COPY

IN THE DISTRICT COURT OF THE UNITED STATES
EASTERN DISTRICT OF KENTUCKY
PIKEVILLE DIVISION

EQUITABLE RESOURCES ENERGY COMPANY, a West Virginia Corporation,	)	
Plaintiff,	)	
VS.	)	No. 91-441
MONSANTO COMPANY, a Delaware Corporation,	)	
Defendant.	)	

DEPOSITION OF WILLIAM R. PAPAGEORGE, PH. D.
TAKEN ON BEHALF OF THE PLAINTIFF.

September 10, 1992

RICHARD E. SCHROEDER

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IN THE DISTRICT COURT OF THE UNITED STATES

EASTERN DISTRICT OF MISSOURI

EASTERN DIVISION

EQUITABLE RESOURCES ENERGY COMPANY, a West Virginia Corporation,	)	
Plaintiff,	)	
VS.	)	No. 91-441
MONSANTO COMPANY, a Delaware Corporation,	)	
Defendant.	)	

DEPOSITION OF WILLIAM R. PAPAGEORGE, PH. D., produced, sworn, and examined on the part of the PLAINTIFF, used in an action pending in the United States District Court within and for the Eastern Division of the Eastern Judicial District of Missouri, in re: EQUITABLE RESOURCES ENERGY COMPANY, a West Virginia Corporation, VS. MONSANTO COMPANY, a Delaware Corporation, on September 10, 1992, at the office of Husch, Eppenberger, Donohue, Cornfeld & Jenkins, 100 North Broadway, St. Louis, Missouri, before Richard L. Saunders, a Notary Public within and for the City of St. Louis, State of Missouri.

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

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Lexington, Kentucky 40592-1660
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And Charles E. Beal, II, Esq.
For The Plaintiff.

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For The Defendant.

WILLIAM R. PAPAGEORGE, PH. D.,

of lawful age, produced, sworn, and examined on behalf of the PLAINTIFF, deposes and says:

DIRECT EXAMINATION

BY MR. BAKER:

Q. Would you state your name, please?

A. William B. Papageorge.

Q. Mr. Papageorge, my name is Michael Baker and Mr. Beal and I are with a law firm in Lexington, Kentucky. We represent Equitable Resources Energy Company in this litigation against Monsanto. We are here in an early phase of discovery. This is the second deposition we've taken in the case.

We took Mr. Craddock yesterday, and I will tell you in the beginning that our purpose here

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is to gather information and I'm not trying to match wits with you or to trick you into saying something that you don't mean to say. So if there's any question that I ask you that you don't understand or don't believe you know exactly what I'm trying to ask, just stop me and I will be happy to rephrase it. I will get my tongue tangled up sometimes anyway.

I'll ask you first, where do you live?

A. You want the street address or the area?

Q. However you'd like to give it.

A. It's at 321 Pebble Valley Drive, St. Louis, Missouri, 63141.

Q. Are you presently employed?

A. Self-employed.

Q. What's your educational background?

A. I received a Bachelor of Science Degree in Chemical Engineering from Washington University in St. Louis in 1943 and a Master of Science Degree in Chemical Engineering from Washington University in 1947.

I also have credits toward a doctorate degree from -- at that time it was called Oklahoma A & M. Today it's Oklahoma State.

Q. After you obtained your Master's in

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Chemical Engineering did you go to work for Monsanto?

A. No.

Q. Why don't you just briefly trace your employment history?

A. After I got my Master's Degree I joined the Phillips Petroleum Company in Bartlesville, Oklahoma, and was employed by them for about four years until 1951. At that time I joined Monsanto.

Q. What was your job at Phillips?

A. Two different assignments. Half of that period I devoted to research relating to oil fields and secondary recovery of oil. The latter two years I was assigned to engineering activities relating to the fractionation of petroleum and designing equipment to do that type of separation.

Q. Did any part of your job at Phillips involve developing new chemicals?

A. No.

Q. And I assume that you had no involvement with PCB's at all while you were with Phillips?

A. That is correct.

Q. In 1951 you went to work for Monsanto?

A. I did.

Q. Why don't just start from the beginning and

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tell us the various positions and outline your job responsibilities with Monsanto?

A. I'll do that. My first assignment was at the plant in St. Louis, which was referred to as the John F. Queeny Plant. My initial assignment was as a process engineer designing equipment to be used in the manufacture of a chemical produced at that plant.

Following that, I was part of the team that went out into that unit to demonstrate that the equipment that I had designed could do the work that it was intended to do. This is about 1953 or thereabouts.

I was then assigned as an assistant supervisor in a department that made plasticizers as your chemicals that are added to plastics to make them soft and pliable. I was then given my own department as a full supervisor, which was involved with the refining of chemicals used in the manufacture of rubber chemicals.

Q. Approximately when was that?

A. About 1954 or '55. I was then given an assignment in the plant -- these are all at the same plant, the Queeny Plant. I was then given an assignment as a maintenance supervisor in the

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Maintenance Department of that plant in charge of the construction or erection of new facilities, on a small scale, not big major projects, but the replacement of a pump or replacement of a tank, new pipelines, new instruments. That assignment lasted, as best I remember, a couple years.

I was then promoted to superintendent in that department, maintenance superintendent. I was then in the position where I was, in essence, supervising a team of supervisors, foremen and mechanics, maintenance people. The team was roughly about four or five hundred people taking care of the whole plant.

Q. And approximately when was that?

A. About 1957.

Q. Up to this point had you had any involvement with PCB's?

A. Yes, there was an involvement but it was related to the presence in equipment that we were installing. For example, when I was in charge of that small projects group we occasionally installed a transformer or capacitor, replaced one. Later, when I was the maintenance superintendent I had a team of electricians who were involved in repair and maintenance and care of electrical equipment that

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had PCB's in them. My involvement there was one of making certain that their practices were proper and they didn't get the material on them and didn't abuse it and respected it.

Also, when I was superintendent I had the supervision of other maintenance people who worked on equipment which contained PCB's such as air compressors, heat transfer systems and the like.

Q. In the Queeny Plant did you have air compressors that used PCB-containing lubricants?

A. Yes, sir.

Q. And you used PCB fluids for heat transfer?

A. Yes. Shall I keep going?

Q. We're up to maintenance superintendent, 1957.

A. '57. As I remember, that went until 1959, '60, as close as my memory will get me. At that time I was then appointed a superintendent in the plant's Engineering Department, which in the plant was referred to as the plant Technical Services Department. There I was supervising a team of engineers and technicians who studied the various assigned departments to try to improve their capacity or the quality of the product or lower the cost, whatever it took in an engineering sense to

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achieve certain objectives.

I think that takes me to about 1963. I was then made a -- I'm still at the Queeny Plant. In, I believe, 1963 I was promoted to a general superintendent in charge of a multifunction department. It had to do with shipping, receiving, distribution of materials in the plant, the trash pickup, the generation of steam, the distribution of electricity, all of the services that were needed by the production units to accomplish their assigned tasks.

Q. Did you have any involvement in disposal of PCB-containing fluids at this time?

A. Yes.

Q. When would that have started?

A. From 1963 when I was given the assignment. Of course, it was an ongoing activity. I just stepped into the job and continued.

Q. In 1963 how did you dispose of, let's say, PCB-containing fire-resistant lubricants?

A. Well, I'm assuming the lubricant is no longer suitable, can't do the job, it's ready for disposal. Is that what you were talking about?

Q. Let me ask you a couple of background questions then. You had air compressors that used

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Pydraul I assume?

A. Yes, yes.

Q. Did you ever change the oil or change the lubricant in those or did you just add more in?

A. Both. It depended on the condition of the material. A sample would be taken, tested in the laboratory. If it was contaminated in any way and it could not be reclaimed, we would, of course, have to dispose of it. If it could be reclaimed, we would. And disposing at that time consisted of landfilling in Monsanto's own landfill.

Q. Where was that located?

A. Over in Illinois.

Q. Was this done in drums or how did you dispose of the liquid in the landfill?

A. The liquid was in drums. The solid materials like rags and sawdust and anything else that was contaminated was also put in steel drums and hauled over to the site and placed in the landfill.

Q. Did you have any standards as to how strong the drums had to be or how long a life you expected the drums to have?

A. No.

Q. During this time period did you ever have

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leaks of PCB-containing fluids in your plant?

A. Certainly, yes.

Q. What was your standard for cleaning up those leaks?

A. Well, if it's a minor leak we used to use some absorbent material, like I mentioned; sawdust and the equivalent of kitty litter, absorbent kind of materials.

Our site was very small. A few rags would do it. Those contaminated substances would be put in an open-top heavy duty steel drum and when it would reach a certain level they would put the top on it and set it out for pickup.

Q. Did you use any petroleum-based lubricants that did not contain PCB's?

A. Oh, certainly.

Q. Was your disposal of those any different than PCB-containing liquids?

A. No.

Q. So those went into steel drums into your landfill also?

A. That's right.

Q. How long did this job as general superintendent of this multifunction department last?

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A. Until 1964.

Q. And then what did you do?

A. I was now assigned to the plant in Illinois, in Sauget, Illinois, S-A-U-G-E-T, we refer to as the W. G. Krummrich Plant, K-R-U-M-M-R-I-C-H.

Q. Was this plant where PCB's were manufactured by Monsanto?

A. Yes, that's one of the plants.

Q. And what did you do at this plant?

A. I was one of several general superintendents of manufacturing assigned a given set of products that I was responsible for.

Q. What were some of those products?

A. It was rubber and chemical called 4NDPA, phenol sulfur dioxide, sodium sulfite, pentachloro -- the penta that was used for wood treating we called Santobrite.

Q. Were you involved with any of the PCB-containing products at that time?

A. Not directly. There were electrical items in my operations that had it in them but that was someone else's responsibility to maintain.

Q. How long did this position as superintendent of manufacturing last?

A. Until 1965.

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Q. And then what did you do?

A. I was assigned as plant manager at the plant in Anniston, Alabama.

Q. Now, is that the other plant where PCB's were manufactured for Monsanto?

A. The other plant in the United States, yes, sir.

Q. And that was the former Swan Chemical Plant?

A. Yes.

Q. What was your job there?

A. I guess you would say I was the top man there.

Q. I guess that pretty well describes it, doesn't it?

A. The old buck-stops-here bit. Well, I felt that there.

Q. How long did you stay at the Anniston Plant?

A. Until the end of 1969.

Q. And you were the top man there that whole time period?

A. Yes.

Q. Were there products other than PCB-containing products manufactured at that plant?

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A. Yes, there were.

Q. Can you give me an idea of what the relative volumes were?

A. I just don't remember the numbers. Of course, commercial quantities. They left the plant in tank cars or trucks.

Q. Let me make it easy then. Would more or less than half the product manufactured there contain PCB's?

A. I just don't have -- I would say from my knowledge of the operation, two-thirds of the products that left that plant did not contain PCB's.

Q. During this time period did you undertake any changes in the way you handled PCB products or the way you manufactured the products or disposed of products?

A. We, of course, made changes in that period of time the way we manufactured, in installing additional equipment and in introducing a new technique in terms of how the reaction was conducted. Let me try to explain that.

At one time in the early days the entire process took place in one pot. While I was there we introduced the cascading system where it might take three pots, where part of the reaction

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took place in the first and would flow to the second and to the third. We found that that gave us more capacity, more product was produced for this same space and volume of equipment.

We introduced more modern packaging facilities for the PCB system. The disposal did not change because, there again, we used Monsanto-owned landfill on Monsanto property within the plant fence.

Q. And the disposal was done within property there at Anniston?

A. Yes.

Q. You didn't ship it to St. Louis or --

A. That's correct, it was right within the plant fence, just right on the property.

The other question was: What did we do differently? Of course, as we became aware of environmental impact or potential environmental impact, we made some changes in the area in which the PCB's were manufactured to help contain any spills, any emissions to avoid getting it into the environment.

Q. Would that have occurred during the time you were at Anniston?

A. Beginning in '69 we started some of this,

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primarily not so much in installing facilities, but in our practices. I emphasized the immediate cleanup of the spill rather than waiting for the whim of the operator to decide when he wanted to do it. I insisted that as soon as the operation was under control, the next step would be to clean up what was on the pavement or on the stairway or what have you.

Q. Was that different from the procedure you would have used in non-PCB-containing products?

A. Not really. The big difference with PCB's is they are tacky, they are gummy, they are just a difficult housekeeping problem, and my emphasis was on as clean a plant as I could achieve realistically because I'm a believer that, first of all, you should respect all materials, don't abuse them, don't expose workers unnecessarily.

And there's another thought, and I still believe it. I'm going to call it morale is better when a place is clean, and I found that this does work and it is a lot easier to motivate people when they don't have sticky handrails and gummy shoes, and that was the emphasis at that time.

Q. Did you instruct your employees at Anniston to take special precautions to avoid sticky rails or

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gummy stairs that had these PCB-containing products on them?

A. Well, certainly, we continually reminded them to wear gloves, and this is why they at times would put up with the sticky handrails. They weren't getting it on their hand, they were getting it on their gloves. So this is a constant educational program, which is really why you have foremen and supervisors, to see that things are done properly. I don't know that I answered your question right.

Q. It's a good start. Between 1965 and 1969 when you were the top man at the Anniston Plant where, roughly -- I don't want to hold you to the numbers, but about a third of the products you manufactured contained PCB's, did you instruct your employees to take any special precautions with PCB-containing products different from the precautions they would take with any other product?

A. Well, we had at the plant two or three products that were much more dangerous, so, of course, they got much more stringent instructions. By "they" I'm talking about the employees who were making these, in essence, nerve gasses. They were cotton weevil poisons and so on, so they, of course,

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got instructions that were a lot different than the rest of the plant, which I would categorize as industrial chemicals, where there the emphasis is, respect these things, wear your gloves. You got them, you don't have to pay for them. We offer the gloves. Wash. There's a shower room there, towels. Change your clothes when you get the chance. These kind of things were universal for all industrial chemicals at that site.

Q. Did you have occasion to have an employee who got his clothes drenched with a PCB lubricant or other PCB-containing product?

A. Well, I don't know about the word "drenched." It was not a case of totally wet like being caught in a thunderstorm but he would get his pants leg wet, for example, or his sleeve. There the instructions were as soon as you felt that the operation was safe and in control, go over to the change room, pick up a fresh set, take a shower and come back.

Q. Did they wear company-supplied uniforms?

A. Yes, yes, this was part of the union agreement.

Q. These were uniforms owned by the company?

A. Yes.

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Q. Were they laundered by the company?

A. Yes.

Q. So the employees wore their own clothes to the plant and changed at the plant into the uniforms?

A. Yes.

Q. Was this policy any different than it was for -- we won't talk about the nerve gas kinds of products now, but the other industrial chemicals that did not contain PCB's, was your practice any different?

A. That practice was true for everybody, including the clerks and people who didn't come near chemicals. It was part of the -- I'm going to call it the fringe benefits of working at that plant.

Q. In terms of the instructions, if you got any on your pant leg, as soon as you had the operation under control, go put on a clean uniform; did that apply to all your industrial chemicals or just certain ones?

A. All of them.

Q. Were there any policies in terms of employee avoidance of the substance that were more stringent for PCB's than there were for non-PCB-containing products?

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A. No, PCB's were -- they were considered probably the least innocuous of the chemicals there.

Q. We'll go on with your history in just a moment, but there's one thing you mentioned. You said when you first became aware of potential environmental effects of PCB's, when would that have occurred?

A. I personally first heard about this starting about June of '69, and I was informed by my immediate supervisor.

Q. Who was your immediate supervisor at that time?

A. Raymond Stratmeier.

Q. Is he still living?

A. The last I heard, yes.

Q. Now, you were the top man at Anniston, so I assume correctly that Mr. -- was it Stratmeier?

A. Yes.

Q. He was located elsewhere?

A. He was located in St. Louis.

Q. Have you since become aware of a report from Sweden in late 1966 or so about finding PCB's in certain wildlife?

A. That's when Mr. Stratmeier, on one of his routine visits to the plant, informed me that he

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just heard about this work in Sweden. He didn't know all the details but he suggested that as soon as he got more, he'd let me know.

Q. And he first informed you of that in about June of 19 --

A. About June of '69.

Q. In 1969 you came back to St. Louis or what did you do when this job ended in Anniston?

A. I did go back to St. Louis, starting in -- terminated officially in late '69 and I was sort of between jobs in the early part of '70, dropping one job and picking up the other.

Q. Where did you go and what was your new job?

A. I went to Monsanto's headquarters in St. Louis. My new job, the title given at the time was manager, environmental control.

Q. Did this change have anything to do with the potential PCB problem?

A. Definitely. It was designed to address the PCB environmental issue.

Q. And how long did you stay in that position?

A. The responsibilities as they related to the PCB environmental issue were with me until February of '76. Starting in about 1973 or '4 I was assigned additional products of Monsanto but I still retained

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the PCB environmental situation.

Q. What were those additional products?

A. They were a group of chemicals that belonged to that particular group that I was assigned to, such as sulfuric acid, which is battery acid, and maleic anhydride, which is an ingredient that goes into plastics, the phenol that I mentioned earlier.

MR. MONGE: For the record, would you spell that so you make sure? Phenol.

THE WITNESS: P-H-E-N-O-L, also known as carbolic acid.

Q. (By Mr. Baker) Were you at all involved with PCT's during any of this period?

A. I was involved with PCT's when I was at the Anniston Plant as one of the products manufactured there. I was involved with PCT's again sort of indirectly in that they were considered along with many other materials as possible alternatives for PCB's. That was the type of involvement I had at the time.

Q. Then what happened in February of 1976?

A. By February -- between the period '73 and '76 Monsanto had undergone several reorganizations where people and products were matched and

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rematched. I was, of course, reassigned different chemicals as those years went by, but throughout the period I was still held responsible for the PCB environmental issue.

In 1976 the PCB's were assigned to another individual who had a similar job to mine and the PCB's fitted better in his list of chemicals.

Q. And who was that?

A. J. C. Weber. Known as Cole Weber. I never did know what the "J" stood for. Cole, C-O-L-E.

Q. Is he still living?

A. Last that I heard, yes.

Q. Do you know if he's still employed by Monsanto?

A. He's retired.

Q. Do you know if he is still living in the St. Louis area?

A. The last I heard, which is about four years ago, he was.

Q. Continue then. You continued to work for Monsanto after February of 1976?

A. Correct.

Q. Did your job involve the work with PCB's at all after February of 1976?

A. Yes, starting in 1977 I was appointed a

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director in environmental operations of one of Monsanto's operating units. As a director of environmental operations I had the full spectrum of environmental issues relating to any materials present in several plants that were assigned to me as part of that operating unit. And virtually every plant had PCB's in their electrical equipment and, of course, the wide use in compressors and heat transfer systems. So my involvement then became one of making certain that the plants and my staff kept tuned in to the issues relating to PCB's, the regulations, the studies being made, all the reports that were possible. So we were now sort of a client of Mr. Weber, who would feed that information to us and we were expected to execute.

Q. At this time, 1977, was the Anniston Plant still in operation?

A. In 1977?

Q. Yes.

A. Yes, sir.

MR. MONGE: You mean the entire plant?

MR. BAKER: Yes.

MR. MONGE: Okay.

Q. (By Mr. Baker) Were you producing any PCB's at that time?

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A. No. '77 at the Anniston Plant?

Q. Yes.

A. No.

Q. Was the Krummrich -- it was still in operation? Obviously, it is in operation today. I assume it is.

A. Yes.

Q. Were you producing any PCB's at that plant in 1977?

A. Up until July of '77 they did produce it.

Q. Earlier, when I asked you about the plants where you produced PCB's you said those were the two in the United States. Did you have plants elsewhere where Monsanto produced PCB's?

A. Yes.

Q. Where were they located?

A. They had a plant in Wales, the United Kingdom, and for a short period of time we had a joint venture in Japan.

Q. When did the Wales Plant produce PCB's?

A. They produced PCB's right after World War II, late '40's to about 19 -- about 1977, 1978, close to the U. S. termination date.

Q. Do you know whether you have continued production in the Wales Plant after you terminated

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production in the United States?

A. No, they terminated at about the same time.

Q. What about this joint venture in Japan?

A. That was terminated -- I don't think they ran more than a year. They started up in '69 right when the issue was becoming quite evident and I believe, as best I remember, they shut down within a year; '70, '71 at the latest.

Q. Did the whole plant shut down?

A. No -- well, my plant. We're talking about the whole facility or just the unit making PCB's?

Q. Maybe I should back up a little bit then. Did the plant manufacture other products also?

A. Oh, yes, yes.

Q. Was the plant jointly owned by Monsanto and the Japanese company?

A. Yes.

Q. Who was the Japanese company?

A. Mitsubishi.

Q. Where was the plant located?

A. I have forgotten. Starts with a "G."

Q. But it was in Japan?

A. Yes.

Q. Did that plant exist before Monsanto's involvement?

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A. Oh, yes. It was a major chemical complex.

Q. And so in 1969 Monsanto bought a portion of that plant?

A. No.

Q. How did Monsanto --

A. Monsanto, with its engineering staff, assisted the Japanese partners in designing a unit, was involved in the construction of that unit in the years '67 and '68. It finally went into operation in about 1969.

Q. And Monsanto owned a portion of that plant?

A. Yes.

Q. Do you have any idea roughly what percentage of it?

A. No, I don't.

Q. The unit in Japan that manufactured PCB's, that was Monsanto assisted in the designing and building of that and owned a portion of it; did it stop production completely in 1970 or the early '70's or did Monsanto withdraw from its ownership position and the plant continued production?

A. No, the unit was shut down. They just stopped making it.

Q. Do you know why that unit was shut down?

A. Because of environmental issues and

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primarily coupled with the fact that in Japan the use of PCB's was not as extensive, particularly in their electrical system. Their electrical system is designed differently than the United States system.

And also a third factor, they were -- I'm going to call them the Johnny-come-latelys. There was a Japanese producer already in place who dominated the small Japanese market.

Q. Were you involved in the decision to shut down that plant?

A. I was involved in the discussions that addressed that issue and I supported shutting it down.

Q. What other persons to your recollection were involved in that decision?

A. I don't remember the Japanese representatives by name. I do know they came to St. Louis and had discussions.

Q. What about Monsanto personnel?

A. In Monsanto, we had Monsanto's Japanese representative, John Durland, D-U-R-L-A-N-D. There was Howard Bergen, the director of the business group that was responsible for the PCB product line and, of course, their staffs, marketing people, research people and so on.

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Q. Are these persons; the two that you named, Mr. Durland, is he still living to your knowledge?

A. To my knowledge, yes.

Q. Do you have any idea where he is?

A. I do not.

Q. Mr. Bergen?

A. He's deceased.

Q. And i believe it was about sometime in 1970 when this portion of the plant in Japan was shut down?

A. Yes.

Q. Did you continue after 1970 manufacturing PCB's in the Alabama plant?

A. Yes.

Q. I think, if I'm not mistaken, you've already told us that you manufactured them in the Krummrich Plant up until sometime in 1977?

A. Correct.

Q. Is that also true for the Alabama Plant?

A. Alabama Plant ceased production before that. Late '71, early '72.

Q. Were you involved in the decision to cease production at the Alabama Plant?

A. Yes.

Q. What were the reasons that Monsanto stopped

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production at the Alabama Plant and continued production at the Illinois Plant?

A. I think the big reason is the fact that the Illinois Plant was the newer plant, had the newer equipment, newer instruments, so it just made that decision simpler, shut down the old entire plan and keep the new one.

Q. Between, say, 1970 and 1977 did the total production decrease or did you just shift production from the Alabama Plant to the Illinois Plant?

A. Between '70 and '77 it decreased by 50 percent.

Q. When did that decrease occur? Was it gradual from '77 or was there a big dropping off point?

A. Big dropoff occurred between '70 and '72.

Q. What were the reasons for that?

A. Monsanto refused to sell PCB's for many applications.

Q. Was one of those applications fire-resistant lubricants?

A. Yes.

Q. What did you do after 1977, as far as you, personally, in your relationship with Monsanto?

A. I retained the title of director,

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environmental operations, from '77 through 1985. During that period of time there -- as best I remember, there were at least two reorganizations but I was still a director of environmental operation of an operating unit.

In 1985 another reorganization took place. I was then named manager of the occupational health for a -- I'm going to call it a bigger unit in Monsanto called the Monsanto Chemical Company as distinguished from their agricultural products company or their valve manufacturing company or their pharmaceutical operation and so on.

Q. Between 1976 and 1985 did Mr. Weber remain in his position?

A. I hesitate because I don't recall when Mr. Weber retired, but until his retirement he maintained the title of manager of -- at that time was manager of Product Acceptability I believe it had been changed to for different operating units and I don't recall just which units he was assigned to.

Q. Between 1976 and 1985 who was the person or who were the persons primarily responsible for Monsanto for dealing with the PCB problem?

A. 1976 it was Cole Weber. Somewhere along in

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about 1977, although Mr. Cole Weber had the officially designated responsibility, the active person was a David Wood. Then for a period of time it seems to me that there was no one that specifically wore the PCB environmental hat until about 1981, Dr. Craddock was appointed. Might have been '79.

Q. I'm not trying to hold you to any particular date.

A. The latter part of the '70's was when John Craddock was appointed as the guy that could again be the focal point for PCB environmental issues.

Q. Has he been the guy ever since?

A. To my knowledge, yes.

Q. Has Dr. Craddock been primarily responsible for dealing with the PCB situation since he took that spot in 1980 or so?

A. You say primarily, I do not know at present if he has been given other assignments. He may well have, but I do know that he's still the PCB focal man, focal point.

Q. You said there was a reorganization in 1985?

A. Yes.

Q. And that you became manager of occupational

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health for the Monsanto Chemical Company?

A. Correct.

Q. How long did you stay in that position?

A. One year.

Q. And then what did you do?

A. I retired.

Q. What has been your involvement with Monsanto since your retirement in 1986?

A. Oh, on occasion I am asked to drop by and share the past with the attorneys.

Q. We talked to Dr. Craddock yesterday and he indicated he had given depositions in a small number of cases and had testified in an arbitration proceeding. We've been given by Monsanto a lengthy list of various litigation cases about PCB's, so let me ask you, have you previously testified in cases for Monsanto involving PCB's?

A. I have.

Q. Approximately how many different cases have you been involved in?

A. We're talking trials now? In the courtroom?

Q. Let's start with trials. We'll go all the way back to the bottom, but, first, have you testified in actual trials in front of a jury or a

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judge?

A. I have.

Q. Approximately how many of those?

A. I have not kept score, it's at least half a dozen times.

Q. To the best of your recollection can you identify where you went to testify?

A. I'll try. I recall a case in the northeast having to do with contaminated mink in New Hampshire. Is this the kind of --

Q. That's a good start.

A. There was a case in Tennessee involving the transport of a transformer and the spillage of PCB's on the shoulders of the highway.

There's a case in Texas where workers allege that they had health problems as a result of working with PCB's.

Q. Has there been a trial in the Bloomington case?

A. Yes, yes, that's another one, the trial in the Bloomington having to do with the cleanup of industrial sites. Seems to me there are at least -- oh, there's a trial in St. Louis here recently; again, workers claiming health effects as a result of working with PCB's. I suspect there's some

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more. I just can't recall them at the moment.

Q. Were you involved in the case in Milwaukee?

A. Oh, yeah, the Stroh case, yes. Yeah, that's contaminated property.

Q. Of these cases it looks like at least the one in Bloomington and the one in Stroh's may have some similarities to our situation. Have there been any others that you can recall where you testified at trial involving claims about cleanup?

A. I can't think of it at the moment.

Q. Have you given depositions in other cases?

A. I have.

Q. And I won't expect you perhaps to remember every single deposition but to the best of your ability can you identify the depositions you've given for Monsanto or in cases involving Monsanto and PCB's?

A. I'll try. There are at least a couple dozen of these. There were depositions relating to a case in North Carolina in which chickens that were fed contaminated feed displayed health problems and hatchability problems and the like.

There were cases in -- of course, depositions relating to the trials we just talked about were part of the group.

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There was a case in -- I believe it was Indiana; yes, Indiana, where a dairyman alleged that his herd was contaminated with PCB's because of PCB's used in a coating in his silo.

There were depositions up in Wisconsin having to do with the manufacture of outboard motors, Outboard Marine case is what I call it, in which PCB's were used in their foundry and discharged into the bay.

There was a deposition having to do with a small transformer manufacturer in Dallas who had contaminated his back lot and wanted help cleaning it up.

There was a deposition relating to a fire in San Francisco, a transformer fire. Also a fire in -- transformer fire in Tulsa. I know there were others but they don't come to mind at the moment.

MR. BAKER: I will ask if counsel for Monsanto will agree to provide us with transcripts of any prior testimony by this witness.

MR. MONGE: I don't know that we would have all those. If we do, I'll look into it, and if you want to pay for the copying cost of them. I mean you can get them at the courts. They are public

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record.

MR. BAKER: I'll just put on the record, one reason we're asking for this is there have been a couple of occasions where we've talked to counsel for other plaintiffs and have been told that there were court orders entered at the request of Monsanto sealing --

MR. MONGE: There may be and I'm going to have to check with my client to find out, and I do not know whether we've got them, whether they were subject to protective orders or what, so I just can't make a blanket representation to you, but I'll let you know. And if there's a reason that we can't or won't, I'll tell you that and you can take whatever steps you deem appropriate at that time.

MR. BAKER: We are asking you to provide it to us and we'll work out financial arrangements or to inform us that you can't for whatever reason.

MR. MONGE: And then we can go from there.

Q. (By Mr. Baker) Mr. Papageorge, do you recall any other cases at the present time where you may have given depositions or you know that there are some you just can't remember?

A. One came to mind called -- the packing company in Montana where a leaking transformer

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introduced the fluid into the waste system which contained the waste from the packing and slaughtering operation, and this waste was salvaged and used as I remember for animal feed of some sort and the allegations were that the PCB's had did some harm.

Q. Do you have any written agreement with Monsanto as to your responsibilities at the present time?

A. I do not.

Q. Do you have an oral agreement with them as to your responsibilities at the present time?

A. No.

Q. In these cases in which you have testified are you compensated by Monsanto?

A. No.

Q. Are you on any retainer for Monsanto?

A. No.

Q. You testified earlier that you are self-employed at the present time. What kind of work do you do?

A. Well, I do consulting work on PCB's. On a few occasions I've been asked by others to help them with environmental type problems such as a contaminated piece of property that they have

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difficulty selling and they need advice on who in the state to contact and what engineering concern or disposal concern to hire. A few of those come my way.

Q. You said you did consulting work on PCB's. Is a portion of that for Monsanto?

A. Indirectly.

Q. Are you paid directly or indirectly by Monsanto for any of the consulting work?

A. I guess indirectly.

Q. I don't mean to pry but what do you mean by "indirectly"?

A. Well, I have an agreement with a law firm that does the PCB work for Monsanto. It's with them that I deal with. Now what happens between them and Monsanto, I don't know.

Q. So you are paid by a law firm to do consulting work and/or expert testimony in cases involving Monsanto?

A. That's correct.

Q. What law firm is that?

A. It's the Smith, Helms, Mullis & Moore in Greensboro, North Carolina.

Q. What is your arrangement with this law firm as to how you are paid?

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A. Well, I'm on a retainer and the payment amounts to $150 an hour and that's about it. There's a provision there if I work into the wee hours of the morning they kick it up to $200 an hour.

Q. People try to avoid that?

MR. MONGE: I assure you, we're not going to do that.

A. But 150 is the --

Q. (By Mr. Baker) So you are paid by this North Carolina law firm $150 an hour for your consulting work and your testimony or -- not for your testimony, for your time in testifying?

A. I do not get paid when I'm a fact witness. I do get paid if I'm an expert witness.

Q. And how is that distinction made? Who makes that distinction?

A. I leave that up to the lawyers. I'm told what it's going to be. I don't know how they decide that.

Q. Do you submit bills to the law firm?

A. I submit a time report; the dates, the hours spent, the fractions of hours and the topic.

Q. Do you submit that for all your time and they determine whether that's involving facts or

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expertise?

A. That's right. I don't make any judgment regarding what time. I just tell them on this date I spent so many hours with Mr. so-and-so regarding this case. What they do with it, I really don't know.

Q. But they send you a check?

A. Yes, eventually. It's not a very formal kind of arrangement, but that's all right, I'm comfortable with it.

Q. When they send that check do they show which portion of that they did not pay because they thought you were a fact witness in that particular function?

A. No.

MR. MONGE: I'm going to object to the relevancy of all this. I've let it go on and I'll let it go on but I don't see any relevancy of it.

Q. (By Mr. Baker) Your answer to that was no?

A. They do not describe how they arrive at the calculation.

Q. Do you ever go back and compare the bills you sent them with the amount they paid and try to figure out?

A. Yeah, I do, and I just -- they decide those

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hours are this type and --

Q. I want to move way from this subject but I can't help but ask one or two more questions. Do they generally pay most of it or is it about half of it or somewhere in between?

A. Most of it they do pay, yes.

Q. And what you're doing today, you will submit your time to this law firm and you won't distinguish between fact testimony and expert testimony?

A. No, I don't feel I'm in a position to.

Q. And you expect or hope that they will pay most of it?

A. Yes, sir.

Q. I won't ask you any more about that. Hope I never have to again.

I'm going to go through a list of names of persons who we believe at one time or another worked for Monsanto and I'm going to ask you to the best of your recollection what their jobs were and whether they are still living and if you have any idea where they are located. And to try and speed it up I will just give you the name and you tell me what you can about that person, and if I need anything more specific, I'll ask you.

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A. It would help me if you give me a period of time because many of these folks had many assignments through the years.

Q. Why don't we start and see how far can get then? Paul Benigness. Are you familiar with that person?

A. Yes, I am. Can I have a period of time? Because --

Q. Let's start at the present and go backward then. To your knowledge, is he still living?

A. Yes.

Q. Do you know if he's still employed by Monsanto?

A. He's retired.

Q. Do you know if he still lives in the St. Louis area?

A. Yes.

Q. Did he work for Monsanto during the 1960's?

A. Yes.

Q. During the 1960's roughly, best of your recollection, what was his job?

A. He was a marketing manager responsible for the marketing of fluids used in electrical equipment.

Q. That would have included Pydraul AC and

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other PCB-containing fluids?

A. Would not include Pydraul.

Q. I'm sorry, electrical equipment. Would have included PCB-containing fluids?

A. Yes.

Q. Do you know what he was responsible for during the 1970's?

A. Same job.

Q. W. N. Maddox.

A. Mr. Maddox was a member of our Monsanto's Distribution Department and he was one of the persons that saw to it that the customer orders were handled promptly; that there was enough inventory on hand to satisfy the order; that the shipment went out when it should, in the right package and the right vehicle or the right routing and so on.

Q. Do you know if he is still living?

A. Best of my knowledge, yes.

Q. Is he retired or does he still work for Monsanto?

A. Retired.

Q. Do you know if he still lives in the St. Louis area?

A. I do not know.

Q. Did he work for Monsanto during the 1960's?

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A. Yes.

Q. And the job you've described, would that have been his responsibility in the 1960's?

A. Yes.

Q. What about the 1970's?

A. Same type.

Q. Cumming Paton?

A. Cumming Paton was a -- he had several jobs there. Cumming Paton is a technical individual, doctor of chemistry who worked in the marketing departments of Monsanto in the late '60's, early '70's. He was involved with plasticizers which included the PCB-type plasticizers. That lasted, as best I remember, until about 1971 or '2. He was then given another assignment that I'm not familiar with the details.

He reentered the PCB situation again in about 1975 or so, but this time not with the plasticizers but with the group we call the Functional Fluid Group that handle these hydraulic fluid and heat transfer fluid, and at that time in '76 it was only electrical fluids.

Q. Do you know if he is still living?

A. Best of my knowledge, yes.

Q. Is he retired?

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A. I don't know.

Q. If he isn't retired do you believe he still works for Monsanto or did he leave the company?

A. The last I heard, yes.

Q. Do you know whether he lives in this area?

A. I do not.

Q. Dr. R. Emmett Kelly, and I'll tell you from yesterday we learned that he is still located in the St. Louis area.

A. Very much so, yes, sir.

Q. Are you still on friendly terms with Dr. Kelly?

A. Oh, yes.

Q. Do you see him from time to time?

A. Occasionally, yes.

Q. Do you ever discuss the PCB situation with him?

A. Well, that's about the only time we see each other is before or after a deposition.

Q. To your recollection what was Dr. Kelly's involvement in the 1960's with Monsanto and PCB's?

A. Oh, he was involved with all health matters relating not only to PCB's but all products by Monsanto.

Q. Would he have been involved prior to 1960?

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A. Certainly. He goes back to the 1930's, so --

Q. Would he have been involved in the 1970's?

A. Yes, definitely, until his retirement.

Q. Jack Barrett, and we believe he may be a physician.

MR. MONGE: How do you spell the last name?

MR. BAKER: B-A-R-R-E-T-T.

A. I don't know of any person by that name. I do know a Jack Garrett, G-A.

Q. So you don't know a Jack Barrett? You don't recall that name at all?

A. I don't.

Q. Was Jack Garrett involved in PCB's at all?

A. Yes, he was.

Q. What was his role?

A. Jack Garrett was an industrial hygienist reporting to Dr. Kelly in the corporate Medical Department.

Q. Okay. Is he still living?

A. Yes.

Q. Does he still work for Monsanto?

A. He retired.

Q. Does he still live in this area?

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A. The best of my knowledge, yes.

Q. Was he working for or with Monsanto in the 1960's?

A. Yes.

Q. Prior to that, in the '50's or earlier?

A. Yes.

Q. In the 1970's?

A. Yes.

Q. D. A. Olsen?

A. Mr. Olson in late '60's, very early '70's was the director of marketing for the business group that managed PCB sales.

Q. Is he still living?

A. To the best of my knowledge, yes, sir.

Q. Do you know if he still works for Monsanto?

A. He does not.

Q. Do you know if he's retired or works for someone else?

A. He worked for somebody else. I don't know who.

Q. Do you know if he still lives in the St. Louis area?

A. I do not.

Q. James Mason?

A. James Mason. I don't know a James Mason

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related to PCB's.

Q. Do you know a James Mason that worked for Monsanto?

A. I've seen the name. I personally had very little, if anything, to do with the person.

Q. C. E. Singleton?

A. Mr. Singleton, yes, he was a salesman in the field selling Monsanto products.

Q. Do you know if he's still living?

A. I do not.

Q. Before I go on with the rest of the names, while we're on the sales list let me ask you a couple of questions.

Did Monsanto have salesmen who were responsible for various territories?

A. Most of the Monsanto salesmen are responsible in two ways. One is they had a product line that they represented, and then they were assigned a geographic area to cover.

Q. Would there have been a salesman responsible for Pydraul fire-resistant lubricants for the area that would include Kentucky?

A. I'm not familiar with exactly where the geographic lines were drawn. It's possible that Kentucky might have been divided in two parts but

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there was certainly a salesman assigned to a piece of Kentucky or all of it that represented the Pydraul products.

Q. Would that salesman have traveled to facilities or done his work by telephone, or do you know?

A. Both.

Q. For the time period between the mid-1950's and the early 1970's can you identify any of the salesmen who would have been responsible for Pydraul fluids for any part of Kentucky?

A. I cannot.

Q. Can you tell us anyone who might be able to identify those salesmen who are still living?

A. The only person I can think of is Norman Johnson.

Q. Would that be N. T. Johnson?

A. Yes.

Q. That's interesting, because that's the next name on my list, so I guess we have come full circle here. Tell me about Mr. Johnson.

A. Well, again, in the period of time we're talking about, Norm Johnson, in the late '60's, early '70's, was the top man in the sales or marketing group that concerned themselves with

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industrial fluids such as the hydraulic fluids, the Pydraul line.

Q. Is he still living?

A. Yes.

Q. Does he still work for Monsanto?

A. No.

Q. Do you have an idea of the area in which he lives?

A. The last I heard he lives up in the Chicago area somewhere.

Q. Is he retired?

A. Yes.

Q. C. Larry Bradford.

A. Larry Bradford was the staff member reporting to Mr. Johnson who concerned himself with the technical aspects of the product and he served as the technical backup person for the salesmen in the field. If a salesman would be asked a technical question that he hadn't responded to before, he had Larry to call on, or sometimes Larry would go out with him and make a joint visit and so on.

Q. Do you know whether these salesmen would have tried to call on all customers or if, say, you had a customer that only bought a small portion every couple of years, would they get sales calls or

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would the salesmen concentrate on bigger customers?

A. That was left up to the discretion of the salesman as to how he wanted to manage his business, and that would vary. If he happened to be in the neighborhood, he might drop by. On the other hand, he may have had a specific program and call on these type of customers once a year; this other set twice a year and so on.

Q. Did Monsanto have any standards or requirements of their salesmen as far as calls on the customers?

A. Well, I don't know as I'd call it a standard. It was really an encouragement, every moment available see your customer face-to-face, make it a personal thing. That was the guidance given.

Q. Do you know if these salesmen were paid salaries or commissions or some combination?

A. As best I recall, it was a basic salary supplemented by what you might call a commission or a bonus, depending on his performance.

Q. In general terms some salesman may have a salary that pays all their cost of living and maybe get a small bonus, and others may depend on a substantial bonus to live on, but in general terms

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would the salary have been the high percentage of their total pay or would a commission have been a high percentage of their total pay, or what do you recall?

A. I'm in no position to know.

Q. You have already, I believe, identified Howard Bergen?

A. Yes.

MR. BAKER: Why don't we take about a five-minute break?

MR. MONGE: Sounds good.

(A brief recess was taken.)

Q. (By Mr. Baker) Mr. Papageorge, in about 1969 or so was there an ad hoc committee formed by Monsanto to address the PCB problem?

MR. MONGE: I'm going to object to the characterization of "PCB problem." You can call it what you want to, but for the record, I'd like to have that --

Q. (By Mr. Baker) Let me change that then to address the PCB situation.

A. There was an informal group that was formed to pull together the evolving PCB information that was pouring in from all directions, yes.

Q. Who selected that group?

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A. My understanding is that Dr. Kelly suggested to the business managers, primarily Mr. Bergen and Mr. Springgate, plasticizer director, that they better address this problem; that it could not be handled only by the Medical Department; that it was widespread. Mr. Bergen and Mr. Springgate then nominated representatives from their staffs to participate with Medical Department personnel and set up this group, this what was later referred to on occasion as the Ad Hoc Committee.

Q. Who were the members of that group?

A. I don't propose to remember all of them. There was Elmer Wheeler. There was a Paul Hodges. I believe a Robert Keller. William Richard. Martin Ferrar. I'm sure there were others but those names come to mind.

Q. Was there a Mr. John?

A. Oh, yes, Ed John.

Q. Do you know whether Elmer Wheeler is still living?

A. No, he's deceased.

Q. What about Paul Hodges?

A. Last I heard he's still somewhere in the area here but I'm not certain.

Q. Is he retired?

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A. Yes.

Q. Robert Keller?

A. Robert Keller is a retired Monsanto employee; still, I believe, lives in the St. Louis area.

Q. William Richard?

A. Deceased.

Q. Martin Ferrar?

A. He's retired. I have not heard from or of Martin. I don't know.

Q. And Ed John?

A. Ed John left Monsanto and joined another company and I don't know where he is or who he joined.

Q. I think that Dr. Kelly selected these individuals or the operations people selected individuals or how?

A. The managers of the business groups appointed these individuals to serve on that committee.

Q. What was Elmer Wheeler's job?

A. Elmer Wheeler was manager -- trying to recall his official title. Manager, Industrial Health I believe was his title. He was really the number two man in the Medical Department reporting

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to Dr. Kelly.

Q. What about Paul Hodges?

A. Paul Hodges was an environmental engineer at that time assigned to the W. G. Krummrich Plant and was helping out with the St. Louis office at the same time.

Q. Robert Keller?

A. Robert Keller was the top chemist in charge of the research group that specialized in developing analytical methods for chemicals.

Q. William Richard?

A. Bill Richard was the director of research relating to industrial fluids.

Q. Martin Ferrar?

A. Martin Ferrar was the director of research relating to plasticizers.

Q. And Ed John?

A. Ed John was a public relations representative.

Q. Was this group given any power or responsibilities other than to report to management?

A. Of course, they always reported to management. Their charge was review all you can about this evolving issue and give us your recommendations as to what Monsanto should do from

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this point on.

Q. Were you involved at all with this Ad Hoc Committee?

A. Not at the time it was active, no.

Q. How long was it active?

A. As best I can tell, about a year, about 1969 primarily.

Q. And then you came to St. Louis in early 1970?

A. First of January, yes, sir.

Q. That's about as early as you can get.

A. On the holiday.

Q. Was the ad hoc committee still in place then or had it already been disbanded?

A. It was in place but when I arrived I formed my own PCB committee and those people automatically became a part of it.

Q. So was there an official announcement, this is our committee, or did you just gather associates together to seek advice?

A. Well, I don't know how to define "official." As far as the individuals in Monsanto associated with PCB's are concerned, they were all well informed that they were represented on this committee by these people and others. Anybody

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associated with PCB's could drop in and participate.

Q. Were there regular meetings?

A. There were many meetings. If by "regular" you mean a certain day of the week, we meet at a certain time in a certain room. They were not that regular. They were called primarily by me when I felt there was a need to touch base with each other or called by any member of the committee who found some new piece of information that he wanted to disseminate quickly rather than rely on the mail and so on.

Q. Were there minutes kept of any of those meetings?

A. Yes, for a while. Let me think a bit. They were not minutes per se, they were summaries of activities as reported by the members of that committee and I acted as editor and put it together.

Q. Did you have a name for that committee?

A. PCB Committee.

Q. Did you issue any kind of regular report to management or to be circulated among other employees?

A. There for a while I issued a monthly report summarizing the previous month's activities.

Q. Other than the six persons that were named

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as members of the Ad Hoc Committee that was in place before you got here; first, did you say all six of those were also members of your PCB Committee?

A. Yes, sir.

Q. Who were some other persons who were on the PCB Committee?

A. Well, we picked up more of the marketing types now. We got Mr. Olson and Mr. Johnson, Mr. Benigou.

Q. I believe it's B-E-N-I-G-U-O?

A. We also picked up from the Plasticizers Group, Walter Schalk, S-C-H-A-L-K. Dr. Cumming Paton referred to earlier.

Now all of these people did not attend all of the meetings because many used to travel quite a bit, but --

Q. Mr. Schalk, is he still living?

A. The last I heard, yes.

Q. Is he still employed by Monsanto?

A. No, he's retired.

Q. Do you know if he lives in the St. Louis area?

A. I do not know.

Q. You said you brought in Mr. Olsen, Mr. Johnson and some people from Marketing into the

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committee. What was your reason for including more marketing people in this group?

A. Well, we needed to know much more about the types, uses, that these materials were being put to and the only people who really knew this were the marketing people. They were the ones that had the hands-on knowledge, so they were able to participate quite a bit. And then many of the decisions that the committee came up with involved their participation, such as writing letters and making calls and so on, so they had to listen to our deliberations to get the proper feel for what it is that we want to pass on.

Q. So you didn't believe that the people who designed the products and the people who ran the company knew what the products were being used for?

A. Oh, they knew in general but not very specific, like the unusual situation such as -- let me give you an example. The use in silo coatings. We at Monsanto were not dairymen, didn't even realize how silos were built and the fact that anybody would coat the concrete silo, but here it is, that kind of --

Q. What PCB product was used in the silo coatings?

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A. Aroclor 1254.

Q. Did some other company manufacture a coating product that contained Aroclor 1254?

A. I don't know that I'd call it a company. There was a consultant -- as I remember, he was associated with it at one time, but, nevertheless, he experimented in his laboratory and came up with a mixture of several ingredients and one of the ingredients was Aroclor 1254 and he recommended this to a concrete silo builder as a good coating to prevent deterioration of the concrete from the acids generated in the silage.

Q. Now, Aroclor 1254 is the same product that was used in Pydraul AC; is it not?

A. That is correct.

Q. Was this product available in its pure form as Aroclor 1250 not combined with other ingredients for sale by Monsanto?

A. Yes, yes.

Q. Was that sold to anyone who wanted to buy it? Was it available on the open market?

A. Yes.

Q. And was it sold through distributors or did you have to buy it directly from Monsanto?

A. Both, either way.

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Q. Back then, say, in the late '60's, if I wanted a container of Aroclor 1254, was there a place I could go and pay cash and buy a 5-gallon container or some other size container?

A. Yes, that would generally be a distributor.

Q. Do you know what warning or caution labels would have been contained on an Aroclor 1254 container in the late '60's?

A. Late '60's there would be reference to it containing a chlorinated chemical. There would be reference to avoid prolonged breathing. There would be reference to don't have it on your skin, wash it off, and there would be reference to clothing contamination and not wearing it too long.

Q. First, would the label have said anything about PCB?

A. No.

Q. Would it have referred to chlorinated hydrocarbon?

A. Yes.

Q. Would the label have had any directions on disposal?

A. In the late '60's?

Q. Yes.

A. No.

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Q. I believe you have already identified Mr. Springgate. Did you know a Mr. Marsh?

MR. MONGE: How do you spell that?

MR. BAKER: What I have is M-A-R-S-H.

A. There was a Marsh, Paul Marsh.

Q. (By Mr. Baker) Paul?

A. That's my recollection. I remember the name but I don't recall a lot of activity associated with PCB's by Mr. Marsh.

Q. Mr. R. E. Hatton?

A. Hatton.

Q. Hatton, H-A-T-T-O-N?

A. Dr. Roger Hatton, yes.

Q. What responsibilities did he have with Monsanto?

A. He's a research chemist, doctor in chemistry. He was very active in the research involving hydraulic fluids and he later became the technical staff member on Mr. Johnson's marketing team.

Q. Was he involved with Pydraul at all in the 1950's or 1960's?

A. Yes, I believe he was one of the developers of some of the Pydrauls.

Q. Do you know if he is still living?

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A. Yes, he is.

Q. Is he retired?

A. Yes.

Q. Does he live in this area?

A. Yes.

Q. Mr. W. R. Core?

A. Mr. Core, yes.

Q. Did you know him?

A. Yes, I do.

Q. Did he have any responsibility with regard to PCB products?

A. Yes, for a while he was my boss, for example. For a short period of time Mr. Bergen reported to him.

Q. Is Mr. Core still living?

A. Yes.

Q. Does he live in this area?

A. Yes.

Q. Is he also retired?

A. Yes.

Q. Mr. J. H. Davidson.

A. Jerry Davidson. He, again, had a job similar to Dr. Hatton on Mr. Johnson's staff, sort the St. Louis-based technical advisor to the field salesmen.

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Q. Is he still living?
A. Best of my knowledge, yes.
Q. I assume he's also retired?
A. He's too young for that. He left Monsanto is all I know.
Q. Do you have any idea if he lives in this area?
A. I do not.
Q. Clayton Callis. I believe you mentioned him once.
A. I did?
Q. Maybe not. I thought you mentioned Mr. Callis. Let me ask you about him anyway. Is he still living?
A. Mr. Callis is living, yes, sir.
Q. Is he retired?
A. He's retired.
Q. Does he live in this area?
A. I believe so.
Q. In the 1950's through 1970's what responsibility did he have with regard to PCB's?
A. 1950 to '70's.
(After an interruption in the deposition the pending question was read by the reporter as above recorded.)

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Q. (By Mr. Baker) And we were talking about Mr. Callis I believe.

A. Dr. Callis' association with PCB's began in the late 1970's when he was appointed a director of environmental operations in 1977. He was Dr. Craddock's supervisor when Dr. Craddock was assigned the PCB issues.

Dr. Callis' responsibilities to PCB's, other than supervising Dr. Craddock, had to do with the assurance that the plants assigned to him complied with all the rules and regulations, the practices suggested for PCB's. That's the only association I recall that Dr. Callis had.

Q. James J. Roeder?

A. James Roeder was a field salesman working out of the St. Louis office. He had the St. Louis area marketing or selling PCB products.

Q. Do you know if he's still living?

A. The last I knew, yes.

Q. Do you know if he's retired?

A. I don't know.

Q. Do you know or believe that he lives in the St. Louis area?

A. I would suspect he's in the St. Louis area and I suspect he's still working for Monsanto but

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I'm not certain.

Q. Earlier, when I asked you about a James Mason, I believe you said you couldn't recall a person by that name. Do you recall a John Mason?

A. I do.

Q. I believe I had a typographical error is what led to that problem. Is John Mason still living?

A. The John Mason I have in mind, best of my knowledge, yes.

Q. Was he employed by Monsanto?

A. Yes.

Q. What involvement would he have had with PCB's?

A. In 1970 or just before, late '69 John Mason was an assistant general manager of the operating unit in Monsanto that had responsibilities for PCB products. He reported to the general manager and the PCB marketing group reported to John Mason.

Q. Do you know whether he's retired now?

A. He is retired.

Q. Do you think he lives in this area?

A. No, he does not.

Q. Do you have any idea where he does live?

A. The last I heard he was in England

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somewhere, or in Wales.

Q. Did he have any involvement with the plant at Wales at any time?

A. Not directly. He was a marketing man. He sold products manufactured at that plant, but --

Q. Has anyone employed by Monsanto had more involvement in dealing with the PCB situation since 1970 than you have?

MR. MONGE: If you can answer that.

A. I don't know how to describe "more." I would suggest that I had a more varied involvement covering just about every spectrum of this issue. There were individuals that had more involvement in very specific areas like Dr. Kelly, of course, in the medical area. He was much more involved than I was, but I don't know how else to describe it. My involvement was much more varied and much broader.

Q. (By Mr. Baker) Besides you and Dr. Kelly, if I were wanting to find the people who know the most about what Monsanto did with regard to PCB's, say, between 1965 and 1980, who are the persons you would suggest I talk to?

A. I'd go to me up until 1976 or so, and to take it on into 1980 I'd go to Dr. Craddock.

Q. What about the period between 1965 and

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1970?

A. Do you have any particular subject or area in mind? It gets fragmented. There is no one person that has the broad picture that is still alive that I remember.

Q. I have many subjects in mind but let me see if I can name a few. First, if I wanted to find out what kind of research into biodegradation Monsanto would have done between 1965 and 1970 who could I talk to?

A. About which product? The Pydraul line?

Q. The PCB products in general and Pydraul products in particular.

A. In '65 through '70 I would go to Dr. Keller or the man right on the firing line so to speak, Dr. Scott Tucker.

Q. That was Dr. Keller?

A. Keller, Robert Keller, K-E-L-L-E-R.

Q. If I wanted to find out for the same time period 1965 to the beginning of 1970 what information Monsanto may have given to its customers concerning possible health effects or environmental effects from PCB products including Pydraul, who would I talk to?

A. Environmental effects now you say, or

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health effects?

Q. Both possible health effects or environmental effects. If you need to separate those, feel free to do so.

A. I would go to Dr. Kelly.

Q. Is that for health?

A. For health and the environmental because there's no one else alive that was active in that time.

Q. Now let me give you a harder question. Say if I wanted the same information first on research and second on information given to customers for the period 1955 to 1965, can you give me any help on that?

A. I would start with Dr. Roger Hatton and see where he could help.

Q. Anyone else that you can think of?

A. Nobody stands out in my memory, no.

Q. Were you at any time ever directly involved in developing products for Monsanto?

A. No.

Q. Were you ever involved indirectly in any research for Monsanto to determine whether there were possible adverse health effects or environmental effects of any products?

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A. Directly?

Q. Yes.

A. No.

Q. What is a chlorinated naphthalene?

A. Chlorinated naphthalene. I suspect you've heard of naphthalene. It's the old moth balls, the old naphthalene. If that naphthalene is melted and chlorine bubbled through it, chlorine will attach itself randomly and the resulting product is a mixture of different chlorinated naphthalenes.

Q. Are those products being manufactured now?

A. I don't know.

Q. Were they being manufactured in the 1930's, 1940's?

A. Yes, they were.

Q. Is this at all chemically related to PCB's?

A. Not in the true sense, but one could say that yes, they are both chlornaphthalenes, and PCB's have chlorine, they both have hydrocarbons, so they belong to the broad family of chlorinated hydrocarbons. Does that help any?

Q. Yes, yes. But they are not closely related you don't think?

A. No, I wouldn't call them closely.

Q. Would you consider chlorinated naphthalenes

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to be toxic?

A. There again, I'd have to know the dosages and the routes of exposure, but they were implicated at one time with a situation that occurred in the coating of wire.

Q. I know that this seems like a simple question, or maybe not simple, but a question that shouldn't be asked, we shouldn't need to ask you about, but early on in our discovery -- and I want to have this nailed down -- but, first, what is a PCB, just in general?

A. Let me try. The "B" in the PCB refers to biphenyls which is a chemical that is graphically shown by a chemist as a hexagon, shape of a hexagon. The corners of the hexagon represent locations of carbon atoms. There are two of these hexagons connected to each other nose-to-nose so to speak as compared to side-to-side. Nose-to-nose. That combination is referred to as biphenyls.

The "C" part of the PCB refers to chlorine. When biphenyls are exposed to chlorine, the chlorine will attach itself to these carbons around these hexagon rings in a random kind of way.

The "P" refers to poly, so any combination of chlorine and biphenyls that has two

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or more chlorines fits the category polychlorinated biphenyls. I hope that helps.

Q. In terms of biodegradation, does the number of chlorines and/or the location, you can use those separately; does that affect the biodegradability of a PCB?

A. It does.

Q. In what way?

A. The lower the chlorine content, the chances of degradation under the proper conditions are better. And what I mean by "proper conditions," you have to have other agents at work, it can't be isolated in a glass container and hope to degrade, it won't do that, but studies have shown that there are some bacteria, for example, that destroy those lower chlorines. They disappear, so the analyst can't find them after a while.

Q. Is that based on the number of chlorines?

A. Generally, yes.

Q. Does the location of the chlorines have an affect on that also?

A. I have an understanding that location can increase the chances for degradation as well as inhibit it. The bacteria in situations can't get in there, the chlorine is in the way, but if they can

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get in there and break this ring, then the chemical is destroyed.

Q. You say that a PCB would have at least two chlorines?

A. To fit the poly definition, yes.

Q. What's the maximum number?

A. Ten chlorines.

Q. Is there some point in the number of chlorines where the substance is much less biodegradable?

A. This is all relative. At about the five and six chlorine level the molecule is resistant. It's more difficult to break down.

Q. Would it become significantly more difficult as you got to the nine and ten level, or can you tell me that?

A. It's expected to be more resistant. There's never been a study addressing that specific question.

Q. In an Aroclor -- let's use 1254 now -- would that have a combination of PCB's ranging from two to five or six or be primarily a particular number of chlorines?

A. It's a range. I have seen this breakdown and it's been reported many times. As best I

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remember, it goes from two to about seven, maybe eight chlorines. There's a range predominantly in the five and six category.

Q. Is the mix different in Aroclor 1242 for instance?

A. The Aroclor 1242, the range goes from -- I think the 1242 as I remember had even some monochlor in it and it went to the three and four chlorines.

Q. So based on what you've told us so far then, 1242 should be much more biodegradable than 1254?

A. Under the same conditions of exposure.

Q. Dr. Craddock I believe gave us a pretty good explanation of the numbering system yesterday, but just to confirm that, what is in the Aroclor, what does the 12 mean and what do the numbers that come after that mean?

A. Well, the 12 refers to the fact that it's biphenyls. The numbers following the 12 represents the percent by weight of chlorine present in that commercial mixture. Keep in mind, Aroclors are not pure chemicals, they are always mixtures, so when we see the terminology Aroclor 1254, that says that it's a biphenyl and 54 percent of that mixture is chlorine.

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Q. It's by weight?

A. By weight, yes.

Q. And to get it to 54 percent by weight chlorine then you need more of the fives and sixes than the 1242 would require, being 42 percent weight in chlorine?

A. The number of chlorines on the molecule help determine the amount that it can hold, yes, it does influence the percentage.

Q. And as you go from threes and four per molecule to fives and sixes per molecule, you have -- I hate to characterize this as substantial or significant because I know I'll draw an objection.

MR. MONGE: You will.

Q. (By Mr. Baker) So I'll do it anyway, but you have a substantial decrease in biodegradability under the same circumstances?

MR. MONGE: Objection to the characterization of the word "substantial," but you may answer if you can.

A. Yeah, I have no way of determining substantiality. I do know that it's more resistance to degradation. It may take longer or it may take a different bacteria or more sunlight and more moisture and more heat and so on.

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Q. (By Mr. Baker) To the extent that you can, try to give me an idea of how much more difficult it would be under the same circumstances for Aroclor 1254 to biodegrade as opposed to 1242?

MR. MONGE: My objection at this time would be to there is no definition of what any circumstances are. If you're asking the witness to just arbitrarily speculate on a set of circumstances, I don't think that's fair of the witness. If you can describe a specific setting, perhaps he could do that.

Q. (By Mr. Baker) I'll try to do it several ways then. And the reason I asked it generally first was to let you pick the circumstances so you could come up with your own example.

MR. MONGE: If that's what you want to do, let him pick the circumstances. So long as he describes the circumstances to you and then can answer the question, I don't have any objection to that.

Q. (By Mr. Baker) And our first set of circumstances would be circumstances where we haven't had some outside individual or company come in and make efforts to cause it to biodegrade, but, say, it's in a truckload of dirt and no one is

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inducing other chemicals or additional sunlight or doing anything else to try to cause it to biodegrade, and you can take it from there.

A. Gosh! I wish I knew more about the dirt.

MR. MONGE: I knew that was going to be the first -- I knew he would say that.

Q. (By Mr. Baker) If you would like to describe the dirt, describe it however best you would like.

A. Well, in order to respond properly to your question I'd have to know a little bit more about the dirt regarding its acidity, its alkalinity. Its mineral content, its humerus and organic content. I'd have to know the kinds of bacteria that are present or could thrive in that particular situation. I'd have to know the concentration of other chemicals in addition to the PCB's, because they all have either potential for accelerating the activity or inhibiting it. What you've given me is a very come complex mixture and I can't even speculate smartly. I just don't know.

Q. What if we had a can of Pydraul AC, a sealed container, in a room without sunlight at 70 degrees. Would the Aroclor 1254 biodegrade under those circumstances?

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A. I don't see how they can. There is no bioagent to start the action.

Q. Say we had it in a lubricating system for air compressors and it was in use circulating and heated to 450 degrees. The machine reached a temperature of 450 degrees. Would it biodegrade under those circumstances?

A. Understand, I would be guessing.

MR. MONGE: Don't guess then. If you don't know, I don't want you to guess. There's probably someone else that might better address that question.

Q. (By Mr. Baker) If we had Aroclor 1254 ingested by a bird -- I hate to keep making up examples. We're not going to get anywhere. If it were ingested by a bird who ate a fish who had obtained what was discharged into a river and that bird just flew around in Kentucky, did what birds ordinarily do, whatever that is, would it biodegrade under those circumstances?

MR. MONGE: Objection, because it's just entirely too speculative. I'll let him answer if he thinks he can.

A. Well, my understanding from other reports, including Monsanto studies, is that the bird would

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-- the Aroclor 1254, will have it in its tissues but there is no evidence that its reproduction ability is hampered or no effect would be noticeable.

Q. (By Mr. Baker) But it would have the 1254 in its tissue?

A. Yes.

Q. If you had the very same example and it was 1242, would the bird still have that in its tissues?

MR. MONGE: Same objection.

A. My understanding, again, if the bird ingested the 1242 the chances are very good that when the analyst looks at the tissue he will identify it as 1254 because the lower chlorinated components of the 1242 have been destroyed, digested if you will, so the bird will be reported as having 1254 in its tissues. Depending on the type of bird and the amount of 1242, it may affect its reproduction ability.

Q. Are you saying the 1242 would be more likely to affect the reproduction of the bird than 1254 would?

A. I am.

Q. Do you offer an explanation for that?

MR. MONGE: If you don't know --

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

Q. (By Mr. Baker) I'm sorry. Why do you believe that would happen? Assuming its true, how would you explain --

MR. MONGE: Let me just object to the line of questioning as to the relevancy of that line of question to issues that are involved in this litigation. With that objection, I'll permit the witness to answer.

MR. BAKER: Let me note that I'm trying to get in a roundabout way at the relative biodegradability of 1254 versus 1242 and I've tried to ask it in several ways and you objected to each of those.

MR. MONGE: I'm not stopping him from answering.

Q. (By Mr. Baker) Answer this and then we'll try to move on. Assuming it's true; not why you believe it's true, but assuming it's true, but why do you believe 1242 would have more of an effect on reproduction of a bird than 1254?

A. This is based on the results of Monsanto studies with chickens where 1242 was found to affect the hatchability of the eggs of the chicken.

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Further, information came from some researchers studying wild birds and it appears that the lower chlorinated PCB's which are metabolized by the birds are the ones that are affecting its ability to reproduce.

Q. Why do you believe that is the case?

A. Are you asking for my technical definition for what happens in --

Q. No, no. Is it your belief that the bird metabolizing the chlorines is causing the problem or is there some more explanation for the effect?

A. I can share with you my understanding. My understanding is that in metabolizing these lower chlorinated PCB's something happens -- and I'm only a layman -- something happens in the hormone production within the bird and these hormones are associated with the calcium metabolism, shell thickness of eggs and ability of eggs to be fertile, and in the long run the eggs just do not hatch. That's a layman's understanding of what happens.

Q. Are you aware of a study in 1938 comparing PCB's with chlorinated naphthalenes?

A. Yes, this relates to the -- yes, the coating process.

Q. Was the conclusion in that study that PCB's

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might cause liver damage?

MR. MONGE: Do you have the name of the study?

MR. BEAL: The Harvard study.

A. As I remember, the evidence pointed to the chlorinated naphthalene and since PCB's were chlorinated hydrocarbons as well, the conservative interpretation of that report was let us treat these PCB's as though they could cause this kind of damage, to be on the safe side.

Q. (By Mr. Baker) Was Monsanto aware of that report?

A. Very much so, yes, sir.

Q. From 1938 on, or did personnel of the company learn of it at some later date?

A. Dr. Kelly was involved as I remember it even before the report was published.

Q. And I'm certain we'll have to talk to Dr. Kelly in more detail about this, but can you tell me, based upon what you have learned in your years with the company -- I know you wouldn't have been involved with it at that time but tell us the kinds of studies that Monsanto did -- I'll start in 1938. If you know of any before then, feel free to tell me about those; but from 1938 through 1966, to

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determine whether there were any potential health effects or environmental effects of PCB's and studies about biodegradation.

A. I can handle the biodegradation quickly. Biodegradation as a routine kind of study for an industrial chemical were unknown. It was an unknown procedure or practice in that period of time.

Q. When did it become a known practice?

A. The first application of that type of study was made when the hard and soft detergent issue arose. You may recall that many of our streams and all were foaming with detergents and the industry was forced to find out how to do biodegradation studies and they used detergents as their first chemical. That was about, I would guess, '66 or so it started, somewhere in there.

Q. I noticed in your answer you used the word "routine." Were there nonroutine biodegradation studies done before that?

A. I'm not aware of any biodegradation study designed to determine whether a material would survive in certain conditions.

Q. One of the major advantages of Aroclors I assume, especially related to fire-resistant lubricants, was that they were very stable; is that

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true?

A. Yes.

Q. Prior to 1966 was there any concern at Monsanto to your knowledge about whether these very stable products caused any environmental damage or whether they would biodegrade?

A. They were perceived to be so stable chemically that it was difficult for anybody that understood chemistry, and also over in the health study field, to perceive that metabolism of these materials would occur, resulting in some potential harm. They were pictured, and I'm going to use the frame and I hope it's descriptive -- they were pictured like pebbles on the beach. They are there, we don't deny they are there, but they don't harm anything. That's the way the chemical was perceived, and it's that property of not being reactive that was perceived to be an excellent property and valuable to avoid the risk of fires and explosions.

Q. So the feeling then in the '50's, for instance, was that these things were so stable that they would be around forever, that they wouldn't cause any harm because of their stability?

A. That is correct.

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Q. So you knew that they were not biodegradable?

A. Well, we all spoke in terms of their lack of biodegradability, yes, but when you say no, means that you conducted some test to confirm.

Q. You believe that they weren't?

A. That's correct.

Q. So the question of conducting a test -- you didn't consider conducting a test?

A. It just wasn't something you considered with industrial chemicals of any kind, not just PCB's.

Q. Let's go on to the other two topics of testing for potential health effects and to the extent that you can distinguish it for potential environmental effects.

A. Well, the materials as industrial chemicals were put through a series of tests that were the normal procedure at the time that we speak of, the '30's to the late '60's. These tests were done for all industrial chemicals to give an indication on the way to handle them in terms of exposing the workers that made them, the people that transported them and might have had an accident enroute, the receiving end, the user and the ultimate consumer.

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They were referred to as acute toxicity tests.

There's a protocol set up in those days. They were dermal skin testing, there was feeding tests, and these feeding tests were deliberately designed to kill the test animal and the report was always expressed in terms of what dose did it take to kill half of them within a few days time, so you can see that it was a very severe test. That's the acute testing.

Q. Before you go on, would Dr. Kelly have been responsible for this testing?

A. Yes, sir. That's his department. On occasion there were tests made that were called subchronic. These are 90-day tests at little lower levels, not the level designed to kill, but a little lower level, to observe what happens at still high levels to the test animal in 90 days subchronic. That kind of information was gathered and compared with known materials with their set of data and a judgment was made then regarding the toxicity of the material, and they came up with descriptions like moderately acute, highly toxic or moderately toxic and so on.

The PCB's under those conditions turned out to be moderately toxic. They were not

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surprising in any way. They were less harmful than many many industrial chemicals already in commerce. That, I think, kind of describes what happened. And then always keep in mind that the animal tests are just one indicator of what could happen. The PCB situation, because of its decades of use, also offered a great opportunity to observe worker effects and you can visualize a situation in the early days where the practices were -- I'm going to use the word "sloppier" than they were as we became more sophisticated through the years.

I don't know how far to go with your testing question at this point, but you can't forget the fact that the medical record of these employees, the maker of the material, Monsanto, and the users was very favorable.

Q. You talked about animal testing, acute toxicity testing and what you called subchronic testing.

Prior to 1966, and that is not just an arbitrary date but that's the date we're distinguishing here as the -- but prior to 1966 was there any animal testing done by Monsanto beyond the subchronic time period that you call chronic testing?

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MR. MONGE: As it related to --

A. What chemicals?

Q. (By Mr. Baker) To any PCB products.

A. Oh, PCB's? No, it's no different than other industrial chemicals.

Q. Did Monsanto do any chronic testing on animals of any other product?

A. Oh, yes, any product that was intended for use in food, for example, went through these chronic tests. Industrial chemicals were not tested that way.

Q. So products that were used in food you did chronic testing on?

A. Yes.

Q. Is that because the FDA or Department of Agriculture required it or did you do testing prior to requirements by those agencies?

A. I'm in no position personally to know when the agencies required chronic testing as part of their evaluation. As far as I can remember, cosmetics and drugs and food additives were tested with chronic testing.

Q. For as far back as you can recall?

A. That's right.

Q. And you don't know whether that started

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with federal regulations or whether it was done prior to any federal regulations?

A. That is true.

Q. Does Monsanto today, or if you don't know today, let's go back to 1985; does Monsanto do chronic testing on new chemicals?

MR. MONGE: Object to the question again on the basis of relevancy to this lawsuit and the claims in this lawsuit, which do not involve any kind of human personal injury claims, if you will, but you may answer the question.

A. Monsanto, in 1985, was expanding the use of chronic testing for its new chemicals.

Q. (By Mr. Baker) Was that because of federal regulations or was it something that Monsanto did that was not required by regulations?

A. It was not required to my knowledge for industrial chemicals.

Q. You used the date 1985 because that was the date I gave you. It went back to 1980 or 1975 for the same picture?

A. It was a growing practice as new products that were perceived to have high success -- of high degree of success in reaching the marketplace with some idea as to how widespread the use might be, a

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decision was made to conduct these tests, so it's a judgmental call, but the practice was growing.

Q. Could you tell us what the first product might have been that Monsanto chose to do chronic testing on animals?

MR. MONGE: To the extent that you -- reread that question. I may have spoke too soon.

(The pending question was read by the reporter as above recorded.)

A. Is this for food additives?

Q. (By Mr. Baker) For, first, industrial chemicals.

A. PCB's.

Q. And when did the product testing start on PCB's, that Monsanto's product testing?

A. Monsanto chronic testing. In a preliminary way they began in 1968. The final multi-year test was started in '69, based on the information obtained from the '68 studies.

Q. Was Dr. Kelly responsible for this testing?

A. Yes.

Q. To your knowledge, and to the extent you don't know, tell me, and we will be talking to Dr. Kelly soon I'm sure; but to your knowledge what was done starting in 1968 and how long was that done

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and what were the results?

A. Starting in 1968 as I recall, some of the acute work was repeated just to confirm that the tests done in the 1950's and '30's and '40's were still valid, the results were still valid.

Also, in '68 there was an attempt made on Monsanto's part, Elmer Wheeler and Dr. Kelly going to Washington D. C. to get guidance from the appropriate regulatory agencies as to the kind of test that would be appropriate. There were none for industrial chemicals, so the decision was made by Monsanto to mimic the food and drug protocols, although there was never any intention of offering PCB's for food use. In order to design the multi-year tests they chose to go this subchronic route, the 30-day test. Based on the results of that test, and I don't recall the feeding levels in the 90-day test, they designed then a multi-year test for rats, chickens and dogs. The test amounts were, of course, the zero; in other words, the control group, and then the one, ten and a hundred parts per million in the diet of the test animal, daily diet, daily input for the rats. It was the lifetime of the rat. For the chicken as I recall, it was 18 months, and for the dog, about 18 months.

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Q. Would this have been an Aroclor product?

A. It was three Aroclor products.

Q. Do you recall which ones?

A. Yes, Aroclor 1242, Aroclor 1254 and Aroclor 1260. I don't know what else to add other than the tests were done, they were reported to Monsanto six to eight months status reports periodically and, finally, the final report was issued in about '71 as I remember.

Q. To the best of your recollection what was included in that final report in 1971?

A. The higher chlorinated PCB's represented as being present in the 1260 and 1254 types affected the test animals in that their livers were enlarged, they didn't gain as much weight as the unexposed controls. The lower chlorinated as represented by the 1242 mixture did affect the chickens at fairly low levels.

As I remember, finally a restudy was made at about two or three parts per million and the chickens died. It affected its hatchability, the egg problem. That's the best I remember the results of those studies.

Q. And you believe there would have been some metabolism in the 1242 that may have caused the egg

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problem?

A. I was tutored by the medical community that this had something to do with hormone production and calcium metabolism.

Q. Did the medical community tutor you on what caused the liver enlargement and other problems with the 1254 or the 1260?

A. Not in highly technical terms except to inform me that the liver is the organ in the body that is really designed to handle chemicals that the body can't cope with. It's sort of the garbage disposal is the way I picture it. Anyway, they are not surprised that the liver was enlarged because it was working extra hard to eliminate this chemical.

Q. So the researchers were not surprised that they had liver enlargements after 6, 12 or 18 months of this chronic testing?

A. That's true, because they had been hinted back in the studies, in the reports with the chlorinated hydrocarbons that injured some peoples' livers, this study confirmed that the liver is the organ that gets involved.

Q. You said it had been hinted in earlier studies. When was it first hinted to your knowledge?

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A. Well, that was the human exposure with the halo wax, the chlorinated naphthalene.

Q. 1938?

A. In '38, yes. This is why the attempt was to keep people from getting exposed, because the liver could be damaged.

Q. Why was the decision made in 1968 and '69 to conduct this subchronic or chronic testing?

A. By that time a few laboratories had the capability for determining the presence of PCB and environmental samples. Once that information was available generally the question kept coming up, what harm, if any, is it doing out there? The fish get it, the people eat it, the weasels eat it, the otter, the seal, the pelican off California, the shrimp down in the Gulf; what is it doing to them?

These tests were designed or conducted in an attempt to try to answer that question, what harm, if any, is resulting from its presence.

Q. Did Monsanto, as a corporation, feel that they answered that question?

A. We thought we did, yes. There's no one else trying to answer it.

Q. The testing that you referred to beginning in 1968 and going through 1971, could that testing

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have been done in 1960?

MR. MONGE: Objection. Calls for speculation. And, again, the relevance of the testing to the issues in this case.

You may answer.

A. Well, certainly, the mixing of PCB's in rat food and so on could have been done and the animals could have been fed, autopsies could have been -- all of those basic technologies were known, yes.

Q. (By Mr. Baker) Were those known in 1950?

MR. MONGE: Same objection.

A. Yes, they were known. What was not known, and which proved to be a real real important piece of information, was the analytical ability to look at tissues of these animals and determine what, if any, PCB's were in those tissues. That was not available until '68, '69, so on.

Q. (By Mr. Baker) What caused that to become available?

A. First of all, it was the availability of highly sophisticated analytical instruments, and coupled with a lot of work done on how to prepare a sample so that the instrument could look at it in a sense and come up with a reliable reproducible answer so you had a lot of confidence the machine

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was telling you this and you believed it.

Q. Was that gas chromatography or something else?

A. It's gas chromatography supported by mass spectrometry.

Q. But in 1950 you could have mixed the PCB's into the food and you could have done the studies to show whether the liver was enlarged or show whether the egg shells were thinner or whatever, could you not?

MR. MONGE: Objection to the relevancy.

A. Yes, you could, but it just wasn't the practice. A person suggesting that would have been looked upon as being irrational, really, because of the whole understanding of chemical testing and so on at that time.

Q. (By Mr. Baker) Had there been other chemicals developed by the 1940's or 1950's that the chemists believed to be like grains of sand that would be there forever?

MR. MONGE: Pebbles on the beach.

MR. BAKER: Pebbles on the beach, I'm sorry. Pebbles on the beach.

A. That's my expression. I don't know if it's a good one or not. But have other chemicals --

WATER_PCB-SD0000049382

Q. (By Mr. Baker) Let me rephrase it then. Were PCB's the first chemicals to your knowledge that if someone asked you if they are so stable they would be like pebbles on the beach you would have used that description?

A. Yes, I believe I would have, yes.

Q. And you can't think of any other chemicals prior to PCB's that you would have used that description for?

A. Not that come to mind at the moment. Frankly, I never gave it a thought to try to find other materials that are that highly resistant. If you really want to extend the definition of a chemical, glass itself, glass beads on the beach are pretty resistant.

(Discussion was had off the record.)

Q. (By Mr. Baker) Mr. Papageorge, I'm going to go through some documents that have been produced to us by Monsanto in this case and ask you a few questions about those. First is a document labeled Plaintiff's Exhibit 43. I'll ask you to quickly -- or take your time, but please review this document.

Do you recall having seen this?

A. I recall having seen it but I'm somewhat confused by the -- something seems to be out of

WATER_PCB-SD0000049383

place or missing.

MR. BEAL: That was the way it was presented to us. We have another copy of it that's in a different order.

(Discussion was had off the record.)

Q. (By Mr. Baker) First, the first document I showed you, Plaintiff's Exhibit 43, which may have had some pages out of place, was called Minutes of Meeting of Corporate Development Committee, November 17, 1969. That was just before you went back to St. Louis.

Are you familiar with a Corporate Development Committee?

A. Yes, I am.

Q. What was that committee's role?

A. That was the top level management committee composed of the President and Chairman of the Board of Monsanto, along with some senior vice presidents. The committee as a whole addressed major issues as it related to Monsanto and made decisions regarding what actions, if any, Monsanto should be taking in conducting its business. It's a very high-level decision-making committee.

Q. Did you know a Mr. Bock?

A. I did.

WATER_PCB-SD0000049384

Q. And what was his position with Monsanto?
A. He was the top official in Monsanto.
Q. Is he still living?
A. Best of my knowledge, yes.
Q. Is he retired?
A. He left Monsanto. I don't know if he's retired now.
Q. Do you know if he lives in the St. Louis area?
A. I do not.
Q. Mr. H. H. Bible. Did you know him?
A. Yes, I did.
Q. And what was his position?
A. He at the time was the vice president that concerned himself with manufacturing matters.
Q. And Mr. Eck?
A. Mr. Eck was another vice president. I've forgotten what his specific assignment was. He was also involved in manufacturing.
Q. Mr. Gillis?
A. Mr. Gillis was the vice president responsible for marketing, sales.
Q. Mr. Putzell?
A. Mr. Putzell was the corporate general counsel.

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Q. Mr. Sommer?

A. Mr. Sommer was the Chairman of the Board of Directors.

Q. And Mr. Ehlers?

A. Mr. Ehlers was an attorney who served as secretary for that committee.

Q. You've testified earlier, Mr. Papageorge, briefly about the Ad Hoc Committee that was in place in 1969 just before you came back to St. Louis. I'm going to show you a document that's labeled Plaintiff's Exhibit 35 and ask you to please review that.

A. I have glanced through the document.

Q. Have you seen that document before?

A. I have.

Q. To your knowledge is that a document that was prepared by the Ad Hoc Committee?

A. Yes.

Q. Do you know what the purpose of that document was?

A. The purpose was to assist the management of the businesses involved here with an understanding of the PCB environmental issue along with some recommendations from these individuals as to what approaches the corporation might want to consider.

WATER_PCB-SD0000049386

Q. If you'll turn to the back, about three pages from the back there is some hand-drawn graphs. Have you seen these graphs before?

A. Yes, I have.

Q. Do you know who drew these?

A. No, I don't.

Q. Do you know why at this time the alternative of ceasing production of PCB products was not followed?

MR. MONGE: "At this time" referring to --

Q. (By Mr. Baker) I believe it was 1969, the time this was presented, I believe October 15, and I think it was 1969.

Do you know, Mr. Papageorge?

A. That is correct. You're asking me why this Ad Hoc Committee did not consider staying out of the business altogether. I don't think that was given to them as part of their charge. Their charge was to review the situation, tell us what to do with the business now, continuing in the business. That's as close as I can come.

Q. (By Mr. Baker) I don't know what all was said back then and we may never be able to remotely recreate it but the hand-drawn charts refers to -- the one at the page labeled EQU001739.

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A. I have it.

Q. The ones you're referring to as profit and liability versus time at the top of that page.

A. I see that.

Q. There appear to be three alternatives here that were considered or discussed or raised in these meetings or whatever. There are three separate charts. On the left-hand side it has action, it has three different choices; do nothing, discontinue manufacture of PCB's or responsible approach.

I will ask you, first, if you know whether these three choices were something that the Ad Hoc Committee presented to management?

A. They were presented, yes.

Q. It appears to me from the graph that whoever presented this believes that you should not adopt the do-nothing approach because by 1971 or '72 the liability would exceed profits, looking at the graph. Is that your understanding as to what they meant by that?

A. That's what the individual wanted to show, yes.

Q. And in the second graph it shows profits going down to zero at some point, which appears to be between '71 and '72 if you discontinued

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manufacture. And at that point, again, liabilities would exceed profits.

Then the third they call the responsible approach which shows profits exceeding liability apparently into the future; shows the line growing farther apart after '73 or '74.

Do you know whether management adopted one of the three of these approaches?

A. The program adopted finally after much discussion and further information more closely approached the responsible approach, and yet it didn't quite meet it because the responsible approach at one time had great expectations of finding alternative chemicals to replace the PCB's and maintain their market share. That did not happen. Many of the businesses that PCB's used to supply were not satisfied with any Monsanto product, so this profit line that is shown here did not become as good as it shows here.

Q. And then at some point off this graph you did discontinue manufacturing PCB's, did you not?

A. The bottom chart does not necessarily say you kept making PCB's. It says I either make PCB's and do it responsibly and legally and on and on, or I have found a good substitute and I'm still in the

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business. Whereas, the middle line says I'm out of the business totally, I've shut the door, that's the end of the game.

Q. So the alternatives you were looking at then when you came on board in 1970 were do nothing, continue the way you had been?

A. Correct.

Q. To immediately discontinue manufacture of PCB's?

A. Right.

Q. Or to take what someone termed the responsible approach and discontinue manufacture at some point in the future?

A. Yes. In fact, I know for sure that this committee we talked about earlier was ready to go out of the business immediately but it was pointed out to them that in some instances that would be perceived to be irresponsible.

Q. Do you know who termed the phrase "responsible approach"?

A. No, I don't. It became quite common. I don't know who started it.

Q. But in your meetings it became common for you to refer to the approach of choice as the responsible approach?

WATER_PCB-SD0000049390

A. In a way, but the word "responsible" wasn't used an awful lot after a while. It became this is our program.

Q. Was there ever any discussion as to whom you were trying to be responsible to?

A. Oh, yes, many times initially. We had responsibilities all over the place, really, to, of course, the customer, to the environment, to the shareholder, to just about everybody that we could think of that was involved in some way.

Q. And the responsibility to the shareholder was reflected by the profit line, was it not?

A. Well, the profit line was part of it. We could not be in a position where Monsanto's image because of this situation was damaged to affect the shareholders in any way, whether it be on PCB profits or other product profits.

Q. So you looked at two potential problems to the shareholders. One was profitability of the PCB products and the other was damage to the image of Monsanto?

A. I would suggest the second one was more important because the profitability of PCB's was pennies to the shareholder. He would never have noticed it.

WATER_PCB-SD0000049391

Q. In terms of profitability of the entire Monsanto Company in 1970, can you give us an idea of what percentage of the profits were related to PCB products and what percentage related to other products?

A. I don't have those numbers at all.

Q. Can you give me a general idea?

MR. MONGE: I'm going to object. It calls for speculation, but if he has an understanding to the best of his knowledge, he can answer that.

A. Let me try. PCB's were not a star performer. They were a good stable product, stood on their own. They did earn a decent return on the investment and what-have-you. And it also formed a product line that fit in with other products that our customers purchased.

The customers, just like when you go to a supermarket, you want to have everything in one-stop shopping. Well, many of our customers were like this, so PCB's fit nicely in the total. I guess, really, my first -- they were not a star and without them the company wouldn't survive by any means, no.

Q. I think that has become obvious over time. I don't want to argue your answer on that.

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To the extent that you can answer this, would PCB's have contributed more or less than 10 percent of the overall company products?

A. I'd be very surprised if it's 10 percent. It's much less than that.

Q. So your testimony then is that in terms of your responsibility to the shareholders and the company itself, that the reputation of the company was more of a concern than profits on PCB's?

A. Absolutely, yes, sir.

Q. And then did your group feel that taking what you term the responsible approach would either enhance the company's reputation or cause it less of a damage than either of the other two approaches?

A. Correct.

Q. Why did you believe that continuing to manufacture PCB's would cause less harm to Monsanto's reputation than discontinuing them in 1971?

A. Well, the continuation of manufacturing was limited to very specific uses in which not only Monsanto but others perceived that the benefits, and I'm relating now to safety considerations, far outweighed the known evidence of harm with the continued use. There was no question at all about

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terminating the open uses like the traffic lane paint application and so on.

Q. And when were the open uses terminated?

A. August 1970.

Q. Then the fire-resistant lubricant uses were terminated at what time?

A. I think they were finally reformulated in '71.

Q. And then what uses of PCB's continued past 1971?

A. The electrical use was the only use that remained.

Q. And that continues through today once they are already in place I assume?

A. Yes, but no new units are manufactured.

Q. When did you stop producing PCB's for electrical use?

A. We stopped producing in July of 1977.

Q. So the approach you ultimately took was to continue on with the electrical uses past 1971?

A. Correct.

Q. You said that was based upon your decision as to the benefits outweighing the harm; is that not correct?

A. Not only Monsanto's understanding, it's, of

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course, the electrical equipment manufacturers, the users, the utilities, the office buildings and on and on, as well as the government agencies that were very interested in the PCB situation.

Q. Did you make a decision in 1971 that the harm from using PCB's in fire-resistant lubricants outweighed the benefits?

A. We made a decision that the potential for release from the systems was there. Therefore, the potential for harm was there, and as long as our scientists could come up with an acceptable fire resistance alternative, let's go to the alternative.

Q. Now, the potential for release was something you knew years before 1971, was it not?

A. Well, certainly, the potential, but we had a belief that was not supported later as we looked into it deeper; that these systems were, in truth, closed systems. If so, the control of the release to the environment was practical, it could be done. Inside a closed piece of machinery, when you drain it, you collect it and you put it in the right place and so on.

As it turned out, we were overly optimistic in terms of our customers developing the right procedures or maintenance programs and what it

WATER_PCB-SD0000049395

takes to keep a system tight.

Q. Let's talk about that for a minute then. You said prior to 1971 you believed that the customers' systems were closed and that the PCB lubricating fluids, after they were used they would be collected and put in the proper place.

When did you first determine that that might not be true?

A. I don't know if there's any one day that stands out. It became one of growing awareness of the attitudes of many customers and our inability to get the government to get involved and Monsanto's inability to control the customer, so I would suggest that it began to crystallize for Monsanto when we found systems that we all perceived to be tight closed systems like heat transfer systems that were associated with preparing of foods, and the chances of getting into food, although very very slim, did happen, and this sensitized us and it extended then over to the industrial hydraulic fluid systems, the conveyor systems and the like. So there was no one day when all of this hit us between the eyes.

Q. Approximately what part of the 1960's or early 1970's did you first determine that you had a

WATER_PCB-SD0000049396

problem with Therminol and PCB's getting into food?

A. Oh, this was '71.

Q. And when did you first --

MR. MONGE: Read back that last question.

(The pending question was read by the reporter as above recorded.)

MR. MONGE: My objection to that, although he's already answered. Was I don't think he said PCB's got into food. That was my objection.

A. I didn't say.

Q. (By Mr. Baker) Approximately what part of the 1960's or early 1970's did you first determine that there was a problem of release of PCB's from hydraulic fluids?

A. As I said, there was no date that stands out in my mind. It was just an awareness that our definition of closed systems was perhaps idealistic; that materials very likely could still be lost to the environment. And as I indicated earlier, there was in our laboratories optimism that a substitute material was on its way. Combining those two thoughts led to the decision, well, let's go with the alternate, speed up the testing, approval, and let's drop PCB's as soon as we can. That's the way the thought went.

WATER_PCB-SD0000049397

Q. Is it your testimony that your company did not realize in the 1950's or in the 1960's that PCB's from lubricating fluids would be released?

A. No, I didn't say that.

Q. I didn't think you meant to say it, I just wanted to be sure.

A. We were aware that the materials were being released but with the understanding at the time that these were harmless, sort of like I said earlier, pebbles on the beach kind of thing, we would not associate that release with a harm. Later, when we were in a position to know better, the word went out, do not release to the environment, take it to the right kinds of places, handle it properly.

Q. The word went out. Now, when was that and to whom did the word go out?

A. All right, this was -- I would suggest that there was an initial word that went out to the very large users in 1969 at which the evolving PCB environmental presence was described. Then when I came on board we prepared a letter to the customers and sent it out in February and attempting to bring the customers up to date as to what Monsanto knew about the environmental presence of PCB's, what kind they were and the like. This letter was sent out in

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February of 1970.

Q. So as far as you know, prior to 1969 Monsanto did not send out the word to its customers, don't allow these lubricating fluids to be released into the environment?

A. Not in those words, that is correct.

Q. Was that something that you decided not to do because you felt they were harmless or was it for some other reason?

A. That's one of the factors. The other one was that we associated PCB's along with a lot of other industrial chemicals, and right or wrong, we assumed that the customer would handle these materials with due respect. Don't pour it down the village sewer and so on.

Q. But prior to 1969 I could have walked into your distributor and bought a 5-gallon can of Aroclor 1254 without anyone telling me don't pour that down the sink or down the drain?

A. That is true, no different from other chemicals too that you could have bought from that same distributor.

Q. I'll show you a document that we have labeled as Plaintiff's Exhibit 36. We have not moved admission of that but that is -- show you a

WATER_PCB-SD0000049399

document labeled Plaintiff's Exhibit No. 36 and ask you to review that and then tell us if you have seen it before.

A. I have reviewed the document.

Q. Portions of that look similar to the last document, and there are some differences also.

A. Yes, they are, and it looks to me that the remaining portion is a mixture of pieces of other documents that I have seen.

Q. Okay, let me ask you first, the front page of this or the first two pages appear to be an outline that were not attached to the previous one, and up at the top it's hard to read but I believe it says "Rough draft, 11/10/69."

A. Yes.

Q. Was this a document prepared by the Ad Hoc Committee?

MR. MONGE: The whole thing? You talking about the first two pages, Mike?

MR. BAKER: The first two pages.

A. I don't know.

Q. (By Mr. Baker) Now it refers, as the last one does, to an October 15th ad hoc committee meeting then on the next pages.

A. Yes.

WATER_PCB-SD0000049400

Q. Do you know who would have prepared the first two pages?

A. I do not.

Q. The first few pages of this after the outline appear to be identical to the previous exhibit. Then after you get to where the end of the previous exhibit was there are some handwritten notes starting with EQU page 1766.

Can you give us any guidance as to who would have written these notes?

A. No, I can't.

Q. Then at the end of the handwritten notes its what may be pages from another document that are attached to this.

Can you tell us where those came from or who was responsible for this?

A. These last remaining pages -- I would be speculating as to where they came from.

Q. You've testified that Monsanto was developing replacement products for the PCB lubricating fluids, have you not?

A. Yes.

Q. When did Monsanto first begin work on developing such products?

A. Well, the development of new products is

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always an ongoing activity in the Research Department, but with the PCB issue arriving the program was accelerated. This acceleration began in about '68, '69.

Q. Is it your testimony that Monsanto was working on replacements for the lubricating fluids that contained PCB's prior to their understanding that there might be a PCB problem?

A. Correct, always looking for a better product, yes.

Q. And you said it accelerated then in 1968 or '69. What kind of product did you develop to replace Pydraul AC?

A. I don't know what you mean by "kind." It was still a liquid, it was still fire-resistant, it met all the corrosion and lubricity requirements.

Q. Did the product you introduced to replace Pydraul AC have a substitute in place of the PCB's?

A. Yes, yes.

Q. And do you recall what the first product that you used to replace Pydraul AC was?

A. I think the ingredient that gave the fire-resistant properties was a phosphate, tricresyl phosphate.

Q. Yesterday we saw an invoice reference to a

WATER_PCB-SD0000049402

Pydraul AC-A. Do you recall what that -A meant?

A. It was a period of time when the fire-resistant properties were achieved by adding a chlorinated terphenyl in lieu of the chlorinated biphenyls mixture.

Q. And that was a PCT rather than a PCB?

A. Correct.

Q. Did the Pydraul AC-A then contain PCT's rather than PCB's?

A. Yes.

Q. What period of time did you manufacture or market that product?

A. As best as I can recall, late '71 to about the third quarter of '72, about a nine-month period there.

Q. And that was after you had completely stopped selling Pydraul with PCB's?

A. Pydraul AC, yes.

Q. During that time period did you sell other Pydraul fluids with PCB's?

A. Some of the Pydrauls took a little longer to be phased out because of the testing program required, but I do believe that by the end of '72 they were all reformulated. Did not include, of course, PCB's for sure, and the PCT's were phased

WATER_PCB-SD0000049403

out also.

Q. When did Monsanto develop PCT's?

MR. MONGE: Objection to the relevance, but you may answer.

A. About 19 -- about World War II time, in the '40's.

Q. (By Mr. Baker) Was there more testing of PCT's before 1970 for possible environmental or health effect than there was PCB's?

A. No.

Q. Was there less testing of PCT's?

A. I would say the testing was equivalent.

Q. Does Monsanto still manufacture and market PCT's?

A. No.

Q. When did that stop?

A. When they shut down the Anniston PCB unit they stopped making the chlorinated terphenyls as well.

Q. Did they ever make PCT's in the Illinois facility?

A. No.

Q. Why did you stop making PCT's at the same time you stopped making PCB's?

A. Was a matter at that point of economics.

WATER_PCB-SD0000049404

The chlorine-producing unit was dismantled, along with the PCB unit. There was very little left any more to support the little PCT business that remained.

Q. You said you made Pydraul with PCT's, Pydraul AC with PCT's, from sometime in 1971 until sometime in 1972. Why did you stop making that product in 1972?

A. The PCT's?

Q. The Pydraul AC-A.

A. -A, because by that time all of the testing protocols for the replacement Pydraul AC with the nonchlorine chemicals in it had been completed, you know; the fire testing, the lubricity testing, on and on, all the tests required had been completed. The facilities for producing the phosphate are now in place, that that technology had been developed, so Monsanto was in a position then to push the button and start going, producing.

Q. And the replacement product then was called Pydraul 90-E?

A. 90-E, yes.

Q. And that contained neither PCB's or PCT's?

A. Correct.

Q. And that was a product that was in

WATER_PCB-SD0000049405

development from the late '60's, or from when?

A. Very likely, yes, because phosphates were looked at in the late '60's, yes.

Q. So the Pydraul, you formulated a temporary product to market as non-PCB's containing PCT's at the same time you knew that you were developing a nonchlorinated product?

A. That is correct.

Q. And then when the nonchlorinated product came along, you discontinued the PCT product?

A. Correct.

MR. BAKER: Would you like to continue for a while longer or take a 30, 45-minute lunch break?

MR. MONGE: It's 12:40.

(The lunch recess was taken, after which the proceedings resumed as follows.)

Q. (By Mr. Baker) Mr. Papageorge, I want to ask you a couple of questions about Exhibit 43 while we're here, with the caveat that it appears that a couple of pages are missing from these minutes and there's another page in there that probably doesn't belong in this location.

This appears to be a portion of the minutes of the meeting of the Corporate Development

WATER_PCB-SD0000049406

Committee on November 17, 1969; is that not correct?

A. That is correct.

Q. And, again, this was after the time that -- was it Mr. Springgate who asked you to come back to St. Louis in 1969?

A. Well, Mr. Springgate was one of the individuals that interviewed me for that new opening.

Q. Anyway, this was a meeting between the time that the deposition was discussed with you I believe and the time that you got back to St. Louis on January 1st 1970; is that not correct?

A. Yeah. Let me try to clarify that a little. My first notification that PCB's were presenting an environmental problem was passed on to me by my supervisor, Mr. Stratmeier. This was in June of 1969.

In November of 1969, following the meeting reflected by this document, Mr. Stratmeier was again in Anniston and he told me that the people in St. Louis were looking for someone to take over a new job to follow this PCB environmental issue; would I be interested.

Q. Okay, if you will turn to the last page of this exhibit, there are a list of 12 items there

WATER_PCB-SD0000049407

that appear to me to be either recommendations or decisions as to how to go about addressing the PCB problem.

Do you know what the status of these 12 items were in November of 1969?

A. In November, at the time these were proposed activities by Messrs. Bergen and Springgate to the Corporate Development Committee, the committee approved these 12 points and they were implemented eventually.

Q. All 12 points on this list were approved by the Corporate Development Committee?

A. Yes, sir.

Q. Does the first one relate directly to you?

A. It does.

Q. Says, "Appoint a project manager responsible for the overall management of the Aroclor pollution problem." And you were that project manager?

A. Yes.

Q. No. 2 says, "Notify all Aroclor customers of PCB problem."

Was that something that was undertaken after you came back in January of 1970?

A. Yes.

WATER_PCB-SD0000049408

Q. We'll get back to that in just a moment. No. 3, I wanted to ask you a couple of questions about "Reduce and effectively control PCB effluents from Monsanto plants."

Now, had there been a problem prior to November 1969 of PCB effluents escaping Monsanto plants?

A. There were PCB's in the sewage water and in the vents emitted from the process. I don't think it would be proper to refer to it as a problem. It was an ongoing situation.

Q. You testified before lunch that you didn't know until sometime in the early 1970's that customers who used fire-resistant lubricants were allowing those to escape?

A. If I said that, I sure didn't mean it.

Q. Maybe I misunderstood you.

A. I was aware, or the company, we were aware, that escape was taking place.

Q. I believe I asked you when you first became aware of that, and in all fairness, you said you couldn't give an exact date, but I thought we had zeroed in on about the year 1970.

Was the company aware of that prior to 1970?

WATER_PCB-SD0000049409

A. We were aware that these materials were escaping. I had hoped by my comments to indicate we had an impression that closed systems could be managed so that no escape could take place. It was in about 19 -- late 1970-71 period we decided that in spite of what we tell customers and in spite of what we think these systems are capable of doing, control of escape was extremely difficult because many customers didn't appreciate the level of attention that it would take to control. So escape was still taking place in spite of what Monsanto was saying.

Q. No. 4 says, "Educate customers on need to reduce and effectively control PCB effluents at their plants."

This was something that was adopted by the Corporate Development Committee in November 1969?

A. Correct.

Q. Was this the first time that Monsanto had adopted a policy to educate the customers concerning this problem?

A. Yes.

Q. No. 5 says, "Develop and implement new packaging systems for Aroclor 1254 and 1260."

WATER_PCB-SD0000049410

Can you tell us what kind of packaging systems you had before and what kinds of new packaging systems were developed and implemented.

A. Oh, this had to do primarily with the automation of the piping system that filled drums with PCB products, especially the 1254, 1260, which in the past were loaded over in the corner of a building with a portable platform scale and then a drum would be set on it and a spigot would be opened and occasionally it would overflow and create spillages that we could no longer tolerate. These were put on automatic conveying systems and a scale that would stop the flow the minute the right weight was met, and it had the proper fume collection systems to it and so on.

Q. No. 6 we've discussed somewhat. "Introduce to market replacement products for Aroclor 1254 and 1260."

You had been working on replacement products prior to this time?

A. Not specifically for -- we were not working on replacement products for Aroclor 1254 and 1260. On replacement products for the mixtures that went out as a finished product.

Q. So this is a different kind of replacement

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product then?

A. Yes.

Q. This is for the PCB substance itself?

A. For the higher chlorinated PCB's, the 1254 and 1260.

Q. Did you develop and market replacement products for 1254 and 1260?

A. No.

Q. For how long after 1969 did you attempt to do so?

A. The attempt really continued on to the termination of production, 1977.

Q. Then in 1977 you terminated production of these PCB products without having replacements for the PCB products?

A. That is correct.

Q. But you had developed replacements for some of the end products that they were used in?

A. Yes.

Q. Says, No. 7, "Continue and expand biodegradation test program with Aroclor series, particularly 1242, 1248 and 1254."

Now this is November 1969. How long had this test program been going?

A. In November '69? Been going on about since

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the beginning of that year, about nine months, 10 months.

Q. And you, the corporation, decided in November to not only continue that testing program but to expand it?

A. Correct.

Q. In what way was it expanded?

A. Well, the beginning program consisted of such studies as taking ordinary river water, introducing the different PCB's to it and analyzing the material after periods of time to see if the PCB's were disappearing. That was called the river dieaway testing.

There was another test that attempted to determine the degradation using some bacteria culture and I don't remember the official technical designation for it.

Finally, the test used by the detergent industry was adopted in which the material being tested is introduced into water and a culture of bacteria that's developed from natural sources like river water and soils and so on is added to the device, into the container, and air is bubbled through it in an attempt to mimic an aerated municipal sewage treatment plant. And,

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incidentally, the culture bacteria was obtained from the St. Louis Sewage Plant. The material to be tested is introduced in a known amount. The mixture is analyzed for how much PCB's is present at day zero and every so often it's tested and the analytical chemist determines what is still present and what is no longer evident.

Q. Okay, at that time in late '69 or early '70 did the people at Monsanto believe that biodegradation of these products was good or bad or neither?

A. The belief was that if the material did degrade, that was good insofar as buildup in the environment was concerned. On the other hand, the question of while it's being degraded is it causing any harm had yet to be answered, so there was an ambivalent reaction; is it good or is it bad.

Q. You see why I wonder the same thing then, but at that time you believed that the materials did not biodegrade but you weren't certain?

A. That's right, and the uncertainty, the uncertainty was brought about by the fact that laboratories like the Swedish laboratory kept reporting Aroclor 1254 and 1260. These were products of commerce produced by Monsanto but they

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were not the high volume products.

The question was: Why isn't 1242 being found? Then the thought process began along the lines, well, something must be happening to the 1242 to make it look different and this is why the idea of biodegradation was approached.

Q. No. 8 says, "Continue toxicological test program." Was that your acute toxicity testing and your subchronic testing?

A. By November of '69 they had started the long term chronic testing.

Q. So the decision is here just to continue that?

A. Yes.

Q. No. 9 says, "Accelerate present analytical test program."

Now what was the present analytical test program?

A. This was the program for improving the laboratory's capability of detecting minute amounts of PCB's in all kinds of samples; air, water, solids, at very low levels, and the intent there was to refine this entire analytical process to get down to lower and lower levels to be able to detect it with confidence, and repeatable so you didn't get a

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different answer of every time you looked at a sample.

Q. No. 10 says, "Determine feasibility and cost of eliminating..." -- I assume that means five and six chlorines in Aroclor 1242 and 1248?

A. Yes.

Q. And five and the six chlorines are the ones that you testified earlier are more prevalent in 1254 and are less biodegradable than the other numbers of chlorines; is that correct?

A. That's correct.

Q. Did you determine the feasibility and cost of eliminating these chlorines from the 1242 and 1248?

A. It was done for 1242. It was not done for 1248 because it was determined that the material produced there in revising or modifying the 1242 would serve both products.

Q. Did you determine it would be feasible to eliminate these five and six chlorines from 1242?

A. Yes.

Q. Did you determine how much it would cost?

A. They did at the time, yes.

Q. Was there ever a product produced by Monsanto that had Aroclor 1242 without five and six

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chlorines?

A. Yes.

Q. What was that product called?

A. Aroclor 1016.

Q. When did you begin producing that product and for how long did you produce it?

A. They began producing it in middle of '71 and terminated it in July '77.

Q. Was it utilized in electrical equipment?

A. Only, yes.

Q. Did you continue to produce Aroclor 1254 after the new product was available?

A. Yes, because the 1016 was only usable in capacitors. 1254 in transformers.

Q. No. 11 says "Study incineration products." What did that mean?

A. This was in reference to the stack dances and any residual ashes and so on that result from incinerating liquid PCB's in order to make certain that either PCB's or something hazardous isn't produced in the incineration process.

Q. And what did you determine?

A. We determined that the incineration, when done as it should be done with the proper air and proper temperatures, flow rates and all, resulted in

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total destruction to the point where known analytical technology couldn't detect anything unwanted.

Q. What happened to the chlorine in that process?

A. Chlorine becomes hydrogen chloride gas. It's scrubbed in a water tower to make hydrogen chloride acid, which is also known as muriatic acid.

Q. Okay, then the final point of the 12 points: "Develop business plan to offer Monsanto fluid reclamation and recovery with Enviro Chem."

First, tell me what Enviro Chem is.

A. Enviro Chem at that time was a subsidiary of Monsanto that was interested in technology that would help in environmental corrective measures and so on.

Q. Did you develop a business plan to offer reclamation and recovery of Monsanto fluid?

A. The study indicated that it would not be feasible, primarily because of the problem having to do with collection from the customers' plants, thousands of plants, and that's just one of the reasons. The other was that the material that was available and no longer usable by the customer was so badly contaminated or deteriorated that we could

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not come up with a technology that would handle all the variables that would be introduced from all these sources of -- let me call it dirty material coming in.

Q. What did you decide should be done with all this dirty material?

A. Incinerate it.

Q. And when was that finally decided?

A. By the end of 1970 that decision had become pretty crystal clear.

Q. What is Findett?

A. Findett is a little chemical company located in the outskirts of St. Louis here -- I don't think it exists any longer -- that used to do a lot of small contract jobs for Monsanto, making small amounts of special chemicals, and for a while we were sending them PCB-type materials in hopes that they could clean them up so we could recycle them. Their success really depended on the quality of the returned material that we worked with. If the return material was a dielectric flow with some water in it, it was rather easy to dehydrate and we could use the material without the water and so on, but if it got very dirty, the technology just became unfeasible.

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Q. Okay, the next item here under the 12 points says, "Cost of this program is estimated at approximately $400 million SARE and $700 million capital to change equipment."

First, I'll ask you, the cost of this program, does that mean all 12 points listed above?

A. Yes, yes.

Q. Did you break out the cost of any particular item?

A. There was a breakdown elsewhere and this represents a total. I don't see it in this document. May I correct, the "M" there is thousands. "M" with a bar across the top at that time was millions.

Q. Okay, that's then $400,000 for this program SARE. What does "SARE" mean?

A. That's sales, administration, research and engineering.

Q. And then $700,000 in capital?

A. In capital, that's physical things, the pots and pans to do it with.

Q. I have no further questions about this particular exhibit.

Like to talk for a while about information that you passed on to some of your

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customers beginning in 1970. I will show you first a document labeled Plaintiff's Exhibit 20. This appears to be a form letter on Monsanto letterhead without an addressee listed. It's dated February 9, 1970, and I'll ask you to review that and ask if you can please identify it.

A. I have reviewed it.

Q. Were you involved in the writing of this letter?

A. Yes.

Q. Were you one of the top people responsible for the wording of this letter?

A. Yes.

Q. Now, this is signed by Mr. Olson. He was one of your sales personnel?

A. He was the top marketing man for the functional fluids group.

Q. To whom was this letter designed to be sent?

A. This particular letter, this was designed to be sent to customers of the industrial hydraulic fluids and industrial heat transfer fluids on record with Monsanto for at least the three-year period preceding the date of this letter, at least, and any additional customers that the field salesmen were

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aware of and added to that list.

Q. Would there have existed at any point a list of persons to whom this letter was sent?

A. Yes, sir, that's what the secretaries typed from.

Q. Do you know whether such a list would still exist?

A. No, I don't.

Q. Was there ever a computer-generated list or strictly -- this is 1970 -- or was it strictly a manual list or --

A. It's a combination manual, plus in those days Addressograph plate printouts.

Q. And you don't know whether any copies of that printout exists today?

A. I do not.

Q. If someone had not bought one of these products from you in two or three years previous, how would they get on this list? Only if the salesman said put this particular company on the list?

A. That would be one way. Another way would be to -- I don't want to limit it just to sales. It might be the technical guy back in the St. Louis office or the salesman's boss. Somebody

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knowledgeable of the material having gone there would have added to that list.

Q. But if someone didn't add it to that list, you only went back about three years in sales records to determine the list?

A. That was the -- let me call that the primary list, the three-year list that was the customers on record; '69, '68, '67. Then we went back and said here's the customers we have. Now please look it over and add to it and it came back and some of them went back as much as five years.

Q. What was the purpose of this letter primarily?

A. The primary purpose was to bring up to speed with those customers who were buying the products that contained these materials as to what the state of the knowledge was relating to PCB's and the environment. This is all that Monsanto knew at the time.

Q. And at this time you were concerned about your current customers but you were not advising any customers as to how to clean up any prior problems that might have existed?

A. Not any specific, except that if you'll note in the last paragraph, possible care should be

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taken.

Q. As to disposal of --

A. Disposal, processing and so on, so it doesn't become an environmental contaminant.

Q. But you weren't discussing at this time how to clean up any environmental problem that may already exist?

A. No, no.

Q. Had you, prior to February 9, 1970, given your customers any advice as to how to dispose of these products?

A. Not in a formal way like this, no.

Q. Had you instructed your salespeople as to whether to give advice; and if so, what advice?

A. The advice to the salespeople were to treat these materials -- and that's a poor word. To handle these materials like all industrial chemicals.

Q. Now this letter was sent to certain of your customers, you said, giving them what you knew at the time?

A. Yes.

Q. One thing of interest to me and, certainly, I know very little about Aroclors and I'm trying to get educated, and you've been very helpful so far,

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but you have additional facts 1 and 2 on this letter. 1 says certain of your products didn't contain Aroclor 1254 and 1260. And 2 says the other Aroclors 1242 or 1248, whatever, less than 54 percent have not been found in the environment and appear to present no potential problem to the environment.

Is that something you believed to be true in February of 1977?

A. Yes.

Q. These two statements in No. 2, have not been found in the environment and, two, appear to present no potential problem to the environment; is that correct?

A. That's correct.

Q. But at the same time, you were undertaking a program to attempt to develop a replacement for Aroclor 1242 that would not have the five or six chlorines attached to it?

A. That's right, that's right.

Q. Why would you at the same time try to remove five or six chlorines from Aroclor 1242 and tell your customers that Aroclor 1242 did not appear to present any potential problem?

A. Well, the attempt to remove the higher

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chlorinated PCB's from 1242 was based on speculation as to why 42 wasn't being found in the environment, which was believed to have something to do with biodegradation, but we had no hard data to support that. That was coupled with the strong desire by the electrical industry to retain these materials in their systems, so without waiting for all the facts to come in we jumped into a conclusion that if we did remove the five and six chlorines from 1242 and it was still a good dielectric fluid, let's go, let's go with it.

In the meantime, insofar as 1242 was used in hydraulic fluids, we've got some promising research programs underway. Let's push that program so that we end up with a situation where we really won't have this potential problem, if it exists at all, and we've got some good products available to our customers to replace their current products.

Q. So what you're saying then is people at Monsanto believed that Aroclor 1242 might be showing up in the environment as appearing to be 1254?

A. That was a belief, a guess on their part, yes.

Q. And you thought that there might be a potential problem with 1242 so you wanted to develop

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a better product?

A. Better than it did with the higher chlorinated ones.

Q. But at the same time you told your customers that there appears to be no potential problem to the environment with 1242?

A. Which was truthful. Nobody was finding 1242 and no effect was being attributed to it. That's as of 1970. And that statement, that last statement, is still valid to this day.

Q. And so you say today, if I ask you, did 1242 present a potential problem to the environment, you would say no?

A. You used the past tense, did it present a potential. It did present at that time, and today, I'm not personally aware of any problem in the environment associated with 1242.

Q. So you agree then that in 1970, 1242 did present a potential problem to the environment?

A. A potential, yes.

MR. BAKER: I would move admission of Plaintiff's Exhibit 20.

MR. MONGE: I have no objection.

Q. (By Mr. Baker) I assume that there were a series of letters that were sent out to your

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customers beginning with the first one, February of 1970?

A. Oh, yes, yes.

Q. I want to show you a document that's been produced to us by Monsanto and marked Plaintiff's Exhibit 21; ask you to review that and tell us whether that is the second in this series.

A. Yes, this is the second in the series as it relates to the Pydraul customers.

Q. Now the previous one went to more than just Pydraul customers, is that --

A. Previous one also included Therminol, the heat transfer customers.

Q. How did you determine which customers to send this second one to?

A. Our marketing records show the Pydraul product, the customers and the amounts, so we went by product designations.

Q. How far back did you go again; three years? Or was it some other period?

A. Well, it was the original three-year list plus these few months since added to it.

Q. So if you weren't on the list for the February 1970 mailing and you didn't buy any Pydraul products between February and June, you didn't make

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this list either?

A. That is correct.

Q. I previously asked you questions about whether there existed at that time a list of the customers this was sent to and whether it still existed. Would your answers be any different for the June 1970 letter than they were for the February letter?

A. No, there was a list then. I don't know where it is today.

Q. This letter refers to PCB's and says there are new formulations available that provide equal or superior performance. Are all these new formulations products containing PCT's but not PCB's?

A. That is correct.

Q. Did you at any place in this letter inform the customers that these new products contained PCT's?

MR. MONGE: Object to the relevance of that question. Hasn't seen any reference used in this lawsuit to PCT's. If there is any, I'm unaware of it, but you may answer the question.

A. This letter does not refer to PCT's.

Q. (By Mr. Baker) Let me ask you another

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question. I expect to draw the same objection.

MR. MONGE: I'll remember to make it.

MR. BAKER: Don't want to catch you off guard.

Q. (By Mr. Baker) Did you have any discussions as to whether you should inform the customers that the new formulations contained PCT's?

MR. MONGE: Same objection. You may answer.

A. Discussions were held.

Q. (By Mr. Baker) Who was involved in those discussions?

A. The research people that were involved, Mr. Richard and his staff, Dr. Richard and his staff, and Mr. Johnson and a couple of his people in the St. Louis office. Mr. Bergen, Mr. Johnson's boss. Somebody from the Medical Department but I don't recall just which individual.

Q. Did some of those people argue in these discussions that you should inform the customers that PCT's were in these new products?

A. I don't know. The word "argue" means they pounded the table and all, but they did bring up the point that why don't we tell them what the alternative material is and the discussion went on

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to the point where, well, unless you're a chemist you really wouldn't understand it anyway and the marketing people said when we go around talking to these customers we will mention the fire retardant material is a chlorinated terphenyl and then it will give us the opportunity to tell them that there's no evidence that these PCT's are found in the environment, there is no evidence of any harm being reported. In fact, nothing, so it looks like it's an acceptable alternative for the time being.

Q. Who made the decision not to include that information in the letter that was sent?

MR. MONGE: Objection to the relevance and just a continuing objection to questions about PCT's so I won't interrupt you every time. Go ahead.

A. Mr. Bergen.

Q. (By Mr. Baker) And Mr. Bergen's decision was to leave that strictly up to the salesmen?

A. Yeah, he was relying on the salesmen to communicate, yes.

Q. Why send a letter at all then? Couldn't the salesmen communicate everything that's in this letter?

A. The letter went out fairly quickly. The salesman, may take him weeks to get around to

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everybody. This was a faster notice, and many customers called in following up to speed up the communications.

Q. Was there any thought at this time as to whether you should inform the customers that this PCT product was only a temporary replacement; that you were working on another replacement that would not contain PCT's?

A. That was to be done person-to-person because at that time we were not certain that all of the Pydrauls listed would have successful alternatives without chlorine in them. We weren't sure of the end result. In other words, we were hopeful but not certain.

Q. But were the salesmen instructed to tell the customers that we were working on a new product that we hope to have out soon that won't have any chlorine at all?

A. Yes, yes.

Q. This assignment, Mr. Olson signed the previous one. Is that because Mr. Olson was responsible for sales of all products and Mr. Johnson was the manager for industrial fluids?

A. That's right. Mr. Olson -- when you said "all products," it's just products used as they are

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without undergoing any chemical change in equipment, functional fluids. Mr. Johnson represented the industrial hydraulic fluid part of that, not the heat transfer, not the electric.

MR. BAKER: I move admission of Exhibit 21.

MR. MONGE: No objection.

Q. (By Mr. Baker) I show you another letter that's marked as Plaintiff's Exhibit 22 and I will ask you to please review it.

A. I have reviewed it.

Q. This appears to be another form letter on Monsanto letterhead that was designed to go to some customers. Do you know to whom this was meant to go and whether this is the third in this series or whether there was some in between?

A. Best I can remember, this was the third of letters sent to Pydraul customers.

Q. This letter is signed by Mr. Bradford. Had he taken Mr. Johnson's job by this time or was there some other reason that Mr. Bradford signed this letter?

A. No, Mr. Bradford reported to Mr. Johnson.

Q. What was the reason for sending this particular letter?

A. In April of '71 we had completely converted

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all of the Pydrauls to the chlorinated terphenyl formulation and this was a way of summarizing finally, saying no more PCB's in any Pydraul because there was a transition period where some had it and some didn't.

Q. In that period you were responsible for dealing with the PCB problem. Had you had a lot of customers complaining about PCB's in the product?

A. No. In fact, the customers weren't complaining at all. In fact, the complaints from the customers were the opposite, they wanted to continue receiving PCB's.

Q. Had you had reports of salesmen from other companies going to your customers saying Monsanto has PCB's in its product and we have a product that doesn't have PCB's in it?

A. Yeah, we had a lot of that, yes, sir. You would expect that.

Q. And was one of the reasons behind this series of letters for damage control, to keep your customers from switching to other companies?

MR. MONGE: Object to the form of the question, but you may answer.

A. Well, not being in the marketing man's seat at the time, I don't know the answer to your

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question.

Q. (By Mr. Baker) But they were all sent to whomever they were sent by people in your Marketing Department?

A. Yes.

Q. Again, I expect to draw an objection to this. This April 15, 1971 letter doesn't mention PCT's either?

A. That's correct.

MR. MONGE: Object to questions regarding PCT's as irrelevant to the issues in this case.

Q. (By Mr. Baker) Did you have the same kinds of discussions that you had before the June 1970 letter concerning whether you should mention PCT's in this letter?

A. I don't recall -- by that time the idea that the field salesmen would speak for PCT's was well entrenched and it did not come up with this again.

Q. Did the company receive inquiries from customers about PCT's at any time between February of 1970 and April 1971?

A. I recall some of the salesmen reporting back they got questions; well, are these like PCB's? Are we going to have the same kinds of

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problems? So some of them did question. Most of them did not.

Q. You said the salesmen reported that back?

A. Yes, that's where the discussion took place.

Q. Are you aware of any customers who contacted non-salespeople, any customers who wrote to St. Louis and said to tell us about these PCT's in the product?

A. I'm not aware of any. I don't recall any.

Q. One final question. To whom would the April 15, 1971 letter have gone?

A. It's the original February '70 list supplemented by those they picked up in June '70 and, again, those that were added to the list from June '70 to April '71.

MR. BAKER: I move admission of Plaintiff's Exhibit 22.

MR. MONGE: No objection.

Q. (By Mr. Baker) I'll show you an additional document labeled Plaintiff's Exhibit 23 and ask you to review this letter, please.

A. I've reviewed it.

Q. To whom was this letter meant to be sent?

A. It's, again, to customers on record with

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Monsanto of having purchased Pydraul products.

Q. Is that the same list from the previous letters?

A. Yes, plus any added since the April '71 to this January '72 date.

Q. Mr. Bergen himself signed this letter. Was there any particular reason he signed it instead of one of the gentlemen who signed the previous letters?

A. No specific reason except that Mr. Bergen on occasion wanted to show his personal interest and he would send out something like this now and then for the different product lines.

Q. This letter mentions for the first time I believe PCT's, does it not?

A. For the first time in a form letter sent out to all customers, yes.

Q. Were there letters that went to some customers previously that mentioned PCT's?

A. I don't recall those specifically but there were responses to individual inquiries in which the PCT was mentioned in writing to them.

Q. So there were inquiries from customers concerning PCT's?

A. There were inquiries on a person-to-person

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basis, salesman-to-customer. Some of those inquiries reached the point where this salesman would call St. Louis and ask either Mr. Bergen or Mr. Johnson or Mr. Bradford or Dr. Kelly to respond, and that would go back in letter form or by telephone or both, telephone confirmed by letter, so all of these were possible and did take place.

Q. Were you getting customer complaints about PCT's or at least were you getting resistance from customers about using products with PCT's?

A. No.

Q. But you decided anyway in January of 1972 to send these customers letters saying we're not using PCT's any more?

A. Yes. Remember, by this time they all were contacted by the salespeople personally, so it was not new, just hadn't been in writing.

Q. They all were contacted by the salespeople personally?

A. That was the program.

Q. That's all customers on that list?

A. Yes.

Q. Why did you feel a need in January 1972 to send this letter?

A. That's just another step in our program of

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keeping the customers up to date. It had been a while since we wrote them back in April. Nine months later we decided it's about time we tune in again with some form of a letter.

Q. At any point in these letters or in the personal contacts did you advise or intend to advise customers about what to do with products in their systems that contained PCB's?

A. That was an ongoing discussion that had primarily -- the message was keep it under control. As long as it was in a tight system there's no problem. You're enjoying the benefits and you reduced your cost, you don't have to add any makeup. If it does leak on you be sure to clean it up properly and dispose of it properly.

Q. Did you ever have a campaign to advise customers that had used Pydraul AC that they should drain their systems and clean out their systems and dispose of the AC, then use a new product?

A. I'm not aware of any program where that type of advice was given when the AC was performing well.

Q. Did you have discussions about whether they should clean out the system and dispose of the AC or just add in the new products by mixing it with the

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AC?

A. Discussions were the new product is compatible. There is no need to drain and create disposal problems or leakage problems. Just top it off. I'm aware of discussions of that nature. And, again, as long as it's in a well-maintained closed system, there is no problem.

Q. But you knew by this time that even, theoretically, in closed systems you had leakage?

A. You had leakage if the unit was not maintained properly. If you allow the leak to continue for example.

Q. But Monsanto's decision was to advise customers to add the new products into their system rather than drain the old products out of the system and use the new product exclusively?

A. That is correct.

Q. Show you another document marked Plaintiff's Exhibit 24. Ask you to please review this.

A. I've reviewed it.

Q. This is another letter signed by Mr. Bergen; is it not?

A. It is.

Q. Was this designed to go to the same

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customers who got the previous letter?

A. Yes.

Q. Why did you feel the need two months later in March of 1972 to send this letter?

A. This letter served two purposes. One, to indicate that the changeover was taking place faster than might have been indicated in the January letter.

And, number two, it gave them a list that they could refer to as to what replacement product could be ordered to fit his system by referring to the old designation.

Q. Why did the changeover take place faster than you had anticipated?

A. Primarily because the manufacturing facility that made the phosphate ester, which was the key new ingredient, was performing much better than expected, was able to produce the quantity of material needed, we were able to build up our inventory much faster and, therefore, we could commit to delivering sooner.

Q. I assume you were in a hurry to get this new product out?

A. Certainly.

Q. Why?

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A. It's just better all the way around. You operate units at maximum, the lower the unit cost. No sense dilly-dallying when you can do better. Once it got cranked up, out it came.

Q. The phosphate ester product -- and I will refer to Pydraul 90-E in particular since that was replacement for AC and AC-A.

A. Right.

Q. Other than the fact that it contained the phosphate ester component rather than PCB or PCT, did Pydraul 90-E have any other advantages?

MR. MONGE: Let me object to the form of the question on advantages because that makes the assumption that the phosphate ester had an advantage over the PCB and PCT formulas, and that gets into what "advantage" means. And now we're talking about the use in the system or what happened in the environment, so object to the form of the question only, but, certainly, you can answer that.

MR. BAKER: Let me rephrase the question then so we won't bicker over that.

Q. (By Mr. Baker) For use in the system did you believe that Pydraul 90-E was equivalent to Pydraul AC-A, better than or worse than?

A. As far as performance was concerned I would

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suggest it's best described as equivalent.

Q. Were there any reasons other than your wanting a product that did not contain PCB or PCT for your developing 90-E as a replacement?

A. I don't know of any.

Q. Were there any components in 90-E that were not available in the 1950's or 1960's?

A. The phosphate ester.

Q. Who developed the phosphate ester?

A. Monsanto's research people.

Q. When was that developed?

A. About 1971.

Q. What persons were primarily responsible for development of the phosphate ester?

A. I don't recall the individual. I know it came under Dr. Richard's supervision. I don't recall the individuals.

Q. Did the work on the phosphate ester begin before 1969?

A. It's kind of hard to draw a line. It's an evolving kind of program. The work with phosphate esters began -- gosh, in the late '60's, but the specific phosphate ester that was finally developed and used as I remember it was first tried in about 1970.

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You know, there are many phosphate esters. This particular one was not commercially available from any other source and it had to be virtually designed from scratch, and when it was produced in laboratory quantities, of course, it had to be tested to see if it was suitable, so I don't know just which date we're looking for. If we're looking for the date when this particular ester was developed, it had to have been in 1970. Phosphate research in itself goes back, gosh, into the '60's at least and earlier.

Q. Was this particular phosphate ester developed solely for use in hydraulic fluids?

A. Yes.

Q. When was the work begun on this particular phosphate ester for hydraulic fluids?

A. This particular one, I guess about 1970.

Q. That's when you first started working on it?

A. On that particular combination.

Q. In the 1960's or earlier did you work on any other combinations to attempt to develop a product to replace PCB's in hydraulic fluids?

A. Phosphate esters were studied back in the '50's for use in hydraulic fluids, not necessarily

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as a replacement for PCB's. This is a spinoff from other hydraulic fluids and I have in mind particularly aircraft hydraulic fluids, and from that experience it was decided that maybe there's something to be learned that can be applied to industrial applications or automotive applications and so on, so that program was always a pretty broad program.

So the idea of using phosphate esters in industrial hydraulic fluids is not a new idea. It's just find the right one, and as long as PCB's were doing such a good job the emphasis was not as great, but once PCB's became an environmental problem, then they put it on a faster track.

Q. I will show you an additional document labeled Plaintiff's Exhibit 25. Has a date at the top, April 1972. Doesn't have a particular day on it. This one is, I believe, signed by you, so would you please review that and identify it for us?

A. I've read it.

Q. What was the purpose of this letter?

A. I got a call from a representative of the Environmental Protection Agency requesting the names of all of Monsanto's customers from as far back as we can go of PCB's and the amounts purchased and the

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years of purchase, the types purchased, and at that time I was in a position where I told them that it was our policy not to divulge this without our customer's approval. EPA was, of course, very upset with that answer, threatened to do whatever it took to get that list and I felt that some day under the right kinds of instructions and what-have-you we may have to divulge names, and this was my attempt to do two things. One is inform the customers that we may have to mention them by name and by product. And, number two, they better clean up their operations and make certain that PCB's weren't getting into the environment.

Q. To whom was this letter meant to be sent?

A. All customers on record as of that initial 1970 list, supplemented by anything since then to this date.

Q. What persons were responsible for seeing that these letters were reproduced and sent to customers?

A. Well, I have trouble with the word "responsible." The ultimate responsibility was Mr. Bergen and Mr. Springgate, but their staffs really were the key people, and I have in mind people like Mr. Johnson who took care of the Pydraul

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customers and other hydraulic fluid customers and the dielectric person and the Therminol person and so on, so I would say the managers from Marketing were the key people to see that this was done.

Q. And based upon your understanding, if you didn't make the first list for the February 1970 letter and didn't have a new purchase in the meantime, you had received none of these letters?

A. Unless somebody said, hey, we forgot so and so, then you're right.

Q. Let me show you one final letter that's been produced to us. This is marked Plaintiff's Exhibit 26 dated August 3rd 1973, and this one is signed by Cumming Paton.

Are you familiar with this letter?

A. Yes, I'm familiar with it.

Q. Was this one designed to be sent to the persons on the same list or some other group?

A. Persons on the same list, the Pydraul customers on that same list.

Q. And what was the purpose of this letter?

A. There were several purposes. One is to again inform them that reformulation had taken place and the list of appropriate replacement products was included.

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The other is to inform them of the incineration service that was available for material that was no longer useful to them.

And the third is a copy of The Federal Register notice that the FDA had put out concerning what they would tolerate in PCB's in certain foods.

Q. Did you at any point provide a list of customers to the EPA?

A. No.

Q. Did the EPA just decide it didn't want to force you to or did they attempt to force you to or what happened?

A. Let me correct my answer. That's not correct. I gave to the EPA in Kansas City, Missouri, a list of customers in the area covered by that EPA region. This was done in December of 1975. We never gave EPA a total list of all customers throughout the world.

Q. You gave them a list of customers in that particular region?

MR. MONGE: And to clarify the answer, I don't want to be testifying. I swear under oath, but --

MR. BAKER: You're not allowed to raise your hand.

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MR. MONGE: I think, backing up, you might want to ask him again. I think the inquiry had come from that region.

THE WITNESS: Yes.

MR. MONGE: And that's why the response ultimately went back to that region.

Q. (By Mr. Baker) What region was that?

A. Region 8 I think is the number.

Q. Did you ever have an inquiry from any other region or were you ever asked by anyone from the EPA to provide a list of customers outside that region?

A. We receive many requests for lists of customers from EPA in Washington and received only the one from Region 8 that we responded to. I received, and Monsanto received, no inquiries from any other regions.

Q. You complied with the Region 8 request but you refused to comply with the Washington request; is that a fair statement?

A. That is correct.

Q. Why would you have complied with the Region 8 request on the one hand and on the other hand why would you have refused the Washington request?

A. I think it's primarily a matter of time. The Washington requests were made in '71, '72, when

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the Interagency Task Force was meeting. At that time Monsanto sincerely believed we would be doing a disservice to its customers to give out their names and have the regulatory people descend on their site and start asking many questions of them. Whereas, in December of '75 most sales had terminated, Region 8 was not a center of any electrical equipment manufacturing.

The big meeting had just finished in Chicago on PCB's, the Toxic Substances Act was almost due to be passed. I guess the decision was made, don't fight it any longer, so we gave in to that one and we expected more requests, but nothing happened.

Q. I want to show you a document labeled Plaintiff's Exhibit 3. I gave you the only other copy. I ask you if you have ever seen this document.

A. I have seen documents very similar to this. Whether it's the same document or not, I can't tell.

Q. The first page, which is difficult to read, the cover page, we have decided amongst us that it says "Log of PCB's Incineration Letters Customers," and I believe it says "Monsanto has" but I'm not

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sure about that.

Would it be a lucky guess for me to say this is a list of customers that would have gotten the incineration letter you said in August of 1973?

A. I would identify this, really, as a -- to me, this is an attempt to pull together the names of those companies that returned material for incineration in response to letters describing the availability of that service and costs thereof, and these numbers on the left are very typical of the kinds of numbers used by receiving departments to identify shipments and locate them in storage yards and warehouses for retrieval purposes.

Q. Do you know who would have prepared this?

A. I wouldn't know that individual because he would change from shift to shift. It would be an employee at the Krummrich plant in Sauget, Illinois, that clocked in or logged in receiving those shipments.

Q. If you were to turn over to about the 4th page, the one that says 14641 in the right-hand column, I use that as an example, as there's like some numbers and names written here and some of them are marked out.

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Do you know why they would have been marked through?

A. That tells me that that particular lot of material was introduced into the incinerator system and burned up.

Q. What do the ones that aren't marked through mean?

A. It's still in inventory out there waiting to be destroyed.

Q. Does that mean that there's some that have never been destroyed?

A. No, no, it depends on when this particular list was -- it's a candid shot so to speak of the situation. There is no date on this list so I don't know whose file it came from and so on.

Q. Do you know of anyone in the company who could tell us where this came from or what it is?

A. No, I don't.

(A brief recess was taken.)

Q. (By Mr. Baker) Mr. Papageorge, we've gone through a number of letters here and looked at a list of companies that you couldn't tell us exactly what it was. Most of the letters except the first one you indicated were letters designed to go to Pydraul customers except maybe the first one and the

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last one, but a number of those letters you said were designed to go to Pydraul customers.

Did you also send out letters to heat transfer customers?

A. Yes.

Q. Was the first one to heat transfer customers identical to the first one of Pydraul customers, the February 9, 1970 letter, or had you sent them one earlier?

A. No, that was the first one.

Q. Were there more letters to heat transfer customers than to Pydraul customers?

A. I've never counted the numbers involved. I just don't know.

Q. Did you feel there was a more urgent problem with heat transfer customers than with Pydraul customers?

MR. MONGE: Objection to the form of the question. It assumes there was a, quote, problem, but you may answer.

A. I don't quite know how to fit in the word "urgent" here. There was an urgency in both cases but for different reasons. The urgency felt in the Pydraul customers had primarily to do with escaping to the environment. The urgency with many of the

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heat transfer customers had to do with the introduction of industrial chemical PCB's into food items inadvertently, and that gave it a different kind of attention in terms of communicating, monitoring and coaxing and what-have-you.

In fact, the heat transfer application, since there was no heat or fire-resistant alternative, we were in a position of having to suggest that for those uses where food or animal feed or packaging that related to food or human exposure, those heat transfer systems should be changed out even though they had to go to a liquid that would burn. In other words, we had to force the customer to accept a different kind of risk rather than to have the human health risk basically.

Q. And in those applications you didn't suggest mixing two products and using some of the old ones and combining with some of the old ones; it's get rid of the old one completely?

A. Not if it had a possibility for entering that food item, yes.

Q. Did you believe that you might be exposed to a greater risk of liability for the heat transfer uses?

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MR. MONGE: Object.

A. You mean me personally or the company?

Q. (By Mr. Baker) The company.

A. The company? Within the company both thoughts were there, the liability part as well as harm to human beings when, you know, you could have prevented it kind of thought did prevail, yes.

Q. Did you send any of the letters to heat transfer customers by certified mail or registered mail or by some other means to obtain a record that they had received it?

A. Yes, I recall at least one mailing of that type, yes.

Q. Did you ever ask the heat transfer customers to sign any documents indicating that they had received a letter or that they had received certain information from you?

A. As best I remember, yes.

Q. Did you maintain records evidencing the fact that the heat transfer customers had received these letters?

A. Yes.

Q. Are those still maintained?

A. When I was actively involved, they were. To this day, I don't know where they are.

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Q. But when you were actively involved, is that through 1985 or '6?

A. No, '76 would be more accurate.

Q. When you were actively involved were there any records maintained to demonstrate that you had mailed letters to Pydraul customers?

A. Yes.

Q. In what form?

A. There was a copy made of the address labels that were typed, those with the pregummed surface. As they were typed, they were photographed. That was kept as a document of who was on that mailing and attached to those address lists was a copy of the document that was mailed.

Q. So these documents that we have just been talking about, Exhibits 20 through 25 or 26, through 25 so far I believe, those documents were kept by Monsanto with a copy of the mailing labels of each copy or individual or whatever, each addressee for those letters?

A. That's correct.

Q. Do you know who was responsible for keeping those?

A. Who was responsible?

Q. Yes.

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A. The manager in charge of that particular group of products such as Mr. Johnson for the hydraulic fluids line would be the custodian of those letters. Overall it was Mr. Bergen, his supervisor, who was responsible for the whole system.

Q. Where were these letters and copies of address labels kept?

A. In their working --

MR. MONGE: Well, go ahead.

A. In the working files of the individuals that were told, You keep records, those are your records.

Q. (By Mr. Baker) Just so we're certain about this then, let's trace those individuals as far forward as you can. Mr. Johnson would have been responsible for the letters that went to Pydraul customers?

A. Yes, sir.

Q. And how long did he stay in that position after 1976?

A. I'm trying to recall. Mr. Johnson left Monsanto -- I think it was before 1976, so his successor inherited those files.

Q. Who was his successor?

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A. I believe, as best I can remember, it was Dr. Cumming Paton.

Q. Do you know who would have replaced Dr. Paton?

A. I do not.

Q. Now, you said Mr. Bergen was responsible for Mr. Johnson's group and for other groups but he was overall responsible for each of these.

How long did he stay in that position?

A. Mr. Bergen left Monsanto in about 1974 give or take a year or so there.

Q. And who replaced him?

A. Mr. Miller, Lee Miller. But the replacement was not an exact replacement, the whole business lineup was changed, so the responsibilities that Mr. Bergen had were divided into several groups, so no one person picked up his total files so to speak.

Q. But you indicated that the copies of the letters with copies of the address labels were maintained to your knowledge at least through 1976 I believe?

A. Yes, sir.

Q. To whom could we go to find out what happened to them after 1976?

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A. I would go to Monsanto Attorney Bistlline. I don't know where else.

Q. Were these documents given to the attorneys at some point, your in-house attorneys?

A. Yes, sir. It's my understanding that when production was terminated, all sales terminated, there was no Monsanto business entity any longer that concerned itself with PCB's and Mr. Bistlline, I believe he joined Monsanto by then but eventually Mr. Bistlline was appointed a custodian of the available PCB records.

Q. Is he still employed by Monsanto?

A. Yes, he is.

(Discussion was had off the record.)

Q. (By Mr. Baker) Mr. Papageorge, I want to show you a document that's marked Plaintiff's Exhibit 2, and the other copy of that was given to you yesterday also.

MR. MONGE: Yes, that's correct.

Q. (By Mr. Baker) And ask you to review this. It shows at the top that it came from Cumming Paton to a number of people that I believe we identified yesterday as sales personnel, and it shows a copy going to you and others in the upper right-hand corner. I will help you. I believe this

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document has a cover memorandum and then an attached letter that is the same letter as our Exhibit 26.

A. Okay, I've reviewed it and I recall it.

Q. Do you recall having received a copy of this?

A. I do.

Q. Contemporaneous to its being sent?

A. Yes.

Q. You've already done this once but just so it will be clear at this point in the transcript, who was Cumming Paton?

A. Cumming Paton, I forget his official title but he was something like a marketing manager at the time fulfilling the kinds of things that Mr. Johnson had done prior to his leaving Monsanto.

Q. This refers to a decision to send out the August 3 letter that we've referred to previously, our Exhibit No. 26.

Were you involved in the making of that decision?

A. I concurred with it. I was not in the meeting where the marketing people decided to put it together and send it out, but they showed me drafts of it, asked me my opinion, and I encouraged it, so I was very much aware of it.

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Q. On the second page, the middle paragraph there begins, "We realize," Mr. Paton told the salespeople this was sent to, "We realize this letter may reopen old wounds."

What do you think he was referring to there?

A. I think he's referring to different reactions from different people. Some were disappointed they didn't have the good old PCB type. Others were frustrated that they felt they were really in a position of having a product in their equipment that they felt uncomfortable with. Others didn't like the idea of going to any expense of draining, thoroughly cleansing out their systems and replacing with totally new material, whether it was Monsanto or a competitive, so there were all kinds of emotions involved in this situation.

Q. And for that reason were you reluctant to send this out?

A. Not I personally, and I don't sense that the group did. They were aware of the situation but that had nothing to do with not sending it out. They knew that they would get some static back, we expected that.

Q. A couple of sentences later it says, "We

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never really sent out as many letters on PCB's to all Pydraul customers as we did on heat transfer."

A. Right.

Q. Do you know what he meant by that statement?

A. This relates to the food applications and the notification of the food processors like the bakeries and the potatoe chip places and all of what the FDA was up to; whereas, this might have struck the Pydraul people as the first time they were aware.

Q. So you had some concern that sending this August 1973 letter might surprise the Pydraul customers?

A. Yes, yes.

Q. Mr. Papageorge, why don't we shift gears just a little bit? I want to show you a document that was produced to us by Monsanto. It's labeled Plaintiff's Exhibit 15 and it's a copy of a pamphlet. It's called The Pydraul AC Fact Finder. Are you familiar with this document?

A. I had seen it before, yes.

Q. First, can you tell us approximately when Pydraul AC was first marketed?

A. Middle '50's.

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Q. Do you know whether there were other versions of this pamphlet that would have gone to Pydraul AC customers?

A. I do not.

Q. Can you tell from this document whether this is a version that would have been prepared in the '50's or at some later point?

I'm confident it was prepared sometime after June of 1958, because if you look at the first set of footnotes on about the fourth page, footnote 2 refers to a publication in June of 1958. I think you've gone beyond that. Page 1444.

And then if you will go over to page 1458, the first sentence at the top of that would seem to indicate it was published at least 10 years after Pydraul AC was first marketed.

A. You say 1458.

Q. Yes, the first sentence at the top of that page, it says, "There has been no reported case in over ten years of service...".

A. I see.

Q. Do you know of someone who could tell us when this publication was put out and whether there were earlier versions of it or later versions of it?

A. I would start with the two individuals

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we've mentioned earlier. Norm Johnson, he may have some background, or Roger Hatton.

Q. And you have seen this document but you don't know whether there were other versions of it?

A. That's true.

Q. I don't think I'll ask you any more about that one then.

Are you familiar with labeling of the Pydraul AC product, what kinds of labels were on the containers?

A. To a considerable degree, yes.

Q. Did those labels change over the years?

A. Yes, they did.

Q. To the extent you can recollect, can you tell me the kinds of information that was on the containers in the mid-'50's and of any significant changes through 1972?

MR. MONGE: Object to the term "significant" but --

Q. (By Mr. Baker) Any changes at all then.

A. There is usual changes of logos and color dinks and these kinds of things. I don't think you're interested in that.

Q. Exclude those from the question.

A. Okay, on the package label there was

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always, from the very beginning, a reference to avoid breathing fumes of the material for prolonged periods of time. There was a mention to wash it off the skin contact. There was mention about laundering clothes, mentioning of chlorinated chemical being present. That message was on at the beginning and continued from beginning to the day they stopped manufacturing them.

The new message that was added to the container by an additional label referred to the newly acquired knowledge regarding potential environmental contamination, which is a small sticker that was added on, and this referred specifically to the presence of PCB's in the product and the need to key -- and the fact it was being found in some environmental samples and that extreme care, I remember that word, should be taken to avoid entry into the environment by avoiding misuse, mishandling, using proper disposal and so on.

Q. Was there a single additional label that was developed to contain this information or were there a series of labels that were changed over the years?

A. The reference to potential environmental contamination as it applied to Pydrauls was a single

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label.

Q. When was that first added to the container?

A. In May of 1970.

Q. Prior to that time did the labels mention PCB's?

A. No.

Q. Prior to that time did the labels contain any information concerning disposal of the product?

A. No.

Q. Prior to that time did the labels contain any warning about or information concerning possible environmental damage?

A. No.

Q. I will show you some documents marked collectively as Plaintiff's Exhibit 12 and will tell you that these were produced to us by Monsanto in this case, and there are a number of labels here. I'll ask you first just to review those. The last couple of labels here, one is for Pydraul AC-A and the next one is for 90-E. The ones before that I believe are all for Pydraul AC.

A. I've reviewed them.

Q. The Pydraul AC labels, they appear to me to be have different size wording and a little bit different configuration on them but it essentially

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says the same thing?

A. They do.

Q. Can you tell us if this was the label that was on the original container from 1955 or is it equivalent to that label?

A. Yes, I would suggest that the one marked EQU1377 represents the original version, modified as shown by the 1375 and 1376.

Q. What about 1378?

A. 1378 is another version of the same type of label.

Q. Now it seems to me that each of these labels are for the 54-gallon containers.

A. Yes.

Q. Pydraul AC was also sold in 5-gallon containers, was it not?

A. Yes.

Q. To the best the your recollection was there a label on the 5-gallon container?

A. Yes.

Q. Was it exactly the same as these, similar to these or different from these?

A. Very similar except that any reference to the weights and the size of the container that would be different.

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Q. Do you recall whether the additional information was identical on the 5-gallon container or do you recall any differences in that information?

A. They were identical.

Q. And each of these says "Contains chlorinated hydrocarbons"; is that correct?

A. Yes.

Q. None of them refer to PCB's?

A. That is correct.

Q. Each of these says "Avoid prolonged breathing of vapors or mists" but they don't say don't breathe it?

A. That's true.

Q. And the other advice or the other wording on these says, "Avoid contact with eyes or prolonged contact with skin," so it doesn't say don't touch it but don't have prolonged contact. It tells what to do if you do have contact, and then says if you have your clothes become soaked with fluid, then launder those before you wear them again, okay?

Does it say anything about getting your pants leg wet and changing clothes immediately?

A. It does not get that specific, no, but it's an attempt to distinguish from a spot on the trouser

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leg as distinguished from the entire cuff being wet.

Q. Are there chlorinated hydrocarbons that are not dangerous to the environment?

MR. MONGE: Object to the term "dangerous" without any reference to amounts and where and what and when.

Q. (By Mr. Baker) Let me rephrase that question. There are many chlorinated hydrocarbons, are there not?

A. Certainly.

Q. Many of them still in use?

A. Oh, I don't know that "many" is still applied. Some are still in use.

Q. PCB's are just one small set of chlorinated hydrocarbons; is that not correct?

A. That is correct.

Q. Another small subset of the chlorinated hydrocarbons would be PCT's?

A. That is correct.

Q. And there are others that are neither PCB's nor PCT, such as dry cleaning fluids?

A. Correct.

Q. So this label says it contains chlorinated hydrocarbons but it doesn't give you any information as to what chlorinated hydrocarbons are contained in

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this?

A. Not a specific one, no.

Q. You said there was an additional label that would have been put on these containers in 1970 I believe?

A. Correct.

MR. MONGE: We will supplement the production. I thought that label was included in there, but in talking to Fran, it appears it isn't.

Q. (By Mr. Baker) Then if you will go past the Pydraul AC labels, the next one is Pydraul AC-A.

A. I see it.

Q. Now, that was the PCT product I believe, was it not?

A. Yes.

Q. That was designed as a temporary replacement for the PCB product?

A. Yes.

Q. And you sent letters to your customers that said these no longer contain PCB's; isn't that correct?

A. Correct.

Q. It appears to me that your label for Pydraul AC-A is identical to the label for Pydraul

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AC, at least the portion that comes after the caution.

A. The cautionary statement is intended to protect the people that are handling the material and this statement applies to both PCB's and PCT's. There is no difference in the way it's handled.

Q. Then if you will turn to the next page, there is a label that says "90-E," and in small print above it it says "Replaces Pydraul AC-A."

Is that all that appeared on the containers for Pydraul 90-E?

A. That's all that appeared on the containers, you're correct.

Q. And to your knowledge is this the label that would have appeared on the containers as soon as Pydraul 90-E was marketed in 1972?

A. Correct.

Q. The next label, I'll ask you to tell us what that label is, the last page, page 13.

A. This was a label provided to the customers of 90-E to affix to his equipment so that the maintenance people, companies or whoever services, that machine does not inadvertently top off the unit with another material that may or may not be compatible with what's already in the machine.

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Q. And at this time Pydraul AC and Pydraul AC-A are no longer available?

A. Correct.

Q. So this was not intended to tell the maintenance people use Pydraul 90-E instead of Pydraul AC?

A. No, this tells them 90-E is in this machine.

Q. Don't use a Standard Oil product or some other --

A. Whatever his boss tells him.

(Discussion was had off the record.)

Q. (By Mr. Baker) Mr. Papageorge, we are rapidly approaching the end of our allotted time for today, so I will show you one more exhibit. This may be the last one for today, but I thank you for your patience.

This is one we gave you yesterday with the prior witness as Plaintiff's Exhibit 69. Please review this and tell me if you can identify it.

A. I've reviewed it.

Q. Mr. Papageorge, this appears to be a letter from Mr. Callis to Mr. Williams who worked for the EPA Region 8. It's dated December 1979.

Were you personally involved in the

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inquiry or dispute that led to this letter?

A. I was not.

Q. Have you at any time learned of what led to this letter?

A. I have not.

Q. I guess we'll have as to ask Mr. Callis then.

A. This is the first I've seen this.

(Discussion was had off the record.)

Q. (By Mr. Baker) Mr. Papageorge, we're about ready to wind up here. I have a few more little quick questions.

In your position with Monsanto are you generally familiar with the levels of Aroclor production, the amount of production each year or each month?

A. Gee! Generally so. I do know that they have, of course, increased from year to year. I do know that they reached a peak of 80 million pounds a year.

Q. What year was that peek?

A. 1970, the year we started phasing out.

Q. Do you know roughly what the level of production would have been in 1966?

A. I'd have to look that up. I don't

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remember.

Q. Did production increase each year between 1966 and 1970?

A. Yes.

Q. And then in 1970 did it start going down?

A. Reflecting the phaseout, yes.

Q. Were the workers at your Anniston Plant represented by a union?

A. Yes.

Q. What union was that?

A. Local 16 of the International Chemical Workers Union.

Q. Is that union still in existence?

A. Yes, sir.

Q. Is it part of a larger union?

A. Well, the International Chemical Workers are part of the AFL-CIO.

Q. You mentioned some litigation with Outboard Marine?

A. Yes.

Q. And I believe you said you had testified in a deposition in that case?

A. Yes.

Q. You know what product Outboard Marine used?

A. I don't recall. One of the Pydrauls.

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Q. It was one of the Pydrauls though, wasn't it?

A. Yes.

Q. To your knowledge did the representatives of Outboard Marine claim that they did not receive these warning labels?

A. No, they did not. They did receive it.

Q. Did they admit -- I'm sorry, warning labels. I'm sorry, the letters we referred to as our Exhibits 20 through 26.

A. Yeah, they acknowledged they received them.

Q. Was Outboard Marine one of your larger customers, one of your smaller customers or somewhere in between?

A. I'd say one of the larger ones.

Q. You also testified about the Stroh litigation in Milwaukee?

A. Yes.

Q. You testified at trial in that case I believe?

A. Yes.

Q. Was that a case involving Pydraul also?

A. Yes.

Q. Did the representatives of Stroh admit receiving these letters or did they deny receiving

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them or do you recall?

A. As best I recall, they acknowledged receiving some of them but not all of them.

Q. How large a customer was Stroh?

A. I would call them one of the smaller customers.

Q. Do you have a general idea of how much of the Pydraul product they purchased?

A. Somewhat general. They would purchase enough to fill a machine, which would be a couple thousand gallons, and then the makeup quantities were in very small amounts, say a drum a year or something like that for that machine.

Q. What kind of equipment was used in 1970 through 1973 to generate these mailing lists or to produce the mailing labels?

A. Oh, it was just typists and pregummed labels. Lists were prepared, as I indicated, some of them by an Addressograph process and then from that list the typist would prepare the mailing label.

Q. Were there any computer records at all then that would contain the address list or copies of the mailing labels?

A. The only computer records I recall at that

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time were the beginnings of programs where the customers were listed on a printout along with the previous years purchases and an estimate on the part of the salesman as to when the next shipment might be called in. That's the only computerized evidence I recall seeing at that time.

MR. BAKER: It's now about a quarter until 4:00. Your counsel indicated he needs to continue the deposition to a later date and I've said about all I need to say for one day too I suspect, so I would --

MR. MONGE: We'll agree an another date compatible with your schedule.

THE WITNESS: Okay, I've got a full calendar coming up here the rest of the year.

MR. BAKER: We will suspend the taking of this deposition until some later date agreed upon among counsel.

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SIGNATURE OF WITNESS

_____
William R. Papageorge, Ph. D.

Subscribed and sworn before me this_____ day of_____, 1992.

_____
Notary Public

My Commission Expires:

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

I, Richard L. Saunders, a Notary Public within and for the State of Missouri, do hereby certify that on September 21, 1992, at the office of Husch, Eppenberger, Donohue, Cornfeld & Jenkins, 100 North Broadway, St. Louis, Missouri,

WILLIAM R. PAPAGEORGE, Ph. D.,

who was by me first duly sworn to testify to the truth and nothing but the truth concerning the matters in controversy in this cause; that the witness was thereupon carefully examined under oath and said examination transcribed into computer-assisted transcription under my supervision.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my seal on September 21, 1992.

My commission expires August 26, 1996.

Richard L. Saunders
Notary Public.

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MF500 Papageorge #68

DEPOSITION CORRECTION SHEET

In Re: Equitable Resources Energy Co vs Monsanto Company

Upon reading the deposition and before subscribing thereto, the deponent indicated the following changes should be made:

Page	Line	Should read:
Title		WILLIAM B. PAPAGEORGE

Reason assigned for change:
Middle initial is incorrect. PH.D. does not apply.

Page	Line	Should read:
7	15	--- plasticizers which

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
7	16	are chemicals ---

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
13	14	They were a rubber chemical ---

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
21	13	Raymond Stratmeyer

Reason assigned for change:
Spelling

Page	Line	Should read:
21	17	--- Stratmeyer

Reason assigned for change:
Spelling

Page	Line	Should read:
21	24	--- when Mr. Stratmeyer ---

Reason assigned for change:
Spelling

Page	Line	Should read:
27	21	--- starts with a 'Y'

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
31	6	--- shut down the old plant and

Reason assigned for change:
Incorrect transcription

William B Papageorge
Deponent

WATER_PCB-SD0000049480

DEPOSITION CORRECTION SHEET

In Re: Equitable Resources Energy Co. vs Monsanto Company

Upon reading the deposition and before subscribing thereto, the deponent indicated the following changes should be made:

Page	Line	Should read:
44	5	--- Paul Benignus. ---

Reason assigned for change: Spelling

Page	Line	Should read:
60	9	Benignus

Reason assigned for change: Spelling

Page	Line	Should read:
62	17	as Aroclor 1254- - -

Reason assigned for change: Incorrect number

Page	Line	Should read:
65	6	Mr. W. R. Corey

Reason assigned for change: Spelling

Page	Line	Should read:
65	7	Mr. Corey, yes.

Reason assigned for change: Spelling

Page	Line	Should read:
65	15	Is Mr Corey - - -

Reason assigned for change: Spelling

Page	Line	Should read:
72	18	--- they are both chlorohydrocarbons, - - -

Reason assigned for change: Incorreet transcription

Page	Line	Should read:
86	13	phrase and I hope - - -

Reason assigned for change: Incorrect transcription

Page	Line	Should read:
94	20	- - - per million in the

Reason assigned for change: Incorrect transcription

William B Papageorge

Deponent

WATER_PCB-SD0000049481

DEPOSITION CORRECTION SHEET

In Re: Equitable Resources Energy Co vs Monsanto Company

Upon reading the deposition and before subscribing thereto, the deponent indicated the following changes should be made:

Page	Line	Should read:
94	21	chicken's diet. - - -

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
96	10	- - - Presence of PCB in

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
133	17	- - - to the stack gases

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
134	7	- - - to make hydro-

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
134	8	chloric acid, - - -

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
135	21	- - - was a dielectric fluid with some

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
175	1	- - - Bistline

Reason assigned for change:
Spelling

Page	Line	Should read:
180	22	of inks - - -

Reason assigned for change:
Incorrect transcription

Page	Line	Should read:
181	15	- - - the need to keep- - -

Reason assigned for change:
Incorrect transcription

William B Papagiorge

Deponent

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