychlorinated biphenyls that you sold them, put them in some product or form, and sell them on; is that correct?
A. Yes.
Q. You knew that the polychlorinated biphenyl fluid or compound was being passed on down the retail chain; is that correct?
A. "Retail"? I don't know what you mean by that.
Q. The distributive chain.
A. Yes. It's not going to a hardware store.
Q. No, sir. But in other words, Westinghouse and General Electric were not the final user of the product?
A. No, sir.
Q. Did Monsanto Chemical Company ever engage in any analysis concerning warnings or labels that would reach the ultimate user of the product?
A. The medical department did not. I cannot speak for the rest of Monsanto.
Q. Of course, any warning or label that was written or drafted during the time period of

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1936 to -- excuse me -- from the time period of 1946 until 1974 would have to have been approved by the medical department?

A. That's correct.

Q. And during that time period, you were the head of the medical -- you were the medical director?

A. Yes, I was.

Q. Would that have been -- made you the No. 1 man in that department?

A. Yes.

Q. So you would have seen any warning or label?

A. Yes. But remember, we had people in the development department who talked to GE and Westinghouse. We had people in the marketing department who knew from their information obtained from the medical department what the toxicity was, what the warning statements were. And whether they had contact with GE or Westinghouse, I don't know. But I have to repeat my statement, that GE and Westinghouse knew as much about the toxic properties and the way to avoid -- and the way to avoid any harm. They knew as much as we did, probably more.

WATER_PCB-00051388

Q. Because of their occupational experiences?
A. Yes. It was occupational experiences and probably the dealings with their customers.
Q. Was there correspondence that went back and forth between Monsanto and your medical department and various individuals in corresponding positions at Westinghouse and General Electric?
A. There was correspondence I've seen with Westinghouse. I have not seen correspondence, to the best of my recollection, with GE.
Q. Did you try and share the knowledge y'all had accumulated collectively about PCBs during this time period?
A. Oh, certainly. I mean, the representative -- yes. Representatives from GE and Westinghouse were at the Drinker symposium. Any information we published, our inhalation studies, which is available to everybody in the Country.
Q. Tell me what your sources of information were with respect to the toxic properties of those raw materials that made up the feedstock of polychlorinated biphenyl.

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A. Well, as I said earlier, the sources were the literature; and there was an enormous amount of literature on benzene. There was certainly enormous amount of information on chlorine dating back to World War II, World War I. It had a lot -- much earlier than that. That's the sources of -- it was common knowledge in the medical profession. Not only occupational medicine, but the medical profession knew about it.

Q. What were your -- did you have occasion to look at employee complaints with respect to benzene and chlorine?

A. We did not have a -- yes. But we did not have any complaints, that I recall, about benzene.

Q. How about customer complaints?

MR. BAUER: Object to the form.

A. We didn't sell benzene to customers.

Q. (By Mr. Kim) How about internal testing? Did you have access to any internal, in-house Monsanto studies concerning benzene?

A. No, sir. We did not do any in-house studies on benzene. There was adequate -- adequate studies in the literature.

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Q. How about occupational testing? Occupational studies?
A. There were -- at various periods of time, there were occupational, epidemiological studies on benzene.
Q. How about Government testing?
A. Who?
Q. Government testing, state or Federal?
A. I don't recall the Government testing. I mean, there may have some. I do not recall them.
Q. What were your sources of information on the toxic properties of chlorinated benzenes?
A. The literature.
Q. Anything else?
A. Well, there may have been topics -- there may have been presentations on the toxicity of chlorine and benzene in some of the meetings that I went to, some of the occupational medical meetings I went to. But the literature was fairly adequate on the toxicity of the chlorinated benzenes.
Q. Did you have any information or evidence concerning the breakdown or by-products of chlorinated benzenes in the human body?

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A. No, sir. I do not recall any.
Q. In the environment?
A. I don't know about the chlorinated benzene. Later in the -- about in the Seventies, there was information available about the breakdown of chlorinated -- polychlorinated biphenyls in the environment.
Q. Mr. Bauer presented a number of studies that he discussed with you in his examination of you, and I want to talk about that. But prior to talking about those, I want to ask you some questions about what Monsanto did not test about.

As I understand your testimony -- and correct me if I'm wrong -- as the medical director of Monsanto, you were responsible for ordering or directing all studies to be done concerning polychlorinated biphenyls during the time period of 1936 to 1974?
A. Not all studies. All studies relating to the toxic properties of the material.
Q. Okay. And as the director of Monsanto Chemical Company with that charge, I understand that you never requested any epidemiological studies with respect to PCBs

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to be done during that time period?
A. That is correct.
Q. You never tested for furan decomposition during that time period?
A. What is the time period again?
Q. 1936 to 1974, the entire time you were employed.
A. Yes. They tested. They didn't find it. They tested it from -- they would look at it from the late Sixties, '69, and through the Seventies. Till I retired, there was -- they were looking for it, certainly.
Q. Out of curiosity, Doctor, when did Monsanto Chemical Company first become aware that their PCB products might be contaminated with polychlorinated -- with polydibenzofurans?
MR. BAUER: Object to the form. Vague.
A. I'd have to assume. I do not know when they -- when Monsanto -- what was the question?
Q. (By Mr. Kim) When did Monsanto first learn that their polychlorinated biphenyls might be contaminated with trace amounts of polychlorinated dibenzofurans?

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MR. BAUER: Same objection.

A. I do not know when anybody at Monsanto first learned about the possibility. They may have had this possibility in their mind. They were looking for it. So I imagine it was pretty close to when they started looking.

Q. (By Mr. Kim) Which was?

A. Late Sixties, early Seventies.

Q. We can agree that furans are much more toxic than PCBs?

A. Yes, sir.

Q. We can agree that furans -- well, strike that.

Did Monsanto Chemical Company ever engage in any analysis to identify the contaminants or, as you called in your direct, scavenger chemicals that made up the polychlorinated biphenyl compound?

MR. BAUER: Object to the form.

A. No, sir, they did not. They put the scavengers in, as I remember, at the request of their major consumers, Westinghouse or GE. We did not manufacture the scavengers, to the best of my knowledge. We didn't test them, to answer your question.

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Q. (By Mr. Kim) Monsanto never, under your direction as medical director at Monsanto Chemical Company, engaged in any studies to determine the synergistic effects of these scavenger compounds with your polychlorinated biphenyl?

A. Well, certainly when we tested the material, we tested everything that was in it. In other words, if you're testing soup, you get the toxicological information on the soup. You don't test the individual carrots or the onions or anything else in there. So whatever we tested on polychlorinated biphenyl, we tested the base material with whatever else was supposed to be in there.

Q. Of course, when you say "we," Monsanto had to contract out such testing because during the time period that you were medical director at Monsanto, Monsanto Chemical Company did not have its own testing laboratories; is that correct?

A. Yes. I don't see the difference. We got the information. We paid for the information. Whether we paid for it in-house or out-house, it's the same thing.

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Q. And we're going to talk about those payments in a while.

Did Monsanto Chemical Company ever test for the breakdown or decomposition products of polychlorinated biphenyl?

A. Yes.

Q. During the time period that you were medical director?

A. Yes.

Q. Have you ever testified to the contrary?

A. Now, let's be sure we're talking about the same thing. They tested for the breakdown periods -- products when lightning might strike a transformer. They're looking for breakdown material there. That's what I testified for -- about.

Q. How about when PCBs entered the human body? Did Monsanto Chemical Company ever engage in any testing with respect to how it metabolized or broke down in the human body?

A. No.

Q. Or in any of the by-products that may occur through such decomposition?

A. In the human body?

Q. Or metabolism.

WATER_PCB-00051396

A. In the metabolism? No, sir.
Q. Did you ever order any studies to check what residues or by-products might be present in a human's blood or urine who is exposed to PCBs?
A. When the instrumentation became available and the analytical expertise became available, we had some fat studies carried out in St. Louis. Not on employees, but on individuals who had died of other reasons, at the coroner's office.
Q. Have you ever testified to the contrary with respect to that? And I'm talking specifically about the time period of 1936 to 1974 when you retired.
A. It all depends when I testified. I do not know when I found out about the -- oh, until 1974?
Q. Yes, sir.
A. I don't know when they did that. I thought they did that after 1974.
Q. Okay. Did you ever order or direct any studies to be done dealing with the enzyme reactions that PCB may cause in humans?
A. We ran enzyme studies on some of our workers,

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but we did not study the mechanisms of how the enzymes were formed or why they were formed or anything of that sort.

Q. And this was during the time period 1936 to 1974?

A. Yes, sir.

Q. And as -- and I think we talked about this, but just one more time. As I understand it, you never directed or asked for any studies that dealt with the synergistic effects of PCBs and other compounds?

A. Well, I told you we've testified -- I testified that we examined the acute toxicity of compounds of both Inerteen and Pyranol, which had at that time trichlorobenzene in it.

Q. What other compounds did it have in it?

A. I don't know. We made it according to their specifications. I don't know what it was.

Q. Did you ever do any testing on the synergistic effect of those compounds that may occur with respect to heat?

MR. BAUER: Object to the form.

A. No, sir, that I could recollect.

Q. (By Mr. Kim) How about the relationship and

the effect of those compounds on humans who may have preexisting liver problems?

A. How about it? What? Is this a question?

Q. Yeah. Was a test ever directed with respect to that?

MR. BAUER: Object to the form. Vague.

A. No, sir, we did not.

Q. (By Mr. Kim) Did you ever direct a test to be done on -- with respect to how those PCB products related to individuals who may drink alcohol?

A. No, sir, we did not.

Q. Were any comparison -- comparison analysis made during the time you were medical director on the relationship between polychlorinated biphenyls and DDT?

A. Were any -- say that over. I lost my concentration.

Q. Did Monsanto Chemical Company seek to engage in any analysis that would have compared the similarities or differences between PCBs and DDT during the time period that you were at Monsanto?

MR. BAUER: Objection.

WATER_PCB-00051399

Foundation.
A. Not that I know of.
Q. (By Mr. Kim) As the medical director of Monsanto Chemical Company from the time period of 1936 to 1974, were you aware of whether Monsanto Chemical Company manufactured DDT?
A. We did at some time. I do not know how long we manufactured it or when we manufactured it.
Q. Did Monsanto manufacture DDT during the time period you were employed?
A. Yes, I think they did. I do not know how long or when.
Q. Would the toxicological testing and analysis have fallen under the department of the medical director during -- with respect to DDT, as well?
A. When we -- we did not, to the best of my knowledge, test the toxicological properties of DDT because when we manufactured DDT, the toxicological product -- properties were well-known.
Q. Did Monsanto engage in any analysis that compared DDT and PCBs?

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MR. BAUER: Objection.
Foundation.
A. I really don't know what you mean by "analysis." Did we check to see if PCB was an insecticide vis-a-vis DDT?
Q. (By Mr. Kim) No, sir. Did Monsanto engage in any or did you direct any studies to be done talking about the chemical similarities between DDT and PCB?
A. What kind of studies?
Q. Analytical chemistry.
A. I don't know.
Q. Would that have been something that would have been under your direction at -- during this time period?
A. Well, I'm sure that people that manufactured DDT for Monsanto knew the chemical formulation of DDT. They also knew the chemical formulation of PCBs. Is that what you're asking? Did we compare those two?
Q. Absolutely.
A. Well, I find that hard to answer, Mr. Kim, because you have to know the formulation of DDT how to make it, don't you?
Q. Absolutely.

WATER_PCB-00051401

A. Well, they made it.
Q. Monsanto made it?
A. Yes.
Q. Monsanto had to have known the formulation?
A. Yes.
Q. And Monsanto also made PCBs?
A. Yes.
Q. Monsanto had to have known the formulation from a chemical standpoint of PCBs?
A. Yes.
Q. In 1968 when the Jensen study came out, Monsanto had a concern that the PCBs being reported in the animals and species in that study might actually just be DDT; is that correct?
A. I don't know if you -- if it's -- yes. If it's a concern, we were interested to know what he was finding, whether it was DDT or whether it was PCB.
Q. And my question is: Given that study and given the analysis that went on afterward, did Monsanto Chemical Company ever engage in any study or analysis or discussion that discussed the chemical similarities or differences between DDTs and PCBs?

MR. BAUER: Objection.
Foundation.
A. I don't know whether they did or not.
Q. (By Mr. Kim) Did anyone under your charge in the medical department?
A. No, sir. We knew that DDT was DDT is an insecticide. We knew that PCB was a different formulation, different chemical structure, and was a dielectric, a plasticizer.
Q. You would agree with me that DDT persists in the environment?
A. Yes.
Q. And you would agree with me that it has now been found, since the Jensen study and forward, that PCBs may accumulate in the environment, as well?
A. Yes, sir.
Q. Did that similarity cause any concern about the chemical relationship and nonbiodegradable -- biodegradability of both chemicals to Monsanto Chemical Company and in particular the medical department?
A. No, sir, it did not.
Q. Let's talk about some of the studies that you

discussed earlier with Mr. Bauer.

MR. KIM: Let's take about a two-minute break and let me bring my notebooks out.

THE VIDEOGRAPHER: We're going off the record. It's one minute after 11:00 o'clock.

(A recess was taken.)

THE VIDEOGRAPHER: It's 11 minutes after 11:00 o'clock. We're back on the record.

Q. (By Mr. Kim) Doctor, I want to turn and talk specifically about some of the testimony that was developed yesterday in Mr. Bauer's examination.

A. Yes, sir.

Q. As I understand, you were formally named medical director in 1946?

A. That's correct.

Q. Part of your responsibilities during that time period would have included developing the industrial hygiene program for Monsanto Chemical Company?

WATER_PCB-00051404

A. Yes, sir.
Q. In other words, that would entail such duties as monitoring the workplace?
A. That's correct.
Q. Monitoring or testing for exposures or leaks?
A. Yes, sir.
Q. Did Monsanto Chemical Company ever do any atmospheric testings while you were there at Monsanto Chemical Company?
A. Atmospheric testing in their plants?
Q. Yes, sir.
A. Yes, sir.
Q. Did the atmospheric concentrations -- were atmospheric concentrations for PCBs ever measured?
A. Yes, sir.
Q. Which plants were they measured at?
A. I know Anniston. I'm not -- I don't recall whether we did it at East St. Louis or not.
Q. East St. Louis would also be --
A. The Krummerich plant, the Sauget plant.
Q. Okay. Do you have a recollection of what the measurements of those atmospheric testings were? And if you don't, you don't.
A. No. My recollection was that they were under

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the point five milligrams per cubic meter.
Q. And your testimony, as I understood it yesterday, was point five milligrams per cubic meter fell within the MAC, or maximum allowable concentration?
A. For 1254 it was 12, and for 1242 it was 1 milligram per cubic meter.
Q. When did Monsanto Chemical Company first start making atmospheric measurements?
A. I don't recall the exact date. I think it was sometime probably in the Fifties. I'm not sure.
Q. Prior to 1950 -- or the Fifties when these atmospheric tests were done, did the occupational workers -- and I'm not going to hold you to that specific date. Your attorney is having a hemorrhage over here. Did the --

MR. BAUER: Objection. Move to strike.

Q. (By Mr. Kim) Did the workers --

MR. BAUER: It's --

Q. (By Mr. Kim) -- at Monsanto --

MR. KIM: Excuse me. Are you -- do you have anything else?

WATER_PCB-00051406

MR. BAUER: Just ask questions, John.

Q. (By Mr. Kim) Did the workers have knowledge of the fact that they were working with a polychlorinated biphenyl?

A. Yes, sir.

Q. Was it called a "polychlorinated biphenyl" during that time period, or was it still called a "chlorinated diphenyl"?

A. I think it was "diphenyl" at that time.

Q. And what representations during the 1950's did Monsanto make to its occupational workers as to the toxicity of the material that they were working with?

A. We stated it was a mild to moderate industrial -- mild to moderate toxicity for an industrial chemical.

Q. Did you tell them how that toxicity might manifest itself?

A. Not -- no, sir.

Q. You did not tell them that one sign of such toxicity could be chloracne?

A. No, sir. We did not because we did not have chloracne in our Monsanto employees.

Q. You did not tell them that literature and

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studies indicated that there might be some liver problems associated with exposure to polychlorinated biphenyls or chlorinated diphenyls?

A. No, sir. Because we were quite sure they were not getting any liver problems.

Q. Why were you quite sure they were not going to get any liver problems?

A. Because they were examined yearly.

Q. And during this -- were they all examined by you, Dr. Kelly?

A. No. None of them were examined by me. The only ones -- time I ever examined people, I saw some of the skin conditions that they had, residues from the Swann episode.

Q. Of course, those workers ultimately became Monsanto workers?

A. That's correct.

Q. And we can agree that in that instance there was a chloracne outbreak?

A. Yes, sir.

Q. Now, your testimony yesterday was the outbreak was not caused specifically by a chlorinated diphenyl but because of a bad benzene in the mixture?

WATER_PCB-00051408

A. Yes, sir.
Q. Okay. And that was documented in the -- was it the Jones and Alden study?
A. That was their opinion, also.
Q. Okay. And that is one of the studies that you relied upon in determining that there would be no chloracne or liver problems in an occupational setting?
A. In that -- in an occupational setting with Monsanto. In addition to that particular study, there were about two to three years of exposure with a new benzene formulated diphenyl; and no chloracne had occurred.
Q. Did Monsanto during the time period of 1936 to the mid-1950's subscribe to the theory that if you prevented all means of exposure to the chemical compound, then the corresponding toxicity would have no consideration?

MR. BAUER: Object to the form.

A. Well, I don't think that ever came up. The theory was we knew what the toxicity was. We knew how to avoid the exposure. Yes, sir.
Q. (By Mr. Kim) The reason I ask, Doctor, is I have a notation -- and it's not exact of what

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you testified as to yesterday, and I just wanted to clarify that for me -- where I thought you told Mr. Bauer that if there were no means for exposure, then toxicity became of no consideration.

A. Well, if you knew that that condition was going to keep on existing, certainly you always have a consideration for the toxicity of the compound. But if you know that there are not -- it's not going to be an exposure, that is not a salient point in your thinking.

Q. And when we're talking about exposures to occupational workers, we have to account for not only those exposures that may occur through some failure in the hygiene program, but also those failures that may occur accidentally?

A. I do not know what you mean by the "failure in the hygiene program." You mean the worker is sloppy?

Q. No. What I'm talking about, Dr. Kelly, is the fact that the hygiene program may be established where we allow PCB vapors at more than 5 milligrams per cubic --

A. Point five.

WATER_PCB-00051410

Q. Point five. Excuse me.
A. Well, there may be episode -- may be times when that is exceeded. But that's also -- at times, some leaks.
Q. Right. And that would just be a breakdown in the industrial hygiene program?
MR. BAUER: Object to the form.
A. Well, I don't think there's any relevancy between that and the industrial hygiene program.
Q. (By Mr. Kim) Okay. You have to anticipate that workers may be exposed through accidents that may occur in the workplace?
A. Yes, sir.
Q. Did Monsanto ever contemplate that its occupational workers would never be exposed to PCBs?
A. No, sir. We never --
Q. Toxicity should have always been a consideration, then?
A. It was.
Q. The first exhibit, if you'll turn to Exhibit 1 --
A. Yes, sir.
Q. -- that Mr. Bauer and you discussed yesterday

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was the Jones and Alden study; is that correct?

A. Yes, sir.

Q. Do you make a distinction between "acute poisoning" and "systemic poisoning"?

A. No, sir. They're talking about two different things.

Q. So you do make a distinction between the two?

A. Yes. There's acute local poisoning, there's acute systemic poisoning. There is a difference.

Q. Can you tell this jury what you understand the difference to be between the "acute local poisoning" and "systemic poisoning"?

A. Yes. If you spill turpentine on your hands, you will get redness and chapping on your hands. If you have an acute -- if you put aniline on your hands, you will get an absorption of aniline; and that will cause "systemic poisoning."

Q. Systemic poisoning -- one method of determining "systemic poisoning" is by looking at an individual's signs or symptoms; is that correct?

A. Well, you don't see the symptoms. I mean,

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you listen to the symptoms.
Q. You made a distinction yesterday between "signs" and "symptoms" -- and I believe, as I understand it -- and correct me if I'm wrong -- that "symptoms" are what a worker or a person would describe to you as to what they're feeling. They're more subjective?
A. Yes.
Q. And a "sign" is something that can be objectively observed or clinically determined?
A. Yes, sir.
Q. For instance, chloracne would be a sign of systemic poisoning?
A. Yes, sir.
Q. A symptom -- what are some of the symptoms that a doctor or occupational director may elicit? Would loss of weight be a symptom?
A. Yes, sir.
Q. Would chronic fatigue be a symptom?
A. Yes, sir.
Q. Joint pain?
A. Yes, sir.
Q. Loss of appetite?
A. Yes, sir.

WATER_PCB-00051413

Q. Loss of libido?
A. Yes, sir.
Q. Do you have an opinion as to whether systemic poisoning is more likely to occur with acute exposure or chronic exposure to an activator?
A. To which?
Q. To a chemical compound.
A. Well, do you want to be specific about the chemical compound? I mean, if you take cyanide, you get an acute exposure, you get an acute problem. You do not get chronic problems from small amounts of cyanide.
Q. There is -- I agree. We never get a chance to learn about the symptoms in those instances, do we?
A. That's correct.
Q. No one to talk to. In those instances -- and let's just use polychlorinated biphenyls.
A. Yes, sir.
Q. -- where there is a potential -- let's say it's been alleged that there could be systemic poisoning.
A. Yes, sir.
Q. Do you have an opinion, as the medical director of Monsanto, as to whether those

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symptoms are likely to develop as a result of acute exposure or more so because of chronic exposure to PCBs?

MR. BAUER: Object to the form.

A. Well, I can only tell you what my experience has been. We have heard of episodes of acute exposures to PCBs at elevated temperatures that give liver problems. We have not had any reports of chronic -- of symptoms or problems occurring from chronic exposure. Conceivably you could get both. If you inhale a great deal of PCBs at elevated temperatures, you're going to get a chemical hepatitis and liver problems.

Q. (By Mr. Kim) Monsanto Chemical Company never engaged or requested chronic testing until the IBT studies; is that correct?

MR. BAUER: Object to the form. Vague.

A. We did what was accepted in those days in the Fifties as chronic inhalation studies. We ran them for 150 days. That's five months. That was a chronic testing.

Q. (By Mr. Kim) Monsanto Chemical Company never ordered or directed testing to be done that

were lifetime studies with respect to the particular species involved in the study?

A. Until the Seventies.

Q. Until the Seventies?

A. Until '68, yes.

Q. And that was the testing done by Industrial Bio-Test?

A. Bio-Test. Bio-Test Laboratories.

Q. Okay. Turning to the Jones and Alden study, or Exhibit 1, if you'll turn to Page 1024 of that study.

A. Yes, sir.

Q. And I'm under the caption where it says, "Report of a Case."

A. Yes, sir.

Q. Do you accept the findings of Jones and Alden?

MR. BAUER: Object to the form.

A. To his findings? What he saw? Yes. I don't accept some of his opinions.

Q. (By Mr. Kim) Do you accept the proposition that he saw a condition that could be described today as chloracne?

A. Yes, sir.

Q. Do you accept the proposition that he

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observed workers who complained of lassitude?
A. Yes, sir. I believe I've seen that in there someplace. Yes, I do.
Q. And Doctor, let's -- I want you to be clear. It's under "Report of a Case." It's about nine lines down.
A. Lassitude. Yes. He complained in December of 1933 of lassitude.
Q. Loss of appetite?
A. Yes.
Q. Loss of libido?
A. Yes.
Q. Would that cause you some concern about systemic poisoning?
A. In this particular case, with that particular chlorinated diphenyl benzene, yes.
Q. Aside from changing out the benzene, did Monsanto Chemical Company engage in any further analysis with respect to its chlorinated diphenyl product to determine whether systemic poisoning was likely with chronic exposure?
MR. BAUER: Object to the form. Mischaracterizes his testimony that Monsanto was the company that switched the benzene

WATER_PCB-00051417

supply.

A. Repeat it.

Q. (By Mr. Kim) Aside from ensuring that the PCBs that Monsanto were selling did not contain the same benzene compound as that analyzed in the Jones and Alden study, did Monsanto Chemical Company under your direction -- excuse me. Did Monsanto Chemical Company engage in any studies as to the effects of systemic poisoning from chronic exposure?

MR. BAUER: Object to the form.

A. Yes, we did. We did not do animal studies, but we examined our workers who had chronic exposure to certain amounts of chlorinated biphenyl. And they had no systemic effects.

Q. (By Mr. Kim) On Page 1027 --

A. Yes, sir.

Q. -- at the very top, Jones and Alden found that 23 of the 24 men working with chlorinated diphenyl during a period from the summer of 1932 to October of 1933 reported chloracne; is that correct?

A. That's what he says, yes, sir.

Q. And several other -- several of them had -- I

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can't read it -- some other problems, at the very end of that paragraph. And your copy is probably more clear than mine.

A. Well, he said some of them had abscesses. Some of them -- well, the acne went along -- went forward to abscesses or confluence of several of the acneform nodules became infected.

Q. On Page 1029, did that cause you any further concern during that time period as to systemic poisoning associated with --

A. In that time period I was not with Monsanto. These were not Monsanto employees. This is 1933 he's talking about. I came with the company in '36, and I think Monsanto took over Swann in 1935 when all the problem was gone.

Q. You would agree with me -- and I think you testified yesterday -- that Monsanto relied in part upon the experiences that Swann had had in determining the toxicological properties of PCBs?

A. Yes, sir. Not the toxicological properties, but the hazards involved.

Q. What did Monsanto rely upon in 1936 when you

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first were hired, if you know, as to the toxicological properties of its PCB product?

A. I do not know what they relied on before I came with the company.

Q. Do you know if Monsanto Chemical Company ever ordered any independent test to be done concerning toxicology with respect to its PCB product prior to you starting work there?

A. I do not know whether they did or not. I've seen no reports.

Q. Have you asked for such reports?

A. I'm sure I did. I can't be sure. Said, "Did you do anything about this?"

Q. And the response was?

A. I have no recollection of it.

Q. Okay. On Page 1029 --

A. Yes, sir.

Q. -- the second to the last paragraph, Jones and Alden note that: "It seems that it may be readily assumed that our problem as to the causative agents of the acneform eruption was connected with the chlorinated products of the impurities present in the crude benzene."

A. Yes, sir.

WATER_PCB-00051420

Q. Did that cause you, at the time that you read this article, to be concerned about chlorinated benzene products within the PCBs?
A. Chlorinated benzene products?
MR. BAUER: Objection. Lacks foundation.
A. Yes. I didn't know exactly what Jones was talking about.
Q. (By Mr. Kim) Okay.
A. We had two years of Swann experience, two years of our own with an absence of any problems with our workers. So this appeared to be of historical interest.
Q. The problem, as they determined in the last sentence, became difficult because the -- "The problem hence becomes difficult of exact solution, and it is necessary to resort to a reasonable deductive hypothesis." Do you see that?
A. Yes, I see it.
Q. Did you agree with Jones and Alden in that instance?
MR. BAUER: Object to the form.
Q. (By Mr. Kim) When you read it.
A. Well, I don't know about how it was necessary

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to resort to a reasonable deductive hypothesis. I don't know what he was talking about at that time.

Q. Do you have any idea -- and you may not -- as to whether Monsanto Chemical Company, anyone there, engaged in such hypothesis?

A. At what time frame? I don't even know what hypothesis it was. So I don't know what they might have -- had given consideration to.

Q. What particular parts of the Jones and Alden report do you not agree with?

A. Well, I would say the one thing that I disagree with is where he stated someplace in this that the complaints of a worker was due to his ethnic background.

Q. Is that the instance where the doctor discounted the complaint of lassitude because he thought it was indicative of the normal temperament of the Negro man during this time period?

A. That's correct.

Q. It's amazing this really existed in 1935, isn't it?

A. Well...

Q. Did Monsanto Chemical Company, as a result of

WATER_PCB-00051422

the Jones and Alden study, after you read it, ever engage in any analytical studies to determine the chemical variances that may occur in the manufacturing process of its polychlorinated biphenyls?

A. I do not know if they did or not. That would be under the analytical department. It would not have been under the medical department.

Q. Do you have a recollection -- and you may not know -- of when the analytical department was formed at Monsanto?

A. Long before I got there.

Q. In any event, you were not given any information as to the analytical work that may or may not have been done by that department?

A. That's correct.

Q. Have you ever been given any information from the analytical department?

A. Oh, I've seen points of some things.

Q. At what time period?

A. Well, I guess I've seen them off and on during the course of my employment there. But I don't know the specifics.

Q. No recollection?

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A. We still talking about PCBs or anything?
Q. PCBs.
A. I've had oral reports of the absence of benzofurans in our product.
Q. When did you receive those reports?
A. '70, '71. I received no positive reports by the time I left there.
Q. Doctor, I know you're not a chemist; but do you know what chlorinated diphenylene oxide is?
A. Yes.
Q. Is it a furan?
A. I could -- I don't -- if it's -- yes, if -- if it's -- if it has two oxygens, it's a dioxin. If it has one oxygen in the connection between the benzene rings, it's a furan. If it's chlorinated.
Q. Yes. And that's what I'm talking about.
A. Yeah.
Q. And there was, to your knowledge, prior to sometime in the Seventies, no reports to you as to the existence of furans within the PCB product?
A. That's correct.
Q. Would it have caused you some concern,

WATER_PCB-00051424

Doctor, if prior to 1970 there had been information that furans might be a contaminant in the PCB product?

MR. BAUER: Objection. Vague. Calls for speculation.

A. In the overall picture, it might have been -- it might have been of concern because it was a product we didn't want in there. But we had tested the toxicity of the material, and the furans were in there if there were -- and if they were in there, were tested. So I was sure that a moderate -- a trace more of the material of the furans would not alter the toxicity of the finished products. And after all, what we were selling was a finished product.

Q. (By Mr. Kim) I think we can agree, though, that Monsanto never did any testing with respect to the breakdown or decomposition products of its PCB fluids?

A. No, I don't think we can agree on that at all.

Q. Can we agree that Monsanto did testing -- are you saying that Monsanto did testing prior to 1970 as to what would happen to PCBs if

WATER_PCB-00051425

heated to 600 degrees --

A. I don't know what --

Q. -- and a person were exposed, rather -- whether acutely or chronically?

A. I don't know if they did or not. That would be the analytical department. I knew they did do testing on arcing of transformers and lightning strikes of transformers, but the temperature involved is a factor that I just don't know about.

Q. And by the same token, we can agree that the medical department under your direction never did any testing as to the by-product or decomposition products of its PCB compound in humans through the metabolic process?

MR. BAUER: Objection. Vague. Do you mean the test was on human beings?

A. That's what I was going to ask. Would you repeat that question?

Q. (By Mr. Kim) Sure. Did Monsanto Chemical Company ever engage in any human testing where they checked for the residue metabolized within the blood and urine of humans that would have given some indication as to the chemical reaction or mechanism of

the ingestion, absorption, or inhalation of its PCB dielectric product?

A. Yes, we did.

Q. When?

A. In about 1972 or 1973, I examined our workers at our Krummerich plant and I tested the blood for the presence of PCBs in the blood.

Q. I understand that. But did you test -- or did you correspond that test with the analytical chemistry department as to what other possible metabolites may exist because of some chemical reaction or enzyme process that occurs in processing the PCB compound?

A. No, sir, I did not.

Q. Did Monsanto Chemical Company have any idea of how PCBs would react chemically and enzymatically within the human body once ingested, absorbed, or inhaled?

A. I don't know what you mean, "react chemically." Would you explain that?

Q. You would agree, Doctor, that if you ingest, inhale, or absorb a PCB, that it will -- the body is going to do something with it?

A. Yes.

Q. Does Monsanto have any testing as to what

that chemical mechanism is as to how the PCB passes through the body?

A. No, sir.

Q. Does Monsanto Chemical Company have information as to whether there may be a breakdown or decomposition of the product once ingested, absorbed, or inhaled in the human body?

MR. BAUER: Object to the form. It's -- I mean, you're asking "does." And I take it you really mean prior to 1974, but you're asking "does." And --

Q. (By Mr. Kim) During any time of your employment.

MR. BAUER: And the other thing is you -- do you mean, still, human bodies as opposed to looking at metabolites in animals? Is that -- is that --

MR. KIM: Yeah. I think the question said "human body."

A. In humans? No, we did not.

Q. (By Mr. Kim) Do you have any idea of whether the absorption, inhalation, or ingestion of PCBs may form some synergistic response to a person with a preexisting liver injury?

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A. Well, first of all, it isn't a synergistic response, Mr. Kim, if the insult to the liver from a preexisting disease had occurred.
Q. How about an enhancement --
A. Huh?
Q. -- of the liver injuries?
A. What?
Q. Excuse me. How about, instead of synergistic response, an enhancement of the injuries of someone with a liver injury preexisting?
A. No. But we do -- no, we did not.
Q. Did Monsanto Chemical Company, during the time period that you were charged with directing toxicological testing from 1946 to 1974, engage in any testing that would have indicated whether a person with a preexisting liver injury was more susceptible to a toxicological response from the ingestion, inhalation, or absorption of PCBs?
A. No, sir, we did not.
Q. Did Monsanto Chemical Company and the medical department under your direction during the years 1946 to 1974 engage in such testing with respect to the enhancement or synergistic effects of a person ingesting,

inhaling, or absorbing PCBs who had a tendency to drink alcohol?

A. No, sir.

Q. Did Monsanto Chemical Company ever do -- while you were medical director during the years of 1946 to 1974, ever do any testing that analyzed the effects of PCBs and its reaction with alcohol?

A. No, sir.

Q. Certain liver enzymes? Any liver enzymes?

A. I don't know exactly -- know how they would do that, but they did not.

Q. Okay. The next exhibit is No. 2; and I believe that was the Drinker study that became the source of some controversy, as I understood your testimony yesterday.

A. Controversy over description of what was what, yes.

Q. Yeah. There was a question as to whether the product he identified was a chlorinated naphthalene or a chlorinated diphenyl?

A. No. A chlorinated diphenyl or a chlorinated diphenyl benzene.

Q. Okay. If you'll turn to Page 292 of the study --

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A. Yes, sir.
Q. -- the paragraph numbered "4" --
A. Yes, sir.
Q. -- which -- and I will indicate that you can find it on Page 291 -- are the results of inhalation experiments?
MR. BAUER: Are you asking him to turn to Page 292?
MR. KIM: Well, and I'm just --
Q. (By Mr. Kim) Did you not understand what I was saying?
A. Yes. It's a -- Channel 4 -- I mean, Paragraph 4 is listed under the "Results of Inhalation Experiments."
Q. Right.
MR. FEATHERSTONE: Too much video in this room, I guess.
Q. (By Mr. Kim) Under that paragraph, we can at least agree that as of September of 1937, Dr. Drinker was reporting that animals exposed to chlorinated diphenyl and such there were no abnormalities seen in living rats. However, after six weeks' exposure, there was slight liver damage which advanced during the next two months.

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A. Yes, sir. That's --
Q. Do you see that?
A. Yes, I do.
Q. And "the changes consisted in slight to moderate swelling of the liver cells, an increased granularity and many mitotic figures."
A. Yes, sir.
Q. "Hyalinization was always present as a result of the inhalation of chlorinated diphenyl."
A. Yes, sir.
Q. That's what he reported, at least in September of 1937?
A. Yes.
Q. What does "hyalinization" mean?
A. That's really scar tissue. It's the presence of hyalin in the cell.
Q. If you will turn -- did that in and of itself cause any concern to Monsanto at the time --
A. No.
Q. -- you received this report?
A. Well, if we were to accept the fact that we didn't know whether we were of the opinion that he was not using chlorinated diphenyl, he was using chlorinated diphenyl benzene, it

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was of interest to us; but we did know that the liver very probably was a target organ of chlorinated diphenyl. Certainly of chlorinated diphenyl benzene.

Q. At any time period -- at any time during the period of 1936 to 1946, did Monsanto Chemical Company warn its workers that the liver was the target organ of exposure?

A. No, sir, we did not.

Q. Just directly across in the next column to Paragraph 4, under the heading "Functional appraisal of liver damage" --

A. Yes, sir.

Q. -- "caused by certain chlorinated naphthalenes and by chlorinated diphenyl" -- do you see where I am?

A. Yes, sir.

Q. Somewhere down there it says that "the health of workers in these compounds has been good with the exception of the fact that in isolated incidents [sic] jaundice has occurred which upon at least three occasions has gone onto acute yellow atrophy."

A. Yes, sir.

Q. Are you with me there?

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A. Yes, sir.
Q. And again, that's talking about the liver?
A. Yes, sir.
Q. Can we agree that Dr. Drinker's study in September of 1937 was predicated in part on the observation of three occupational deaths, which are noted at the front of the study?
A. Yes. Let's be precise about what the deaths were from. They were from chlorinated naphthalene.
Q. Right. Did Monsanto Chemical Company ever engage in any analysis as to the relationship between its PCB products and the relationship between chlorinated diphenyl benzene?
MR. BAUER: Objection. Vague --
A. Say that --
MR. BAUER: Objection. Vague and foundation.
A. Say that over again, please.
Q. (By Mr. Kim) During the time period of 1936 to 1947, did Monsanto Chemical Company and the medical department under your direction ever charge any testing facility to investigate the relationship between chlorinated diphenyl benzene and its poly --

WATER_PCB-00051434

polychlorinated biphenyl product it was selling?

A. What was the time frame?

Q. 1946 to -- 1936 to 1946.

MR. BAUER: Objection. Vague and lacks foundation.

A. I don't know when we did testing on chlorinated diphenyl benzene. I don't recall.

Q. (By Mr. Kim) I understand, Doctor. And I think I've confused you.

My question is: Was there any comparison analysis done between the properties of polychlorinated biphenyls and chlorinated diphenyl benzenes?

A. Well, there certainly were physical properties that were an awful lot different.

Q. How about the decomposition of such products?

A. That would have been an analytical problem. It was not done in our -- the medical department.

Q. And again, you were never presented with any information as to that from the analytical department, as you recall?

A. No, sir, I was not.

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Q. Okay. If you'll turn with me to Page 297, the bottom right-hand quadrant --
A. Yes, sir.
Q. -- where it is headed, "Chlorinated diphenyl."
A. Yes, sir.
Q. Are you with me? There it indicates that feeding with respect to this experiment began on May 4, 1936, and was discontinued on May 10th.
A. Yes, sir.
Q. By May 12th, seven of the ten rats were dead?
A. Yes, sir.
Q. And the three remaining were sacrificed. It also indicates at the very end of that paragraph that the liver changes began at once?
A. Yes, sir.
Q. And there were no other changes in other organs?
A. Yes, sir.
Q. Again indicating, at least in September of 1937, that the liver was the target organ?
A. Yes, sir.
Q. It talked about a second group of ten rats

WATER_PCB-00051436

that were fed a different dosage; is that correct?

A. Yes, sir.

Q. And again, those rats that died -- at the very end of the column -- showed losses in weight; is that correct?

A. Yes.

Q. And that they had liver lesions?

A. Yes, sir.

Q. At the top of the very next page.

A. Yes, sir.

Q. And again, as a result of this study in 1937, Monsanto never warned its workers or anyone about the aspects of the liver being a possible target organ of PCB exposure?

MR. BAUER: Object to the form. Lacks foundation.

A. No, we did not warn them about that. But we prevented it. They didn't have any symptoms or any liver problems. Why warn them about something they don't have or weren't going to get?

Q. On Page 298 --

A. Yes, sir.

Q. -- under the heading of "Discussion" --

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A. Yes, sir.
Q. -- 11 lines down, it says: "It is most remarkable, too" -- are you with me?
A. Yes, sir.
Q. -- "that all the compounds tested attacked the liver and the liver alone."
A. Yes, sir.
Q. Again, a reasonable reading is that the liver is the target organ of chlorinated diphenyl or chlorinated diphenyl benzene if you assume that those were, indeed, the chemicals tested during 1937 or '36?
A. Yes, sir.
Q. The Monsanto response to this study was to question it; is that correct?
A. Yes. We wanted to get the facts.
Q. And you called Dr. Drinker?
A. Yes, I did.
Q. You had concerns as to whether it was chlorinated diphenyl or a Monsanto chlorinated diphenyl or actually some other product; is that not correct?
A. Or we had no record of selling Halowax chlorinated diphenyl. We had records of selling them chlorinated diphenyl benzene.

WATER_PCB-00051438

So I called Dr. Drinker and said, "Where did you get the product that you were calling 'chlorinated diphenyl'?"

Q. And in actuality, Monsanto sent Dr. Drinker some of its product for further testing; is that correct?

A. Yes. That was honest to goodness chlorinated diphenyl, chlorinated to as close of 65 as we possibly could.

Q. And Dr. Drinker, based upon those tests, submitted another report to Monsanto Company based upon those tests?

A. Not only to Monsanto Company, he published another report.

Q. And that was the recant in the 1939 article?

A. In the 1939 article, yes, sir.

Q. After this initial article in 1937, there was a symposium held; was that not correct?

A. Yes, sir.

Q. You attended that symposium?

A. Yes, I did.

Q. There were representatives from General Electric there?

A. Yes.

Q. There was a Dr. von Oettingen?

WATER_PCB-00051439

A. Yes.
Q. Did you know him?
A. Yes, I did.
Q. Did you know the -- was he -- did you know the relationship between Dr. von Oettingen and Westinghouse?
A. No, I did not.
Q. How about between he and Haskell Laboratories?
A. Well, he worked for Haskell Laboratories.
Q. Do you know --
A. He was a director of it.
Q. Do you have any knowledge of the relationship between Haskell Laboratories and Westinghouse during that time period?
A. No, sir.
Q. Okay. You made a comment during the symposium that has also been published in the Journal of Industrial Hygiene and Toxicology; is that not correct? Page 307.
A. Yes, sir.
Q. Where you noted that, "I can't contribute anything to the lab studies, but there have been" -- "there has been quite a little human experimentation in the last several years,

WATER_PCB-00051440

especially at our plants where we have been manufacturing this chlorinated diphenyl."

A. Yes, sir.

Q. You also indicate that at least on one occasion, you did have a more or less extensive series of skin eruptions "which we were never able to attribute as to cause, whether it was an impurity in the benzene we were using or to the chlorinated diphenyl."

A. Yes, sir.

Q. Do you recall making those statements?

A. I don't know if I made it exactly that way because I think I would have said that it was -- occurred at the Swann Chemical Company. It did not occur at Monsanto.

Q. You would agree that Monsanto bought Swann Chemical?

A. Oh, sure.

Q. Okay. Is it --

A. What it was what I said, we had been manufacturing it. It really wasn't us. It was Swann.

Q. Do you still agree with the substance or characterization of that statement in the Journal of Industrial Hygiene and Toxicology

WATER_PCB-00051441

in September of 1987?

MR. BAUER: Object to the form.

A. What? The substance?

Q. (By Mr. Kim) Sure.

A. Well, I admit -- I agree that we -- that there was a outbreak of chloracne due to the manufacture of chlorinated diphenyl when it was being manufactured by Swann at one particular period in time when they were using a different benzene than our regular supplier, yes, sir.

Q. You also further state that: "We have never had any systemic reactions at all in our men."

A. That is correct.

Q. Now, was there a medical monitoring program in place at Monsanto between the years 1936 and 1950?

A. Yes.

Q. Did you do such medical monitoring?

A. Did I myself personally? No. We had a physician there.

Q. Was it at your direction?

A. Yes, sir.

Q. When he took the history, was that history

WATER_PCB-00051442

done pursuant to instructions that you'd given him about possible PCB effects?

A. Yes.

Q. He knew to ask for liver conditions?

A. No question, yes.

Q. He knew to ask and check for dermatitis or chloracne conditions?

A. Yes, sir.

Q. Did he know to ask for people who had preexisting liver injuries?

A. Well, I presume he did. I cannot answer that.

Q. Did he know to ask --

A. Well, he was a physician. And if you're checking with liver -- liver problems, you ask if they had any previous symptoms of liver illness.

Q. Was there any written protocol as to what you wanted that physician to gather in this medical monitoring?

A. I don't recall of any, no; but I've talked to him frequently when I was -- when he was there.

Q. Did he understand that a loss in weight, fatigue, loss of libido, loss of appetite may

be symptoms of a systemic poisoning?
A. Yes, I'm sure he did.
Q. Do you know whether he asked for such conditions?
A. You usually do not ask the individual for the loss of libido. You certainly -- in any physical examination, you ask about tiredness, pains of diarrhea or whatever. What other symptoms you mentioned?
Q. Joint pain?
A. Joint pains, yes, I'm sure he did.
Q. Was the medical monitoring program that this physician engaged in done specifically with the idea of exposure to PCBs in mind?
A. No, sir, it was not. It was part of an examination for the entire wage roll group.
Q. Did Monsanto Chemical Company, during the time period of 1936 to 1950, engage in any further studies that could attribute the cause of chloracne to either chlorinated diphenyl benzene or polychlorinated biphenyls?
MR. BAUER: Object to the form.
A. Say that over.
Q. (By Mr. Kim) You had -- what I'm getting at,

WATER_PCB-00051444

Doctor, is within your statement on Page 307 of the symposium, you indicated that: "We were never able to attribute as to cause whether it was an impurity in the benzene or to the chlorinated diphenyl."

A. Yes, sir, that's what I said.

Q. Did Monsanto Chemical Company engage in any further studies to further determine this?

A. Well, we examined -- you're talking about animal studies or human studies? Human studies --

Q. Animal studies first.

A. Animal studies, we did not.

Q. Human studies?

A. Human studies, we examined our people that were working with chlorinated diphenyl and found no chloracne or systemic symptoms or signs.

Q. Aside from the chlorination, how does trichlorobenzene differ from just the general benzene compound that was discussed -- that you discussed here?

MR. BAUER: Objection. Foundation.

Q. (By Mr. Kim) If you know.

WATER_PCB-00051445

A. Well, yes. Certainly it's got one less benzene ring. It's got three chlorine atoms and one benzene radical. And chlorinated biphenyl has two of them. Two benzene rings. Chlorinated terphenyl or chlorinated diphenyl benzene has three.

Q. Is a chlorinated benzene more dangerous than just a regular benzene?

MR. BAUER: Objection. Vague.

A. I don't think so. I think benzene is worse.

Q. (By Mr. Kim) The use of trichlorobenzene causes you -- in the PCB compound causes you no concern from a medical standpoint?

A. Cause of what?

Q. Trichlorobenzene. Do you know whether trichlorobenzene was used in some of the GE and Westinghouse dielectric products?

A. Yes, it was.

Q. Does the presence of trichlorobenzenes in combination with polychlorinated benzene -- polychlorinated diphenyl cause you any concern from a toxicological standpoint?

MR. BAUER: Objection. Vague.

A. Well, yes. We recognize that it has some toxicity. We recognize that we had studies

on both the combination and our chlorinated diphenyl. We did not find that addition of chlorinated -- of trichlorobenzene enhanced the toxicity from the acute point of view, particularly markedly.

Q. (By Mr. Kim) Did you ever -- did Monsanto Chemical Company and the medical department while you were in charge ever commission any testing that would determine how trichlorobenzene would break down upon ingestion, absorption, or inhalation in the human body?

A. No, sir, we did not.

MR. KIM: Take a break?

THE WITNESS: I'm all right.

MR. BAUER: Let's take a break, Dr. Kelly.

THE VIDEOGRAPHER: We're going off the record. It's 12:00 o'clock. This is the end of Tape No. 4.

(A recess was taken.)

THE VIDEOGRAPHER: It's ten minutes after 12:00 o'clock. This is the beginning

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of Tape No. 5, and we're back on the record.

Q. (By Mr. Kim) Doctor, if you'll turn to your Deposition Exhibit No. 3, which I believe you identified yesterday as a 1938 article written by Drinker and some other individuals; is that correct?

A. '39.

Q. '39? I thought this --

A. Is that '38?

Q. February of '38 --

A. Oh.

Q. -- is what I thought this was.

A. Oh, okay. Yes, sir.

Q. Is this the article in which Dr. Drinker questions his use of the compounds? What is your understanding?

A. Questions his use? I mean --

Q. Questions the identity of the compounds he tested in 1937.

A. No. It was the next article.

Q. Okay. This was --

A. The '59 article.

Q. This article, as well, caused you some concerns because you had questions as to whether it was a chlorinated diphenyl benzene

WATER_PCB-00051448

or chlorinated diphenyl that he had tested?

A. That's correct.

Q. Just very quickly, if you'll turn to Page 123 of this study -- excuse me. 121.

A. Yes, sir.

Q. The last paragraph of the first column, first sentence, at least as of February of 1938, Dr. Drinker felt that: "Of the various chlorinated hydrocarbons tested, chlorinated diphenyl gave evidence of being the most toxic"?

A. Yes, sir, that's what is stated.

Q. And at the top of the second column he went on to indicate that when combined with carbon tetrachloride and alcohol, it produced extensive liver necrosis and was highly fatal?

A. Yes, sir.

Q. "Chlorinated diphenyl fed in small doses produced similar but more marked liver injury. In large doses this compound was highly fatal."

That's what he stated, at least, in February of 1938?

A. Yes. But I don't know what he's referring to

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when he says chlorinated diphenyl produced similar but more marked liver injury. I thought he was talking about chlorinated diphenyl all the way along. What he referred to was chlorinated diphenyl.

Q. Absolutely. At least, that's what he thought in February of 1938?

A. Yes.

Q. And that was the state of the literature in 1938?

A. That was what?

Q. The state of the literature in 1938?

A. Yes.

Q. That is what Monsanto Chemical Company, at least from a review of the scientific and medical literature, would have seen in 1938?

A. Yes, sir.

Q. In 1938 did Monsanto engage in any further testing to determine the toxicity of chlorinated diphenyls?

A. Yes. We engaged with Drinker to test chlorinated diphenyl.

Q. And indeed --

A. We disputed his idea that he tested chlorinated diphenyl.

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Q. Outside from engaging with Dr. Drinker, who had done the original study, did Monsanto Chemical Company engage the services of any other scientific facility to try and repeat the results that Dr. Drinker had found in 1938?

A. No. We were convinced that Drinker was an adequate experimenter; and all he had to do was get the right material, give it the right name.

Q. You paid Dr. Drinker for those studies, didn't you?

A. Some of it was done under the combined payment by Halowax, to which we contributed; and some of the later studies was defrayed by Monsanto itself.

Q. The report in which Dr. Drinker did his work with the Monsanto chemical chlorinated diphenyl was paid for by Monsanto Chemical Company, was it not?

A. We paid it out of -- yes. I'm not sure, though.

Q. Okay. The last page, Page 123 now, second --

A. Yes.

Q. -- second column, Paragraph 5 --

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A. Yes, sir.
Q. -- where it says: "Administration of small sublethal doses of carbon tetrachloride and alcohol to rats whose livers have already been injured by" -- "by the compounds under consideration is highly fatal and produces massive necrosis of the liver."
A. Yes, sir.
Q. That's what he stated in 1923; is that correct?
A. In Nineteen which?
MR. BAUER: Object to the form.
Q. (By Mr. Kim) Excuse me. I mean, 1938.
A. Yeah.
Q. February of 1938.
A. Yes, sir.
Q. Did Monsanto Chemical Company share the same opinion as to those conclusions in 1938?
MR. BAUER: Object to the form.
A. No, sir. We didn't believe he had tested chlorinated diphenyl in that manner.
Q. (By Mr. Kim) And you as medical director did not believe in that hypothesis in 1938?
MR. BAUER: Object to the form.
A. No. I believed it as far as chlorinated

WATER_PCB-00051452

naphthalene was concerned, but I didn't believe it as far as chlorinated diphenyl.

Q. (By Mr. Kim) In 1938 did Monsanto engage in any further testing, outside of Dr. Drinker, to determine the repeatability of this information?

A. No. We knew it was going to be repeated, though.

Q. By Dr. Drinker?

A. Yes.

Q. Indeed, Dr. Drinker prepared that report and gave it to Monsanto Chemical Company, as we see in Exhibit 5, I believe?

A. Yes, sir.

Q. If you'll turn -- is that the report that Dr. Drinker gave to Monsanto after you gave him the Monsanto chlorinated diphenyls?

A. Yes, sir.

Q. If you'll turn to -- let's see how yours is numbered -- what is Bates stamped as Page 118916.

MR. BAUER: Do you know what "Bates stamp" is, Doctor?

THE WITNESS: Yes.

MR. BAUER: It's the production

WATER_PCB-00051453

number down there.

THE WITNESS: Yeah. Uh-huh.

Q. (By Mr. Kim) It's the fifth page. If you could turn to the fifth page.

A. 915 or 916?

Q. 916.

A. Oh, 916.

Q. Headed with heading "Chlorinated Diphenyl" --

A. Right.

Q. -- "Compound 1268"?

A. Right.

Q. First sentence indicates that: "This material was furnished by...Monsanto Chemical Company"?

A. Yes, sir.

Q. In the last paragraph of that first page, he indicates that: "The condition described above caused swelling and increased granularity of the liver cells."

A. Yes, sir.

Q. And at the very end, he indicated that: "The carbon tetrachloride-alcohol test was positive after 52 days, which indicates that though liver damage was apparently slight some degree of harm had been done to the

WATER_PCB-00051454

organ." Is that correct?
A. That's what he states, yes, sir.
Q. Can we agree, then, that based upon this, there is some indication, again, in Nineteen Thirty -- September of 1938 that the liver is, indeed, the target organ of chlorinated diphenyls?
A. Yes.
Q. If you'll turn to the next page, first full paragraph, last sentence: "When sacrificed 72 and 141 days after removal from exposure it was observed that the swelling of the liver cells had disappeared, but the granular and hyaline material remained in the liver cells and had apparently become permanent."
A. Yes, sir.
Q. Did that cause you any concerns as the medical director of Monsanto Chemical Company whose workers may or may not have been exposed through various routes of exposure to its PCB product?
A. Well, we certainly were interested in his statement. You forgot -- inadvertently left out the next sentence that said: "There was absolutely no progression of damage after

removal from exposure." So --

Q. But the damage had occurred and was permanent?

A. Well, let's -- what are we talking about in "damages"? We're talking about no -- hyaline inclusions were rare. There was increased granularity of the liver cells. There was some swelling of the liver cells. The swelling was gone, but the granular and hyaline material remained in the liver cells. Well, that's the result of the scar tissue that was formed. Certainly there was some damage in the liver but it was healed and there was no progression of the illness.

Q. Would the presence of granularization and scarring in the liver have caused you some concern, as the medical director of Monsanto Chemical Company, with respect to any systemic effects of PCB exposure?

A. Well, yes. There was some mild clinical effects, yes. But they were not progressive, and they were not serious.

Q. Did it cause you some concern, as medical director of Monsanto, after receiving this report, that the tests done in conjunction

WATER_PCB-00051456

with the carbon tetrachloride alcohol test was positive?

MR. BAUER: Object to the form.

A. Well, this was a test that certainly hasn't been used lately. It was a test by Drinker. We do know that carbon tetrachloride is a very serious liver toxin. It shows that if you have a damaged liver and you take carbon tetrachloride, you will get a much worse, more aggravated damaged liver. Yes, it did cause us concern from that point of view.

Q. (By Mr. Kim) As medical director of Monsanto Chemical Company, did it give any cause for concern that there may be some synergistic or enhancement of injury considerations with respect to chlorinated diphenyls?

MR. BAUER: Object to the form.

A. Chlorinated diphenyl enhancement of injury by what? Would you repeat it?

Q. (By Mr. Kim) In -- yeah. As medical director of Monsanto Chemical, did it cause you some concern in 1938 when you received this Drinker report that chlorinated diphenyls in combination with carbon tetrachloride alcohol caused any enhancement

WATER_PCB-00051457

of liver injuries or systemic poisoning?

A. Yes.

Q. Did Monsanto after September of 1938 engage any subsequent testing facility or scientific organization to attempt to repeat the findings found by Dr. Drinker in September of 1938?

A. At any time? We did never -- we never repeated the chlor -- the chlor -- carbon tetrachloride test. That was really not a standard test. I don't recall seeing it in any other literature outside of Drinker's. We did not.

Q. Did Monsanto Chemical Company by virtue of their medical monitoring program ever warn workers or screen workers who might have preexisting liver injuries?

A. We did not screen them. Whether we -- whether Dr. Martin talked to the workers about excessive alcohol use, I can't answer.

Q. On page -- two pages over, the middle of the page, second full paragraph, second sentence --

A. Yes, sir.

Q. -- it says: "The question as to why

WATER_PCB-00051458

#1268" -- and I assume that's the Chlorinated Diphenyl 1268?

A. Yes.

Q. -- "the most highly chlorinated compound tested, proved but slightly harmful" --

A. Wait. I'm on the wrong page. What page? You said two -- you're all on 18?

MR. FEATHERSTONE: Yeah.

A. Right?

Q. (By Mr. Kim) Yes.

A. Okay.

Q. Second paragraph, second sentence, right in the middle.

A. I have it now. Right.

Q. Okay. Starting with, "The question as to why #1268" --

A. Yes, sir. I see it.

Q. Okay.

-- "the most highly chlorinated compound tested" -- and here I assume we're still talking about the Chlorinated Diphenyl No. 1268?

A. Yes, sir.

Q. -- "proved but slightly harmful cannot be answered with any definiteness."

WATER_PCB-00051459

A. Yes, sir.
Q. What did Monsanto Chemical Company, as a result of this statement, do to attempt to clarify the toxicology -- toxicological issues with respect to chlorinated diphenyls?
A. We knew what the toxicological information that was obtained was. We had it. Drinker found it. We did not investigate the mechanism of it, but we were -- of the lack of toxicity. But we were just happy to have the results that he said were -- was of slight toxicity, slightly harmful.
Q. Doctor, what's your opinion of what is "slightly harmful"?
A. Two drinks of alcohol is slightly harmful.
Q. But in that case, Doctor, you'd agree that we know that with some certainty, that the cause of that harm is the two drinks of alcohol?
A. Yes.
Q. Is that correct?
A. Yes.
Q. Did it cause you some concern about the lack of definiteness as to why the Chlorinated Diphenyl 1268 was proving slightly harmful?
MR. BAUER: Object to the form.

WATER_PCB-00051460

A. Well, we knew that it had some toxicity. We never denied that 1268 did not have some toxicity.
Q. (By Mr. Kim) I understand that. But did it cause you some concern that you could not precisely define the mechanism of toxicity?
A. No, it didn't. We knew that it was a slight toxicity. We knew what the exposure or lack of exposure was. So we thought we had all the information we needed to protect our workers and our customers.
Q. The next sentence states: "It has been suggested that the toxicity of all these chlorinated compounds, even though of varied composition, may depend on the ability of the animal to decompose them after lodgment in the tissues, and that this decomposition might be shown by an increase in the chlorine in the urine and suitably conducted feeding experiments"; is that correct?
A. That's what he says, yes, sir.
Q. Do you agree or disagree with that statement?
A. Disagree what way?
Q. Did you have any disagreements with that statement when he reported it to you and

WATER_PCB-00051461

Monsanto Chemical in 1938?

A. Well, this is a hypothesis that he had.

Q. Did you agree with the hypothesis or disagree with the hypothesis?

A. Not necessarily. I don't recall if I did or not. It may not have been absorbed. There may be a lot of reasons why it wasn't.

Q. Did it cause Monsanto and the medical department under your direction in 1938 any concern as to questions of decomposition within the animals after ingestion or inhalation?

MR. BAUER: Object to the form.

A. No, sir. Because here he is talking about the toxicity of it regardless of what the decomposition products were. And we found out the toxicity. That's what we wanted to find out. We wanted to find out the toxicity, the target organ; and we knew the routes of exposure. We had enough information to protect our workers and our customers.

Q. (By Mr. Kim) We talked earlier, Doctor; and I think agreed that with respect to how chlorinated diphenyls chemically break down

WATER_PCB-00051462

in the human body, no tests were done?
A. That's correct.
Q. Were they ever done with respect to animals?
A. They may have done some in the reactive work in the 1970's. I cannot answer -- certainly not in the Thirties and Forties, no, sir.
Q. Were they ever done while you were the medical director of Monsanto between 1936 and 1974?
A. We took the -- we received the tissues from the rabbit and from the dog -- rat experiments, but I do not believe they were analyzed before I left.
Q. Were the blood and urine of those animals taken, as well, samples taken?
A. I can't answer that. I don't recall that.
Q. There was no measurement that you recall of the metabolites or any residues that may have been left in those dogs?
A. No, sir.
Q. If you'll turn to Exhibit No. 6, which I believe is the article in 1939 where Dr. Drinker addresses the misidentification of the chemical compound in his earlier work; is that correct?

WATER_PCB-00051463

A. Yes, sir.
Q. And by this time he's also had an opportunity to report to Monsanto in September of 1938 his findings based upon the compound that Monsanto provided him?
A. Yes, sir.
Q. On Page 158 --
A. Yes, sir.
Q. -- the very last sentence of the first column, Dr. Drinker notes: "We have no information as to whether this last compound lacks toxicity because it is not broken down in the body, but that would seem the probable explanation." Is that correct?
A. That's the statement made there, yes.
Q. Did it cause Monsanto any concern that the compound did not break down in the body?
MR. BAUER: Objection. Lacks foundation.
A. No, sir. We were examining this material to see if it was toxic or not. And it was found out to be of a very low toxicity; and at that particular point, we were not concerned about why it was low -- having low toxicity.
Q. (By Mr. Kim) As of 1939, we can agree that

WATER_PCB-00051464

there had been no chronic studies done with respect to the breakdown of chlorinated diphenyls at the direction of Monsanto Chemical Company?

A. Now, you're shifting back to diphenyls. We're talking about di -- you mean -- that's correct. He was mentioning -- he brought in chlorinated diphenyl benzene. But I'm confused myself here.

Q. Well --

A. Say the sentence -- ask your question over, please.

Q. I think we can have some amplification because in the sentence before the one I read, it said: "On inquiry it was found that substance 6" -- which is the chlorinated diphenyl benzene --

A. Yes, sir.

Q. -- "was in reality a mixture of chlorinated diphenyl and chlorinated diphenyl benzene and that number 13 was actually chlorinated diphenyl."

A. Right.

Q. Okay. "We have no information as to whether this last compound" -- which would be No. 13,

WATER_PCB-00051465

the chlorinated -- "lacks toxicity because it is not broken down in the body, but that would seem the probable explanation."

A. Yes, sir.

Q. Did I read that correctly?

A. Yes, you did.

Q. And the jury will make their own determination of what he was referring to. But my question to you is: Did it cause you, as the medical director of Monsanto in charge of warnings and the industrial hygiene of your employees, any concern from a toxicological standpoint that chlorinated diphenyls were not broken down in the body?

MR. BAUER: Objection. Lacks foundation.

A. I don't recall what my thinking was at that time.

Q. (By Mr. Kim) Did you, as the medical director of Monsanto Chemical Company, engage in any chronic studies that would have looked at the chronic effects of chlorinated diphenyl in the human body?

A. No, sir. In the human body? We did not experiment with the human body.

WATER_PCB-00051466

Q. How about any lifetime animal testing?
A. Not until 1968.
Q. Well, then, how did you know what would happen to an individual who had a PCB in his body that didn't break down over an extended period of time?
MR. BAUER: Object to the form.
Q. (By Mr. Kim) You couldn't know anything.
MR. BAUER: Object to the form. Argumentative.
A. That isn't quite true because you're saying that the material is not broken down in the body. He is not saying that the material stays in the body. It's excreted. He takes this by mouth, and it's gone. It's excreted. He didn't say that it's not excreted.
Q. (By Mr. Kim) I'm sorry. I -- where did he say it was excreted?
A. I -- he did not say that.
Q. How did Monsanto Chemical and you come to that conclusion, that although not broken down, it was excreted?
A. Well, if you take it and you don't get any toxicity from the material, it either is

nontoxic or not absorbed from the gut.

Q. Of course, Doctor, we don't know whether it was toxic or not over the long-term because no chronic tests were done during that time period?

A. That's correct.

Q. And, of course, we don't know whether it was excreted or not because it was not identified as such in Dr. Drinker's last report?

A. That's correct.

Q. And my question to you is: Given that vacuum of information, how do we know what the toxicological properties are of a compound that may remain in the human body, whether in the blood or in the fatty tissues, that is not broken down over an extended period of time, in 1938?

MR. BAUER: Object to the form.

A. We didn't know in animals. We did know that it was not toxic from the long-term point of view in humans because our clinical experience with our workers by 1939, or '38 or '39, showed that there were no systemic effects from chlorinated diphenyl.

Q. (By Mr. Kim) Were there any specific studies

WATER_PCB-00051468

undertaken with respect to these systemic effects that you just mentioned in which the workers were specifically questioned about PCB exposure and symptoms?

A. They were certainly questioned about symptoms. I do not know if they were questioned about exposure, but the doctor knew what the exposure in the plants were.

Q. Was the doctor specifically doing the monitoring and the medical evaluation with an idea of PCB exposure in mind?

A. I'm sure he was looking. Yes. He was doing his examination to find out if there were any illness or symptoms due to the work environment that this worker was exposed to.

Q. With respect to PCBs?

A. With --

Q. Specifically?

A. He did it when they were -- no matter what compound he was working with. He was familiar with what the exposure was to our various compounds in our various departments at Anniston. And there weren't that many of them.

Q. I understand, Dr. Kelly. My question is more

WATER_PCB-00051469

specific. Did the medical department or the physician, as we have talked about, engage in any specific medical monitoring program or study that dealt specifically with PCB exposure?

A. He ran some liver testing on the workers at random intervals. He did not run them on everyone, every day or every week. But he ran some of them on the yearly examinations. The tests at that time were ones that are not used now. They were pretty rough tests, but they were all that was available.

Q. And those liver exams were done specifically with an idea of PCB exposure in mind?

A. Of possible liver effects in man, yes, sir.

Q. Specifically as a result of PCB exposure, not other chemicals that Monsanto produced?

A. That's correct.

Q. Where are the results of that?

A. I don't know. That was in Nineteen, what, Thirty-nine, Forty.

Q. Did Monsanto keep a record of such?

A. I'm sure they did. I don't know.

Q. Did it ever form the basis of any in-house studies or publications?

WATER_PCB-00051470

A. We didn't -- publication, no. In-house studies, I looked at them. I went to Anniston at least once a year. I would look at the records, and I would see the results.

Q. But as you sit here today and testify before this jury, you can't produce any of the underlying data that you're relying upon?

A. No, sir, I cannot.

Q. Can anyone at Monsanto?

MR. KIM: And perhaps that's better directed at Monsanto's attorneys as to whether that underlying data exists.

Mr. Bauer?

MR. BAUER: You're asking me a question during the deposition?

MR. KIM: Yeah. I just want to know whether it exists. And if so, will you produce it?

MR. BAUER: You've asked me the question. I'm not going to answer it on the record during a deposition.

MR. KIM: Will you at least make inquiry as to whether it exists?

MR. FEATHERSTONE: Mr. Kim, we'll make inquiry and respond to your question,

WATER_PCB-00051471

unless we know what the information is. In other words, we don't know whether the records exist or not. These are records that are sixty some years old.

MR. KIM: And Mister -- I'm just asking if you'll make inquiry as to whether they exist or not. Or are you going to require me to do it by way of formal --

MR. FEATHERSTONE: We will make inquiry --

MR. KIM: I mean --

MR. FEATHERSTONE: -- and respond after the deposition.

MR. KIM: That's all I'm asking.

Q. (By Mr. Kim) All right. If you'll turn to Exhibit No. 7 --

MR. KIM: You want to break, Scott?

MR. BAUER: Well, I think maybe we shouldn't go too much more today. But --

Q. (By Mr. Kim) -- which I believe is a study done by Dr. Meigs, M-e-i-g-s?

A. Yes.

Q. And you testified yesterday that this was one of the studies that you relied upon while

as -- while medical director at Monsanto to determine the safety of PCB products?

A. No, sir. I didn't say that.

Q. Excuse me. I probably misunderstood you. Tell me the significance of this article.

A. The significance to this article is that people who were -- some workers who were exposed to a PCB containing hydraulic -- heat transfer fluid were exposed over some period of time to some ill-defined chlorinated diphenyl and developed a -- extremely mild cases of chloracne. They were exposed to a condition that was also poorly diagnosed. A statement was made that they were exposed to point one milligrams per cubic meter.

Q. How long were they exposed?

A. They don't know that, either.

Q. Does that cause you some concern as a medical director, the question as to exposure?

A. Yes.

Q. And the length of exposure?

A. Yes. I didn't see how they could get any product, no matter what their exposure was, at point one milligrams per cubic meter.

Q. If you'll turn to the second page of that

study.

A. Can I tear it apart?

Q. You bet.

A. Oh, sorry. It did.

Q. When did you first tear it? No. I'm just kidding. Strike that.

The second column underneath the heading "Comment," the last paragraph.

A. Yes, sir.

Q. "The fact that tests of the air, even in the presence of vapors, showed only negligible amounts of chlorinated hydrocarbons indicates that this type of intermittent but fairly long" continuous -- "continued mild exposure is not innocuous."

A. Yes.

Q. Did I read that correctly?

A. Yes, you did.

Q. Did that cause Monsanto -- did that cause you, as the medical director of Monsanto Chemical Company, any concern about the length and route of exposure and its attendant toxicities?

A. Yes, that caused me concern. It's exemplified by my letter to Dr. Meigs shortly

WATER_PCB-00051474

after this appeared and his subsequent letter to me.

Q. Well, we're going to get to those letters.

A. Well, fine. But --

Q. The second -- the next sentence says: "The low concentration of the chlorinated diphenyl in the air might account for the fact" -- "might account for the fact that lesions developed in only 50% of those involved." Did I read that correctly?

A. Yes, you did.

Q. Did that cause you, as the medical director of Monsanto, some concern that low concentrations of chlorinated diphenyls might account for lesions in 50 percent of the people exposed?

A. If he were -- if I were sure that it was a low concentration, it would have. I was not sure it was a low concentration. So I wrote Meigs and said, "What do you think about this concentration?"

Q. You questioned his report of the point one milligrams per cubic meter in the air?

A. Yes, I did.

Q. In 1954 had Monsanto Chemical Company engaged

in any air concentration tests?
A. Yes.
Q. By 1954?
A. Yes. I think around '54. I'm not exactly sure.
Q. Those would have been the Treon studies; is that correct?
A. Well, that's what they did. You said "tests," atmospheric tests.
Q. Yes.
A. Yes. But I don't know when we first did our atmospheric sampling at Anniston.
Q. To what minute level could Monsanto, given the technology in 1954, measure concentrations?
A. I don't know. We could certainly go down, I believe, to one -- point one. But I'm not sure.
Q. Could you go less than point one? Do you know?
A. I don't know. That's an analytical -- I don't know.
Q. Do you have a recollection during that time period of what the actual concentrations with respect to PCB vapors were during that time

period?

A. It was something between nondetectable and point five. I don't know which.

Q. Certainly that would include point five --

A. Yes.

Q. -- milligram per cubic meter?

A. Yes.

Q. Based upon that knowledge, that the Monsanto concentration levels were between nondetect and point five milligrams per cubic liter [sic] and Dr. Meigs' results, which indicated, in his opinion, at point one milligrams per cubic meter, that lesions could develop in 50 percent of the people exposed, did that cause Monsanto Chemical Company any medical and toxicological concerns as a result of PCB exposure?

A. Yes, it did. Because as I said before, if it could occur at point one, we were concerned. And at that particular time, we were already -- April, '64 -- '54, we were starting the experiments at Kettering because their report, which you have there someplace, was sometime in either '54 or '55. That was a five months' period that they examined the

WATER_PCB-00051477

rat experiment, and I don't know how long it took afterwards before the final report was done.

Q. Who paid for those Kettering studies?

A. Monsanto did.

Q. Who designed the protocol?

A. Dr. Treon.

Q. You had no part in designing the protocol of those studies?

A. Well, sure. But he designed it. He -- I said, "We want this tested at elevated temperatures." And he was the expert in laboratory work and toxicological work.

Q. While you were the medical director of Monsanto, were you responsible for designing any of the protocols of the studies that you ordered?

A. Well, I had input in it; but I didn't tell the people exactly how I wanted it to be done. We picked experts -- experts and listened to them.

Q. Who determined the hypothesis to be tested?

A. What do you mean by the "hypothesis to be tested"?

Q. Well, who determined the objective of the

WATER_PCB-00051478

test?

A. I did. "What's a safe limit?"

Q. In response to Dr. Meigs' study, there is -- well, let's just get through the Meigs stuff -- a series of correspondence in which, just as in the Drinker report, you question the wisdom of his product and exposure; is that correct?

MR. BAUER: Object to the form.

A. The wisdom?

Q. (By Mr. Kim) Well, his identification.

A. What?

Q. You question Dr. Meigs' identification of the product, do you not?

A. No, I didn't question. I just wanted to know if he was sure about it and about the levels.

Q. And that was important?

A. Yes, certainly.

Q. In Exhibit No. 9 he responds to you, does he not?

A. Yes.

Q. And in the first paragraph, he says: "...since there is a tendency among all of us to assume that certain conditions can be characterized as 'safe' on the basis of

WATER_PCB-00051479

environmental studies alone."

Was that the same view and opinion that Monsanto Chemical Company had in the medical department in 1954?

MR. BAUER: Object to the form. Can I hear that back?

THE WITNESS: I'd like to hear it, too.

MR. KIM: Why don't I just rephrase it.

MR. BAUER: All right.

Q. (By Mr. Kim) You received this letter, didn't you?

A. Yes, I did.

Q. And Dr. Meigs in the first paragraph indicates that, "There" -- quote: "There is a tendency among all of us to assume that certain conditions can be characterized as 'safe' on the basis of environmental studies alone."

A. That's his statement, yes, sir.

Q. Did you, as the medical director of Monsanto Chemical Company, agree or disagree with that statement on May 7th of 1954?

A. I --

WATER_PCB-00051480

MR. BAUER: Object to the form.

A. I did not agree with the statement. I did not include myself into -- into stating that -- into a statement that if you have environmental data that -- or below what was accepted as a maximum allowable concentration is safe, I believe that it's safe. Whether Meigs believed it or not, I don't know. But he --

Q. What -- excuse me. Go ahead.

A. He certainly is running in the face of an awful lot of people who would disagree with this statement.

Q. Including those people at Monsanto Chemical Company?

A. I don't know about all of them. Including me.

Q. What environmental studies did you have at your disposal as the medical director of Monsanto Chemical Company on May 7th of 1954 concerning polychlorinated biphenyls?

MR. BAUER: Objection. Vague.

A. We had the Drinker work. We had -- I don't know when we got the Treon report. That was around that time. It was either '54 or '55.

WATER_PCB-00051481

We had some spot samples at our Anniston plant where the workers were being exposed to small amounts of material and were having no symptoms or signs.

Q. (By Mr. Kim) During the 1930's, did you have the opportunity to review any work submitted to Westinghouse by Dr. von Oettingen?

A. No, sir, I didn't. During the 1930's?

Q. Yes, sir.

A. No, sir.

Q. Just real briefly because this may eliminate a lot of questions.

Let me show you a copy of a document entitled "Medical Research Project No. MR," dash, "46, The Toxicity and Potential Dangers of Inerteen," which was submitted by Dr. von Oettingen to Westinghouse and ask if you've ever reviewed that document.

MR. CAILTEAUX: Object to the form of the question.

A. First of all, this does not say it was submitted to Westinghouse. It was submitted by von Oettingen.

Q. (By Mr. Kim) Well --

WATER_PCB-00051482

A. I have to disagree with that. Secondly, I never saw this during my -- to the best of my recollection, any time when I was with Monsanto. I have seen it during some of these 20 to 22 depositions, but I have not seen it -- I did not see it, to the best of my recollection, during any time at Monsanto.
Q. You have reviewed it?
A. Yes.
Q. Am I mistaken -- or can you tell me what the file stamp at the bottom of that document is?
A. What the what?
Q. The file stamp.
A. You're talking to me?
Q. Yeah. The receipt? It was received by --
A. K82?
Q. -- Monsanto?
A. And there's a GBRN00 --
Q. Just above that. It looks like it's typing. But it's a file --
A. This?
Q. Yeah. There you go.
A. Stamping? It says "Westinghouse Electric Manufacturing Company, East Pittsburg, Industrial Hygiene Laboratory, File Copy."

WATER_PCB-00051483

Q. We'll talk a little bit about this tomorrow, but I think Mr. Bauer wants to shut it down for the day.
A. You talking to me?
Q. I was just making a general comment.
A. Oh. I'm not included?
Q. No, you are. I was saying that I think Mr. Bauer wants to shut it down. Are you ready to quit for the day?
A. Oh, I'm all right. No.

MR. BAUER: We can go for a few more minutes if you want to finish that document. Or we can break and --

MR. KIM: Well, this document is going to take a while.

MR. FEATHERSTONE: Then we ought to break.

MR. BAUER: Then we'll break till tomorrow.

THE VIDEOGRAPHER: We're going off the record. It's 15 minutes after 12:00 o'clock. This is the end of Tape No. 5.

(Whereupon the deposition of Robert Emmet Kelly, M.D., was recessed at

WATER_PCB-00051484

12:15 p.m. and is to be continued at 9:00 a.m. on February 17, 1994.)

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THE STATE OF Missouri :
COUNTY OF St. Louis :

I, ROBERT EMMET KELLY, M.D., hereby certify that I have read the foregoing transcript of my testimony given in the foregoing numbered and styled case and that same is true and correct to the best of my knowledge and belief.

I further certify that any and all corrections have been made on a separate page and initialed by me.

This the 30th day of March, 1994.

Robert Emmet Kelly MD
ROBERT EMMET KELLY, M.D.

SUBSCRIBED AND SWORN TO BEFORE ME, this the 30th day of March, 1994.

Josephine S. Niblock
Notary Public in and for
the State of Missouri

My Commission Expires

JOSEPHINE S. NIBLOCK
NOTARY PUBLIC STATE OF MISSOURI
ST. LOUIS COUNTY
MY COMMISSION EXP. JAN. 15,1995

Job No. 94-512

WATER_PCB-00051485

THE STATE OF TEXAS :

I, Irma L. Reyes, Certified Shorthand Reporter in and for the State of Texas, hereby certify that this deposition transcript is a true record of the testimony given by the witness named herein, after said witness was duly sworn or affirmed by me.

I further certify that I am neither attorney nor counsel for, related to, nor employed by any of the parties to the action in which this testimony was taken. Further, I am not a relative or employee of any attorney of record in this cause, nor do I have a financial interest in the action.

Further certification requirements, if any, pursuant to the Rules will be certified to in the Supplemental Certificate after they have occurred.

Subscribed and sworn to on this, the 2nd day of March, 1994.

Irma L. Reyes, CSR
Certificate No. 4071
Expires December 31, 1994

My Notary Commission expires September 21, 1996

WATER_PCB-00051486

LIST OF CHANGES OR CORRECTIONS

To the Deposition of _____

If there are any changes or corrections, please list them below giving the page number, line number, and reason for the change.

The reasons for making changes are:

(1) To clarify the record:
(2) To conform to the facts:
(3) To correct transcription errors:

Page No. 194 Line No. 9 Reason for Change Misspelling
Changed ~~Canal~~ Canaclor To Kanaclor

Page No. 195 Line No. 9 Reason for Change misspelling
Changed duritus To neuritis

Page No. 197 Line No. 15 Reason for Change misspelling
Changed Vateche To Badische

Page No. 209 Line No. 2 Reason for Change mistranscription
Changed Texaco To Texas Plant

Page No. 226 Line No. 23 Reason for Change mistranscription
Changed Taker To Tankcar

Page No. 263 Line No. 6 Reason for Change Typo
Changed 12 To one half 1/2

Page No. 305 Line No. 22 Reason for Change typo
Changed 59 To 39

Page No. 320 Line No. 4 Reason for Change misspelling
Changed reactive To radioactive

Page No. 330 Line No. 23 Reason for Change wrong transcription
Changed product To problem

[signature]
Witness