IN THE UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF ILLINOIS

EASTERN DIVISION

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| The United States of America,<br><br>Plaintiff,<br><br>vs.<br><br>Outboard Marine Corporation and Monsanto Company,<br><br>Defendants. | No. 78C1004<br><br>DEPOSITION OF ELMER P. WHEELER |

The deposition of Elmer P. Wheeler was taken before me, Joann H. Singleton, Notary Public for South Carolina, beginning at 10:00 a. m., March 10, 1981, at the Grand Jury Room of the Kershaw County Courthouse, Camden, South Carolina, pursuant to notice.

APPEARANCES

Mr. James T. Hynes, Assistant U. S. Attorney, Office of United States Attorney, United States Courthouse, 219 South Dearborn Street, Chicago, Illinois, 60804, Counsel for Plaintiff.

Ms. Roseann Oliver, of the law offices of Phelan, Pope & John, Ltd., 30 North LaSalle Street, Chicago, Illinois, 60602, Counsel for Outboard Marine Corporation.

Mr. Hugh Thomas, In House Counsel for Outboard Marine Corporation.

Mr. Bruce A. Featherstone, of the lawfirm of Kirkland & Ellis, 200 East Randolph Drive, Chicago, Illinois, 60601, Counsel for Monsanto Company.

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# I N D E X



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STIPULATIONS

MR. HYNES: This is taken pursuant to notice and Federal Rules of Civil Procedure.

MR. FEATHERSTONE: And can be signed by the witness before any notary?

MR. HYNES: Yeah.

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ELMER P. WHEELER, BEING BY ME FIRST DULY SWORN AND CAUTIONED TO SPEAK THE TRUTH, THE WHOLE TRUTH AND NOTHING BUT THE TRUTH, WAS EXAMINED AND TESTIFIED AS FOLLOWS:

QUESTIONS BY MR. HYNES:

Q. Would you please state your full name and spell the last name for the record.

A. Elmer P. Wheeler. W-h-e-e-l-e-r.

Q. And what's your home address?

A. 110 Cool Springs Drive, Camden, South Carolina.

Q. Before we begin this, Mr. Wheeler, I want to let you know that, any time you're tired or want to take a break for a few minutes, just say so. There's no problem to take a little break.

A. Thank you, Mr. Hynes.

Q. What is your profession?

A. I'm retired. My profession in my active career was in the field of Industrial Hygiene.

Q. And would you briefly trace your educational



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background, college and any graduate degrees.

A. Yes, Sir. My degree was a Bachelor of Science and Chemistry in the College of Technology at the University of New Hampshire, 1936. In the fall of 1937, I was registered at the Massachusetts Institute of Technology in the School of Biology and Public Health to work toward a certificate in Public Health, which was MIT's equivalent of a Master's Degree. I was only there for one term, when I was called back to the State of New Hampshire to work for the State Board of Health at the time when the Department was beginning an Industrial Hygiene program in the state. During the rest of that school year, I was involved with that program and visited several hundred plants for industrial hygiene surveys in the state, varying from five employees to maybe five thousand employees. That fall I returned to MIT but, whereas my original objective had been to be in the general field of Public Health, by this time the emphasis had turned to Industrial Hygiene. And the major courses in Industrial Hygiene were at the Harvard School of Public Health. So, although I was registered at MIT, I took courses at Harvard for credit. I did not get a graduate degree because I did not have the opportunity-- With this switch in emphasis, I did not have the opportunity to complete a thesis.

Q. So basically you did the course work but not



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the thesis portion of the graduate degree?

A. That's right, Sir. And the courses in biology and public health were those intended for graduates in Sanitary Engineering at MIT, plus a number of others who were taking the courses as pre-med for subsequent entry to medical school.

Q. Any other formal education after MIT?

A. No, Sir.

Q. Are you a member of any societies, professional societies or organizations?

A. Yes, Sir.

Q. Which are they?

A. Currently, the American Industrial Hygiene Association. I'm certified for the practice of comprehensive industrial hygiene by the American Board of Industrial Hygiene.

MS. OLIVER: I'm sorry. Would you just repeat that.

A. Yes. I am certified for the comprehensive practice of industrial hygiene by the American Board of Industrial Hygiene. I am a member of the American Chemical Society. In all cases now, I believe, emeritus.

Q. Because you're retired?

A. Yes.

Q. I'm not familiar with the certification program



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for comprehensive practice of industrial hygiene. Would you explain the requirements for that certification?

A. Briefly, it's a program established in 1959. As a matter of fact, the membership elected to go this route when I was president of the American Industrial Hygiene Association. An independent board of industrial hygienists, judging the qualifications of the people in the field. Initially a number of us who had been in the field for an extended period of time and who had shown the ability and qualifications were granted grandfather clause status, if you will, without examination. And I've forgotten, frankly, what the qualifications were for that grandfather status. The fact is it meant a demonstration of proficiency in the field and a fairly decent tenure. Subsequently a series of examinations were developed, which were available to people who wanted to become certified by the Board in either the comprehensive practice of industrial hygiene or a number of specialties in the field, whether it be analytical chemistry, air pollution, toxicology, radiation health, etcetera.

Q. All right. Would you briefly explain what the field of Industrial Hygiene is.

A. I don't think I can give you the precise definition but it's the art and science of examining the environment of industrial employees, determining the



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potential exposure to materials that they're handling, evaluating those exposures and, when necessary, recommending controls to limit the exposures to safe levels.

Q. And you've practiced in this field all your professional life?

A. Yes, although subsequently I got involved in other associations of which I'm no longer a member. The American-- The Air Pollution Control Association, of which I was on the Board of Directors and an officer. I was--

MR. FEATHERSTONE: He didn't ask you, Sir, for--

MR. HYNES: No, no, no.

MR. FEATHERSTONE: The question only asked whether you were involved in the area of Industrial Hygiene throughout your professional career.

A. Yes.

Q. You said you were an officer in the American Industrial Hygienists Association. You were president when? 1959? Was that--

A. Yes.

Q. And are you currently an officer in any of the societies?

A. No, Sir.

Q. Have you ever had any teaching appointments or--

A. No, Sir.



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MR. FEATHERSTONE: Please wait until he finishes the question, Mr. Wheeler.

A. Yes, Sir.

Q. I was going to say hospital appointments or anything relating to that.

A. (Shakes head indicating negative answer).

MR. FEATHERSTONE: You have to answer audibly.

A. No, Sir.

Q. Have you ever published any articles in the field of Industrial Hygiene?

A. Yes.

Q. Do you recall what those articles concerned, the subject matters, and where they were published and when?

A. I believe it was in the late '50s or early '60s where I presented papers that were subsequently published in the scientific journals, relating primarily to the administration and management of industrial hygiene programs.

Q. Would you happen to have a list, a bibliography of these publications? I don't want to take the time to go through each and every one that you can remember but--

A. I don't know. At one time I had such a list. I don't know if I still have it or not.

Q. Would it be fair to say that these articles were all in the area of administration and management of



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industrial hygiene programs?

A. Yes.

Q. Would you briefly describe, if you can recall, in a little bit more detail the subject matter of these articles.

A. The emphasis was on where an industrial hygiene program should be established within an industrial corporation, who should be responsible for it, the lines of communication and what the program-- I believe, what the program should include.

Q. Subsequent to your concluding your course work at MIT and at Harvard, would you-- When did you start working for any companies? What was your employment history?

A. I returned to the State of New Hampshire--

Q. What year?

A. I guess it was June of '39. I think that ties in with the right sequence of the half year and the full year. And was with the State Health Department as the assistant administrator of the program, director of the program, until I was called into service in April of 1941. I was an anti-aircraft artillery officer, served overseas, returned in April or May of 1944, and I was assigned to the Army Industrial Hygiene Laboratory located at Johns Hopkins University. It was a function of the Surgeon General's office, the Surgeon General of the Army. I was with that



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laboratory until I joined Monsanto in July of 1947.

Q. And when did you retire from Monsanto?

A. June 30, 1976.

Q. Anyhow, when you ask someone who retired when they retired, they always know the exact date. Now, you began with Monsanto in July of '47 and you worked through June 30th, '76, as continuous employment?

A. Yes, Sir.

Q. And what was your first position with Monsanto?

A. I believe the title was strictly-- It was simply Industrial Hygienist in the Medical Department, under the direction of the Medical Director.

Q. And what were your duties?

A. The duties of an industrial hygienist of visiting the Monsanto plants, evaluating the handling of products, raw materials, by-products from the standpoint of exposure to our employees and to, where necessary, make recommendations for improved hygienic practice to ensure the health of our workers.

Q. And in July of '47, was there a specific department called Industrial Hygiene or was it a--

A. I was a one man section in the Medical Department.

Q. And you reported directly to a medical director?



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A. Dr. Kelly.

Q. And he was the Medical Director then?

A. Yes, Sir.

Q. Was that the title?

MR. FEATHERSTONE: Mr. Wheeler, wait until Mr. Hynes has finished his question.

A. I'm sorry.

MR. FEATHERSTONE: You make me nervous.

Q. You were the one man industrial hygiene department in July of '47. Did that subsequently change?

A. Yes.

Q. And when was that?

A. 1951 or 1952.

Q. And what changes took place?

A. We added a second individual to assist me in the industrial hygiene efforts.

Q. And who was that?

A. Mr. Jack Garrett.

Q. G-a-r-r-e-t-t?

A. Yes.

Q. Were your duties changed in any way?

A. Yes.

Q. In what way?

A. Corporate management assigned us a similar consulting role to our plant managers, concerned with the



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fields of air pollution and water pollution.

Q. So you added the air pollution and water pollution concerns to your duties?

MR. FEATHERSTONE: Consulting responsibilities.

A. Consulting responsibility. Yes, Sir.

Q. And how would you consult and who would you consult with?

A. At the time of our industrial hygiene visits, we would review with plant management, who had the ultimate responsibility for pollution control measures, as well as safety and fire prevention and health maintenance programs, as to whether or not there were any problems as to what they were doing, whether they were meeting the required permits from whatever organizations might have been in vogue at that time, and in this consulting capacity, to keep abreast of developments in the field because the activity at that time was within health agencies, both from the Federal Government and within state agencies that might have any interest or involvement in the pollution field.

Q. You say you consulted with plant managers. Does that mean each individual Monsanto plant throughout the country?

A. Yes.

Q. And could you just briefly describe how the corporate organization structure worked? What I'm looking



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at, were the individual plant managers in charge of a straight line of all operations within their plant and then they reported to a particular individual at Monsanto? Or would there be people in a central office, which would control certain aspects of that plant? Was it a centralized or a de-centralized organization? I'm just--

MR. FEATHERSTONE: With respect to what operation?

MR. HYNES: The individual plants.

A. I don't know, Sir-- I don't know what you mean by de-centralized or centralized. My understanding was that the plant managers were responsible directly for any activities within the confines of his plant.

Q. That's what I mean. And then you would consult with them in any problems they would have in the industrial hygiene area and then in 1952 you would consult with them in any potential air or water pollution problems or concerns within that individual plant?

A. That's right.

Q. What type of concerns or problems did you discuss with these plant managers? What were the typical type of problems that they would see, if there were any, that you'd consult on?

MR. FEATHERSTONE: He's already told you it was industrial hygienic practices and pollution consulting.

Q. What type of pollution consulting problems did



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you discuss beginning in '52? What were the type of problems that were coming up at that time with these individual plants?

MR. FEATHERSTONE: Well, how is that germane to this lawsuit, Mr. Hynes?

MR. HYNES: It's about water pollution.

MR. FEATHERSTONE: You've already tried that with the judge and you didn't succeed.

MR. HYNES: I want to find out what type of problems there were.

MR. FEATHERSTONE: Well, why don't you tell me what it is that you're looking for so I can make a draw on whether I'm going to instruct him to answer that question or not answer that question. I don't see how a problem with a product unrelated to PCB has any bearing on this lawsuit and, indeed, the judge has instructed you that, if you want to find out about pollution control in Monsanto plants with respect to PCBs, you have to do it by interrogatory.

MR. HYNES: I want to find out the type of problems-- I want to find out what his duties were and what his responsibilities were.

MR. FEATHERSTONE: He's told you that.

MR. HYNES: And now I'm going into a little bit more detail of what his responsibilities--what his consulting consisted of.



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MR. FEATHERSTONE: Mr. Wheeler, if you can respond to that question in a little more detail and still on a general level, without getting into any specifics with respect to the pollution aspects of the firm and, indeed, with respect to the industrial hygienic practices, until he directs you to a specific one, go ahead. But if you can't do it, tell him you can't do it.

A. The only way I can respond to that, I think, Sir, is that there was a growing interest on the part of everyone of the control of air pollution, water pollution and, in fact, in every instance that I can think of, our plants were faced with obtaining permits from appropriate state agencies for the discharge of any of their wastes.

Q. And you would consult with them of ways to meet the permit requirements?

A. Not so much that because we weren't qualified engineering-wise to do so, but to see that they got whatever assistance they needed through consultants or, in collaboration with the state agencies, work out a program that made the permits possible.

Q. You and Mr. Garrett, somewhere around '52, were the two man--

A. Yes.

Q. Industrial hygiene department. How long did that situation last? Did you add more people at a later



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date or did your duties change at a later date?

MR. FEATHERSTONE: You have two questions there, Mr. Hynes. Which one do you want to ask him first?

Q. Did you add more people?

A. Yes.

Q. When?

A. We added a toxicologist full time in '60. I believe it was 1960.

Q. All right. And that's the first change from '52 to '60? You added a toxicologist?

MR. FEATHERSTONE: Wait. You're talking about the whole Medical Department or just--

MR. HYNES: No. I'm talking industrial hygiene.

A. Industrial hygiene, we added another gentleman that reported to Mr. Garrett. I've forgotten the year. Mid-'60s, I would say.

Q. But up to 1960, the only person you added was the toxicologist to your department?

A. Some time in 1960, I believe. Yes.

Q. And did your duties change between 1952 and 1960?

A. I had become more involved, along with my other duties, in the field aspects of industrial hygiene, in the toxicology research programs for the corporation, subject to direction of Dr. Kelly, who had the principal responsi-



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bility.

Q When did you become more involved with the toxicology research program? About when did that start?

A Early, mid-'50s.

Q And what was your involvement in these programs?

MR. FEATHERSTONE: When? At that time?

MR. HINES: When it began.

A Primarily to make arrangements for the acute screening toxicity studies for Monsanto products.

Q You say make arrangements.

A To obtain samples.

MR. FEATHERSTONE: Wait until he finishes his question.

Q You said make arrangements. Could you explain what you mean by that?

A Yes. The obtaining of samples for research, seeing that they were shipped to the contract laboratory that was doing the work for us, receiving the reports and, with Dr. Kelly, interpreting the results.

Q Did you yourself do any of the toxicity testing at all?

A No, Sir.

Q You say, somewhere in the early, mid-'50s, you became involved in this toxicology research program. What you just said concerning arranging for the acute toxicity



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tests, was that your involvement that-- Did your involvement change in any way from the beginning of that period until, let's take it up to, say, 1960?

A. It was extended to include monitoring for Dr. Kelly chronic toxicity studies, which he had arranged with contract laboratories.

MR. HYNES: Would you repeat that answer, please.

REPORTER READS BACK.

Q. Am I understanding you right? In the beginning, when you started working in the toxicity research program for Dr. Kelly, your first duties were in arranging for the acute toxicity tests and subsequently it was expanded--your duties were expanded to monitor chronic tests, also?

A. That's right.

Q. That takes us up to about 1960, using as an artificial cut off, when you hired a toxicologist in the department. Is that correct?

A. Yes, Sir.

Q. And when the toxicologist was hired-- What was his name? Do you recall?

A. Dr. William Hunt, deceased.

Q. And did your duties change with regard to this toxicity testing once Dr. Hunt was hired?

A. Dr. Hunt reported to me so I had some managerial responsibilities for his efforts.



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Q. But did he take over this getting the samples, arranging with contractors, reviewing the reports that you had previously been doing?

A. Yes, Sir.

Q. And then basically he would report the results and his progress to you then? Is that correct?

A. Yes, Sir.

Q. Did your duties change, subsequent to Dr. Hunt being hired, in the industrial hygiene area with Monsanto?

A. No.

Q. So from that time until you retired, your duties were substantially the same?

A. Yes.

Q. Could you explain briefly what an acute toxicity study is?

A. Yes. The intent of an acute toxicity study, as we were doing them and as others were doing in the field and as accepted by government agencies, included the determination of an oral, lethal dose in rats, the skin absorption or penetration lethal dose in rabbits, the skin irritation potential in rabbits, the eye irritation potential in rabbits and, with liquid samples, the effects of acute vapor inhalation.

Q. On the acute vapor inhalation, any particular species that was the test animal?



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A. Rats.

Q. Rats?

A. Rats. Yes, Sir.

Q. The oral, lethal dose would be rats and then the skin absorption, the skin irritation and eye irritation would be rabbits?

A. Yes, Sir.

Q. The normal testing animals?

A. Yes, Sir.

Q. Were these all of the types of acute toxicity tests which were done that you recall?

A. Yes, Sir.

Q. Were these the normal series of acute tests that were done by the company?

A. Yes, Sir.

Q. When would these tests be done with relation to a product, a particular chemical product or a chemical component?

A. Very early in the research stages of a chemical.

Q. Before it would be marketed or manufactured in a--

MR. FEATHERSTONE: Commercial sense?

Q. Commercial sense? Is that--

A. Long before.



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Q. The best of your knowledge, were the acute tests like these or the series of acute tests done on each Monsanto product that was at least in the research stage? I use product in a very broad sense. I don't mean a commercial product. But any product that is being involved in research, are these the tests that are normal practice to do for each such product?

A. Yes.

MR. FEATHERSTONE: Mr. Hines, you said, are these the tests? The witness is retired and I don't know--

MR. HYNES: That's fine.

Q. When I say are, I mean are in the sense of when you were working for Monsanto as an industrial hygienist. And, again, if there's something that's unclear and I misstate something, please correct me. Don't be shy. Bruce won't be.

MR. FEATHERSTONE: That's right.

Q. And you mentioned chronic toxicity tests. Could you please explain what chronic toxicity test is?

A. A chronic toxicity test attempts to determine the levels of a material that will have an effect on animals when the exposure is repeated over a long period of time by the ingestion route, usually a two year study of rats or dogs at levels which are intended to show a decided effect on the animals--



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Q. A what effect?

A. A decided effect, if any, in the animals, a level that has a less severe or maybe even a reversible effect and a third level that shows no effect.

Q. You mentioned decided effect, a less severe effect--

MR. FEATHERSTONE: Or reversible.

Q. Or a no effect level?

MR. FEATHERSTONE: Well, the second one--

Q. The second one, less severe but reversible?

A. Or reversible.

Q. And then a no effect level?

A. (Nods head indicating affirmative answer).

Q. Are these three distinct types of chronic tests?

A. They are part of the package of the usual chronic toxicity studies.

Q. And were chronic toxicity studies done on all of the same chemicals or products that an acute test would be done?

A. No, Sir.

Q. When would a determination be made of when a chronic-- Or how would a determination of whether a chronic toxicity study would be then made?

MR. FEATHERSTONE: Well, at what point in time



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are you talking about, Mr. Hynes? I think his testimony has been that he monitored the tests for Dr. Kelly. I'm speaking about--

MR. HYNES: Let me rephrase that.

Q. Did Monsanto have a practice as to when a chronic toxicity test would be ordered?

A. Yes.

Q. And what was that practice?

A. Depending on the use, intended use, of the product and the results of the acute studies. An intended use, to be specific, would be, for example, in pesticide, where government regulations required registration and where battery tests satisfactory to the U. S. Department of Agriculture, the U. S. Food and Drug Administration required that chronic studies or data from chronic studies be established.

Q. That's one category, of government requirement, to have chronic studies. Other than a government requirement, was there any practice within Monsanto as to when they would--

A. Yes.

Q. --order a chronic toxicity study series?

A. Yes.

MR. FEATHERSTONE: To the extent that you attempted to characterize his testimony, Mr. Hynes, I object



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to it. His answer was broader than just those circumstances in which the Federal Government required this chronic testing.

MR. HYNES: I understand that.

MR. FEATHERSTONE: His answer started with whatever the intended use of the product was.

Q Pick up there. It would be the intended use of the product and/or government regulations. Now-- Just strike that. Government regulations obviously is a requirement if it's required by government regulations to do the chronic tests or whatever would be required to market the product. But other than that, what types of--

MR. FEATHERSTONE: In what circumstances were chronic tests done?

Q In what circumstances would a chronic test be done? Fine.

A When the use of a product, a proposed use of a product, indicated that there might be exposure to humans via the inhalation route.

MR. FEATHERSTONE: Chronic exposure to humans?

A Yes, Sir.

Q And what do you mean by chronic exposure to humans?

A The field of Industrial Hygiene is concerned with day in and day out exposures of workers to materials



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in their work environment, generally on the basis of eight hours a day, forty hours a week. This is prolonged, repeated exposure. So a chronic inhalation study over some period of time, again using different levels, to find a no effect level may be required.

Q. So it would be chronic exposure by the inhalation route. That's when you would internally have the chronic toxicity test series done. Any other situations where Monsanto would have chronic tests done?

A. Not that I recall.

Q. And the inhalation route, the chronic exposure by inhalation would be the only situation-- I'm trying-- Is there any other-- You say if the proposed use of the product indicated chronic exposure by the inhalation route?

A. Possible chronic exposure.

Q. Possible. Would there be any other route of chronic exposure that you can think of where chronic tests would be done by the company?

MR. FEATHERSTONE: You mean before the product was marketed?

MR. HYNES: Right.

A. No.

Q. This may seem like a simple question. But why would it only be inhalation exposure, other than ingestion? What other methods would there be besides inhalation,



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MR. FEATHERSTONE: For skin testing?

MR. HYNES: For skin testing.

A. I think only for those products that were intended for repeated and prolonged use by humans, including materials in perfumes, powder, materials that people would, by the nature of the product, be expected to have repeated daily or quite frequent exposure.

Q. Did Monsanto market any of those products?

A. We marketed a bactericide for soap. Yes.

Q. That would be considered a drug; wouldn't it? Or do you know?

A. I believe so. I believe the Food and Drug Administration defines that. Yes.

Q. Did you ever do any subacute toxicity studies at Monsanto?

A. Monsanto didn't do any toxicity studies.

Q. Well, I'm sorry. Did you ever contract out to do any subacute toxicity studies?

A. There were some subacute toxicity studies done. Yes.

Q. Would you please explain what a subacute toxicity study is.

A. My recollection is that this would involve maybe a ninety day administration, rather than a year or two years.



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ingestion--

MR. FEATHERSTONE: Wait a minute now. You've got two questions. First you start off with, why inhalation rather than ingestion?

Q. Why inhalation rather than other methods of being chronically exposed, from Monsanto's standpoint?

A. I don't know of any other methods, except through the possible skin absorption route.

MR. FEATHERSTONE: People don't usually ingest industrial chemicals.

MR. HYNES: That's fine. I understand that.

Q. You don't mean you have food and food additives and products like that and that's why Monsanto is a chemical company. And that's the normal way people would ingest or be chronically exposed to your products?

A. The state of the art did not include, in quote, chronic skin exposures because the data could be extrapolated from the inhalation or ingestion and acute skin effects by absorption--excuse me--the effects from the acute, penetration or absorption data.

Q. When you say the state of the art, was this at the time while you were in industrial hygiene?

A. Yes.

Q. Prior to your retirement did that, quote, state of the art change?



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Q. In other words, it would be similar to a chronic but the time frame would be much less. Is that a correct characterization?

A. Yes.

Q. Do you recall when a subacute toxicity study would be done as a matter of what Monsanto's practice was in that?

MR. FEATHERSTONE: Again, before the product was marketed?

MR. HYNES: Right.

A. I don't recall.

Q. Do you recall ever being involved in any arranging for or reviewing any subacute toxicity studies for Monsanto?

A. No.

Q. Do you recall if Monsanto ever ordered any multigeneration type toxicity studies in any of its-- Strike that. As a matter of practice, did Monsanto ever contract out for any multigeneration toxicity studies?

MR. FEATHERSTONE: Do you know what that is, Mr. Wheeler?

A. I don't know what the term multi means, whether that's one generation, six generations or a hundred generations.

Q. Say, three generations.



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A. And your question was, Sir, did Monsanto ever contract for multigeneration studies?

Q. Yes.

A. Yes.

Q. In what circumstances was that done?

A. I don't recall because this was a later development in the practice of toxicology research after my involvement had been limited because of other experts that we had in the department, well qualified toxicologists, in addition to Dr. Hunt.

Q. You don't recall what circumstances would require, under Monsanto's practices, multigeneration--

A. Not specifically.

Q. Generally do you recall any products or any situations where that was called for? You say not specifically. Do you recall in general what the multigeneration toxicity tests--

MR. FEATHERSTONE: Is your last question the question you wish the witness to answer?

MR. HYNES: Yes.

A. And what was the question?

Q. Let's start it again. You said you don't remember specifically the reasons for a multigeneration toxicity test; other people did that.

MR. FEATHERSTONE: He said the circumstances he



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didn't recall specifically.

MR. HYNES: The circumstances.

Q. Do you recall in general what the circumstances were?

A. No, frankly. I'm sorry, Sir, but I'm not real articulate and I sometimes use words that may confuse you.

Q. That's okay. I get the same problem sometimes.

MR. FEATHERSTONE: You're referring to the word specifically, obviously, Mr. Wheeler?

A. Yes.

Q. I believe you said that the acute toxicity series were done early on in the research end of a product development. I take that to mean that there is constant research going on within Monsanto to develop new products or improve existing products. Is that correct?

A. Yes, Sir.

Q. And these acute tests would fit in early on in that research for either a new or improved product. Is that correct?

A. Yes, Sir.

Q. Could you explain, to the best of your knowledge, how a new product would be developed within Monsanto from the point someone got an idea to the point where it was marketed? And the second part of that question, where your department would fit into that process?



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MR. FEATHERSTONE: Well, Mr. Hynes, Mr. Wheeler was never in the area of commercial development.

MR. HYNES: I'm asking what he knows about it and where his department fit into that decision making process.

MR. FEATHERSTONE: All right. As a preliminary question, Mr. Wheeler, did you have any involvement in commercial development, as such?

A. No, Sir.

MR. FEATHERSTONE: Okay. Now you can tell Mr. Hines what you know about it and where you fit into it.

A. I can't answer the first part of his question as I understood it because I have no idea. I have no reason to know what prompted a chemist in the research group to invent a new product.

MR. FEATHERSTONE: Okay. Now, maybe with that preamble in mind--

Q. Where would the Industrial Hygiene Department--I'm using the word department for you and the people who worked with you and for you. What input did you have into the development of a new product into the research? What was the extent of your input?

A. The input that I received?

Q. No. The input that you put into the new product? I'm thinking in terms of acute toxicity tests and all that. How would you first become involved? Let's start



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all over again. How would you first become involved with the development of a new product?

A. By management direction, the research chemist was obligated to send us a sample for acute testing at an appropriate point. Accompanying his request for the study was a form on which he had to indicate prospective uses of the product and, equally important, had there been any indication of any effects noted in the research laboratory on him or his associates. This would be our first indication that a new product was being considered for a specific use.

Q. And then, once you received the sample and information sheet, what then occurred within your department? What did you do?

A. The sample was sent to the consulting laboratory for the acute studies.

Q. And then you received those results back. And what were your duties at that point, once you had received the results back from the lab, the consulting lab?

A. The report was evaluated to compare the data that had been obtained with data that had been--with data bases that had been well established within the industry and by government, I presume. Probably it was the ICC because what I'm referring to is the proper labeling of chemicals before they can enter interstate commerce. And



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in the tests then there had been established gradations of toxicity classification, depending on what the lethal doses were. For example, a compound that had a lethal dose-- I believe my memory is correct. For compounds that had a lethal, oral dose in rats of fifty milligrams per kilogram or less, by law the material had to be identified as a Class B poison; the containers had to meet the approval of the ICC; skull and crossbones had to be on the label, with appropriate recommendations for the handling of that material. Exponentially, I think the range then included--

MR. FEATHERSTONE: Mr. Wheeler, the question doesn't ask for that detailed a response.

A. I'm sorry.

MR. FEATHERSTONE: Your answer, before you got off on this tangent, was that you compared the results to established standards. Then what did you do?

A. We sent that evaluation of the data back to the individual who had requested the samples and included copies to those people in the company, specifically the labeling and container group, so that they would be prepared, if the product did move into commercialization, as to the kind of containers that would be necessary to meet the regulations, as well as the label content.

Q. You said you evaluated the report. Was just part of the evaluation to determine the proper labeling and



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containers that the product should be contained in if it was marketed or was there more to your evaluation than just that?

A. More importantly, from an industrial hygiene standpoint, it was possible to estimate what the effects might be if there were exposures to humans, not only our own people but others.

Q. And how was that-- How did you go about determining the possibility of contamination or problems? What I'm getting at is-- In talking about labeling, you said you had pretty much of a standard reference or, if there's a certain lethal dose, it would fit into certain categories for labeling a poison or whatever other categories there are. What criterion did you use to determine other problems that might exist if the product was marketed?

MR. FEATHERSTONE: For example, industrial hygienic problems?

MR. HYNES: Right.

MR. FEATHERSTONE: Potential--

A. Well, the chemical and physical characteristics of the material were obviously a factor. The intended use; the difference between potential exposure if the material was a highly volatile liquid, as compared to a very oily, waxy material; whether the material was a solid, which in turn would tend to limit exposure; and the general



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background, based on our training and experience, as to what these data meant in comparison to other well known household products or industrial chemicals.

Q. How important was the information which you received from the research chemist with regard to the intended use of the product to your evaluation of potential problems?

A. I don't think I heard the first part of the question.

Q. How important was the information concerning the intended use of the product to you in making your evaluation of the product from an industrial hygiene standpoint?

A. At that time in the development or the research development of the product, from an industrial hygiene standpoint, it gave us an opportunity to indicate to the man in research whether he had to take special precautions in handling this material and, certainly, if the material was going to go outside the company, the kind of recommendations that had to be provided for the safe transportation and safe handling by other research people outside the company.

Q. So the intended use data would be somewhat significant to your evaluations of the product?

A. Very.

Q. After you made your evaluation, you sent your



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report back to-- You sent it back to research chemists. Is that correct?

MR. FEATHERSTONE: Among others. That's what he testified to.

A. Among others, yes, Sir.

Q. What further involvement then would your department have with the development of this product?

A. None, unless there were some indication on the part of the people working with it that there were problems with throat irritation, nose irritation on their part from exposures or until such time as the product began to appear to be promising in terms of the development effort. And I'm trying to be a little more precise in that we had research, we had a development group, before things went into the marketing group. And our next involvement in the product was probably when it moved from research to people in development.

Q. Would that-- What you just said, it would be research and then development and then marketing?

A. Yes, Sir.

Q. And when the product moved from research to development, that would be the next time you would be involved with that product. Is that correct?

A. That's my recollection.

Q. And what would your involvement at that point



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be?

A. A review of the acute data and, with a clear understanding at that time, I think, of what the proposed uses were, a decision would be made as to whether additional toxicity work should be undertaken.

Q. Am I correct in-- My interpretation of what you're saying is, once a product reaches the development area, there is more precise information as to its intended uses and chemical properties and things like that than there were when it was in the research stage, when you first had some input into this process. Is that correct?

A. That's a long question and I don't remember the first part of it.

Q. All right. When a product gets to the development stage from the research stage, you stated that you would review the product, the information that you received on it and determine if more toxicity studies are needed, re-evaluate it in terms of the knowledge that you had at that time. The information in the development stage of the product then is a little bit more comprehensive than it was at the research stage of this product development. Is that correct?

A. I don't know what you mean by comprehensive.

MR. FEATHERSTONE: Do you have more information in the commercial development stage?



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A. We had more information from the people in development. Yes.

Q. And based on that additional information, you'd make a determination of whether more toxicity data was needed. Is that what you were saying?

A. Yes.

Q. What would the-- What are the criterion that you would use to determine if more toxicity data was needed at that time?

A. If I understand criterion, I don't think we had criterion or criteria that were identified as such. It was a question of scientific judgment.

Q. And what factors would lead you to exercise your judgment to order more toxicity tests on a product?

A. May I answer that in terms of extremes?

Q. Fine.

A. If the early data indicated that the sample was biologically inert, that we could not demonstrate effects in the animals studied, there probably would be no more toxicity work done, unless, even on that data, there was--an intended use was such that there would be human exposure. On the other hand, in this field of pesticide research, which was a major effort in Monsanto, if the material was a class B poison or approaching that level of toxicity, then, obviously, additional studies would be



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recommended and undertaken.

Q. And in between those two extremes is where you exercise your judgment whether you needed or you don't need any more toxicity studies. Is that correct?

A. Yes.

Q. In the commercial development stage, what are the types--what were the types of additional toxicity studies that would be ordered? The categories? Would it be acute, subacute, chronic?

A. The acute studies might be extended by using additional animals, in essence, repeating the earlier work but using additional animals and various levels other than had been used in the initial studies, to more definitely define statistically an oral, lethal dose. If appropriate, subacute studies would be undertaken. If appropriate and an indication of usage such that there could be intimate contact with the skin, the state of the art tests for dermatitis testings in humans would be undertaken. Dermatitis potential.

Q. Now, once--

MR. FEATHERSTONE: Wait a minute. He also asked about chronic testing. Is this a stage at which chronic testing might be done if appropriate?

A. If appropriate, yes, Sir.

Q. Now, once your department made the determination



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that additional toxicity studies or data was necessary, assuming it was, you get the results in, you evaluate it like you did before in the earlier stage, the research development area stage of the product development? You'd make the same type of evaluation, use the same criterion as that?

A. I was really not that prepared--

Q. Let's do this again.

A. You say you. I don't know whether you mean me personally or me, the department.

Q. I mean you, the department, first of all. Once the determination is made in your department at the commercial development stage of the product to do or not to do additional toxicity tests, once your decision is made, once you have the data from tests, if any, ordered, what is the next step your department would take with regard to evaluating that product?

A. I'm going to ask you, Sir. I don't know whether you said on the basis of subacute studies or chronic studies or--

MR. FEATHERSTONE: He's just asking you for the general procedure.

Q. The general procedure, not what you would do with a chronic versus an acute study. But once your determination has been made in your department, once you have



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the data to exercise your judgment, what is the next step you take in the product development?

A. The Medical Department would analyze the data, interpret it and provide it to the people, not only at that time in development, but, also, back to the people in research and, if the material was approaching commercialization, then to the people involved in marketing.

Q. What form would your recommendations normally take? Would it be, we recommend the product; don't recommend it? What form would your recommendations be once you finished your work?

MR. FEATHERSTONE: He said interpretations of the data. There's a difference.

Q. All right. Your interpretations, your exercising your judgment, what form did that take when you notified the other departments?

A. By form, as I understand your question, would be written communication from Dr. Kelly to the involved party.

Q. And what would the content--the type of information that you would communicate?

A. The information that the department would communicate, to my recollection, consisted of, the interpretation leads the department to believe marketing can proceed; marketing cannot proceed without additional toxicity data;



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or marketing can never proceed in the intended use.

Q. If I'm correct, you gave three general categories of your department's evaluation, that marketing can proceed, you need additional data, or marketing can never proceed with the intended use?

MR. FEATHERSTONE: Did you call those recommendations or interpretations?

MR. HYNES: I called them interpretations.

Q. Are they interpretations or recommendations?

MR. FEATHERSTONE: Or comments.

Q. Or comments? What would you categorize these as?

A. That's a fine distinction between words that I don't know that I can make. We were responsible for making a judgment and we expressed that judgment.

Q. All right. Fine. In your department's judgment then, in the situation where your department said marketing can proceed, what criteria did you use? I mean criteria in the broadest sense, not necessarily written criterion. What criterion would your department use to make that recommendation that marketing can proceed? What would be the factors that would be involved in making that determination?

A. Well, the principal one, of course, would be the data that had been generated in the toxicology studies



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but, also, in conjunction with potential use and the potential exposure to workers and, in some cases, to the public.

Q. Could that be categorized-- Would I be fair in categorizing it, for its intended use, it's safe?

A. Yes.

Q. And then the second recommendation or evaluation would be you need additional data. What type of additional data would that consist of? Would that be strictly toxicity data or would it be some other type of data?

MR. FEATHERSTONE: Ma'am, would you please repeat the question?

REPORTER READS BACK.

MR. FEATHERSTONE: You mean in a case which Mr. Wheeler referred to, a recommendation or a judgment from Medical that you can't proceed without additional data?

MR. HYNES: Right.

MR. FEATHERSTONE: The question is, what type of additional data would you recommend be secured?

A. Toxicity data of some sort.

Q. So the additional data you referred to there was strictly toxicity data. Is that correct?

A. Yes. And I'm including in that the skin testing program with humans that I mentioned earlier.



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Q. And what factors would cause your department to make the evaluation that marketing should never proceed with the product for its intended use?

A. There are so few. In fact, I can't recall of an instance where that was done.

Q. Again we're talking at the commercial development stage. Do you recall an instance where that was done on any product at the new product research stage?

A. The only instance I can recall, Sir, is Monsanto made a herbicide for killing weeds.

MR. FEATHERSTONE: The question is, do you remember it happening at the research stage? I take it, by happening, he means the Medical Department recommended that development not go ahead with this product.

A. Yes.

Q. Your answer is yes? You do recall that?

A. One instance.

Q. Would you explain what that instance was, the best you recall.

MR. FEATHERSTONE: Did it involve PCBs?

A. No, Sir.

MR. FEATHERSTONE: He's not going to answer the question, Mr. Hynes.

MR. HYNES: I don't understand why. I want to find out what the factors are for the recommendation not to



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proceed with the product. He remembers one instance. I think we have a right to find out what the factors were that led them to make that judgment.

MR. FEATHERSTONE: Well, you may have a right to the factors but you don't have a right to the product or the particulars. Mr. Wheeler, if you can answer that question generally with respect to the factors that are considered by the Medical Department, you may do so. If you can't, without divulging what the product was, say so and we won't go any further, unless Mr. Hynes can demonstrate some relevancy to this litigation.

A. There was one case where a product had been developed that, in the form and concentration that Monsanto proposed to market it, a change in marketing practice actually where it was proposed the material be sold in its concentrated form, whereas it had been marketed as a mixture, for want of a better word.

MR. FEATHERSTONE: You mean diluted form?

A. In diluted form, yes, with inert materials. A change in marketing the material as a concentrated material would have required the class B poison label that I mentioned earlier and we didn't feel that that was a logical way to proceed.

Q. That's the only instance you can recall?

A. The only one I can recall. Yes, Sir.



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Q. Once your department's evaluation-- Is that all that you can recall in the commercial development stage of a product? Once you make this final evaluation, proceed, don't proceed, need additional data, once that evaluation is made by your department and sent forward to whomever is supposed to get that, what further input or information is requested from your department on this product before it goes into commercial sales as a fully developed commercial product?

A. Your question is so long, Sir, I don't know how to answer it.

MR. FEATHERSTONE: After you made--

Q. After you make your recommendation at the commercial development stage, does your department have any further input in the product before it is finally marketed?

A. No, Sir.

Q. Now, once a product has been on the market, other than when a problem comes up-- Let's put that aside for a minute. If a product is on the market, does your department ever become involved again in the evaluation?

MR. FEATHERSTONE: If there's no problem?

MR. HYNES: That's right.

Q. I'm talking about, if there's no problem, is there any other further involvement with your department?

A. Only as technical bulletins for a product



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might be revised and we were required to ensure that the proper handling precautions were included in any revisional bulletins.

Q. What are these technical bulletins?

A. In every instance, I believe, of a Monsanto product of any volume, there's a technical bulletin that had been prepared to assist, first, people as prospective customers during the development effort of the material and then, secondly, as a part of sales literature just generally available to anyone.

Q. And what role did your department play in the technical bulletin revisions or offering a technical bulletin?

A. Our role was concerned with the assurance that, if there were necessary precautions in the handling and use from a health standpoint, that these warning statements or recommendations for safe handling be included.

MR. FEATHERSTONE: When you use the term, Mr. Hynes, your department, are you referring to--

MR. HYNES: The Industrial Hygiene Department.

MR. FEATHERSTONE: Even though there wasn't an Industrial Hygiene Department, that loose characterization?

MR. HYNES: Right.

MR. FEATHERSTONE: All right.

Q. What situations would require your department



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to become involved with the revision of a technical bulletin?

A. What?

Q. What situations would call for you to become involved in revisions of a technical bulletin?

A. It was general company policy that the bulletins should be reviewed by the department.

Q. And when would-- What would prompt the department to review such a revision? Who would initiate the revision of it? First of all, who would initiate the revision of a technical bulletin?

A. I believe someone in the marketing department.

Q. And do you recall what situations would prompt them to initiate such a revision?

MR. FEATHERSTONE: You have a terrible foundational problem there, Mr. Hynes. Mr. Wheeler wasn't in marketing and, if marketing did it, how can he answer that question?

MR. HYNES: If he knows.

MR. FEATHERSTONE: I guess that's the be all and end all of foundational problems. To the extent you know anything about it, Mr. Wheeler, you can tell him.

A. Well, any new data that had been developed about other characteristics of the product, which I had no responsibility or control of. If there was a change in physical characteristics, chemical characteristics--

MR. FEATHERSTONE: Intended uses?



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A. Intended uses, in particular.

Q. So if there was a change in the intended use, there would be a new technical bulletin, which would come out eventually to take into consideration its new use?

A. Yes, Sir.

Q. At some point then, your department would have reviewed that intended use and determined the toxicity, the handling, the type of-- Strike that. If the intended use changed in a product, would your department be notified by some other department within the company?

A. Yes.

Q. Was that a standard practice?

A. Yes.

Q. And once you had been notified-- I'm using you in a plural sense. Once you had been notified of an intended use change in a product, what evaluation did your department do in terms of toxicity work or safety and the like for this intended use?

MR. FEATHERSTONE: Now we've moved away from the revisions of this--

MR. HYNES: Right.

Q. In these product intended use changes, you say, as a matter of practice within the company, if there is an intended use change, your department would be notified. When your department was notified, what did you do?



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A. I can't recall specific instances where any great amount of additional toxicity work was done or any, perhaps, other than, again, as I mentioned earlier, the fact that, if the intended use was going to involve repeated human skin contact, we would insist that we get data as to show potential irritation problem from that use.

Q. Would I be correct in saying that, once you were notified of the change in intended use or an additional intended use, you'd evaluate it with the data that you had on that product and then make a judgment whether you needed more data?

A. Yes, Sir.

Q. Once your judgment was made, you would make a recommendation to whom as to whether they can go forward with the intended use, you need more data, or don't go forward with the intended use?

A. I think, Sir, if the question came to us from the development group, it obviously went back to the people in the development area. If it came from somebody in marketing, then we were in contact with the people in the marketing group.

Q. And was the method of your evaluation, the form that your evaluation took, would that be in the technical bulletin revision.

A. If we had recommendations or thoughts for



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changes, yes.

Q. But if you had no changes in toxicity data, safe handling data or whatever, you wouldn't be involved with the changes in the technical bulletin revision?

A. There was no reason to. We would be involved. There would be no reason to suggest changes.

MR. FEATHERSTONE: In the language?

A. In the language.

Q. You would just review the revision to make sure it comported with prior data?

A. Our prior data and knowledge. Yes.

Q. In your department, industrial hygiene, were all of the toxicity studies done on behalf of or for Monsanto ordered by your department and evaluated by your department?

A. I can't think of any exceptions.

Q. And you said before--am I correct--that Monsanto didn't do any in house studies, toxicity studies? They were all contracted out?

A. That's right.

Q. Is it correct that any warning labels on products-- I mean finished products that were being marketed. Did your department have to approve and evaluate those warning labels before they were affixed to the product?



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A. Yes.

Q. With regard to the products which Monsanto manufactured, would data-- Strike that a second. Monsanto had various plants throughout the United States. Is that correct?

A. Yes.

Q. And each plant would manufacture either raw materials for-- Components. Not raw materials. Components for other products or make the finished products for sale at these various plants? Is that correct?

A. Yes.

Q. Would instances of workers' safety problems in the manufacture of these products be sent to your department for evaluation?

A. There has to be a distinction, I think, Sir, safety and health. We would become aware of any safety problems which involved accidents through the safety director and another staff department in Monsanto, through the safety engineer at the plant, or through the physician at the plant, who was responsible for the treatment of accident cases.

Q. And what would the health problems be? You made a distinction between safety and health. What would the health problems be?

A. The distinction I was trying to make, Sir, was



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that--and this is a sort of a professional situation--an accident is a one time sort of event, should be preventable, should not occur again, barring human error and the lack of corrective physical changes. The potential health effect of something is a little more obscure and is concerned not with the leak that occurs today and a fellow gets a snoot full of irritating substance and his eyes water and he has a little tightness in his chest, which requires first aid treatment, but the effect that is more obscure and results from a limited exposure to a much lower concentration day in and day out over a working lifetime. Is that clear?

Q. It's more of a chronic type of a problem?

A. Yes.

MR. FEATHERSTONE: A chronic type of an exposure, as opposed to problem.

MR. HYNES: All right.

MR. FEATHERSTONE: I'm exposed to you on a chronic basis and I haven't yet considered that a problem.

A. I hope mine is acute. Would this be an appropriate time to make a break for the restroom?

MR. HYNES: Fine.

RECESSED: 11:30 a. m., March 10, 1981.

RECONVENED: 11:37 a. m., March 10, 1981.

Q. We're going into some questions now on the pydraul fluids, the aroclors and all. Do you recall when



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the pydraul fluids were first marketed by Monsanto?

A. I believe the mid-'50s.

Q. And prior to their being marketed, was your department involved in evaluating the toxicity, the safety of the products prior to their marketing?

A. Yes.

Q. When do you recall your first involvement with that product? With the pydraul fluids?

A. I don't know. I suppose samples came to us from research.

MR. FEATHERSTONE: Do you have any specific recollection with pydraul?

A. No.

Q. In normal practice, before a product is marketed, how many years would you estimate the average would be before a product was marketed? Where it would be in research, commercial development?

A. I don't know.

Q. There really is no rule of thumb in that. Is that correct?

A. Not to my knowledge.

Q. Have you reviewed the-- Or at any time did you review the pydraul toxicity studies at Monsanto?

A. Are you speaking now, Sir, of you, department, or you, Wheeler?



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Q. You, department. Do you know-- I'm sorry. You, Wheeler.

MR. FEATHERSTONE: What's the question now?

Q. Do you recall reviewing the pydraul toxicity data at any time? Yourself?

A. Not specific dates.

Q. Do you recall that you did review it at some point?

A. Yes.

Q. Do you recall approximately when that was?

A. No, because I don't know when they were moving along in research and to development.

Q. Subsequent to their marketing-- Or prior to their being marketed, would I be correct in assuming that they went through the same pattern of evaluation that you referred to previously? The research chemist stage, the commercial development stage?

A. Yes.

Q. And your department, I assume, would have conducted or evaluated acute toxicity studies?

A. Yes.

Q. Do you recall if any studies, other than acute toxicity studies, were done on the pydraul product?

MR. FEATHERSTONE: That's back when--

MR. HYNES: Back when it was being developed.



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A. I can't recall of any.

Q. Do you recall if anything other than acute studies were ever done on the pydraul products?

A. Yes.

Q. Do you recall when those others, other than acute studies, were done and the type of studies which were done?

A. Again, I believe it was some time in the mid-'50s that we had some toxicity tests done at Kettering Laboratories to determine what, if any, effect there might be on animals when the fluids were exposed to hot surfaces or molten metal.

Q. And these were toxicity studies which were done after the product had been marketed?

A. I don't recall.

Q. Were you involved in these Kettering Laboratory toxicity studies yourself?

A. Again, in conjunction with Dr. Kelly.

Q. And your role there was evaluating the results from Kettering?

A. Discussing the evaluation with Dr. Kelly.

Q. And do you recall any recommendations or evaluations which you made with regard to these studies?

A. The data indicated that, if they were--

MR. FEATHERSTONE: The question is, do you recall



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making any recommendations?

A. Recommendations per se, no.

Q. Do you recall what your evaluation of these tests consisted of?

A. Our evaluation.

MR. FEATHERSTONE: You and Dr. Kelly?

Q. You and Dr. Kelly?

A. Yes.

MR. FEATHERSTONE: Do you want their evaluation?

MR. HINES: Yes. Okay.

A. Our evaluation was that, if there should be a rupture of a system where the fluids were under pressure, which was their intended use, in a closed system, that if there should be a rupture of a hydraulic line and the material was sprayed on molten or hot surfaces, the decomposition products would not lead to an immediate threat to the employees in the plant where the accident occurred.

Q. What did you mean by an immediate threat?

A. As I would envision circumstances resulting from such an accident, because the fluids were non flammable, the personnel in the plant and the physical property was not subject to burning down and loss of life and property but there could be an evolution of smoke, fumes and perhaps vapors. And there's a distinction here, Sir, in the industrial hygiene field where a cloud of a mixture of



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these components would be present until such time as the machinery could be shut down and the area ventilated.

MR. FEATHERSTONE: In other words, the machinery could be shut down and the area ventilated without any immediate threat to human health?

A. Exactly.

Q. You stated that decomposition products of the pydraul. What would these decomposition products be?

A. My recollection is that there was some analyses done that showed that these could be gases, including carbon monoxide, which you would get from the combustion of any organic material. There was, I believe, some data that showed that some of the material just volatilized and, thirdly, that, in fact, some of the material did break down into suet and carbon. What analysis was done indicated there was no generation of unusual components that would be seriously toxic for the duration of the exposure necessary to shut down the equipment and ventilate the building before resuming normal operations.

Q. I don't understand what you mean by volatilized material. Could you explain that?

A. Yes. Water volatilizes. YOu get steam out of it.

Q. Very hot-- I'd say hot vapor but again vapor is a word of art there, too.



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A. Vapor is the--

MR. FEATHERSTONE: Wait a minute. That isn't a question. He's giving us his understanding.

Q. A volatilized material then would be something that is a highly heated gas which comes off?

A. Not necessarily.

Q. All right. I still don't understand what a volatized material is. Could you try to explain that?

MR. FEATHERSTONE: Do you want a general or do you want to know how pydraul might be volatized?

MR. HYNES: Both. What a volatized material is generally and how that relates to pydraul, how that is volatilized.

MR. FEATHERSTONE: He wants a layman's explanation like one you've given me, perhaps.

A. I mentioned earlier in my remarks that this is a question of definition for the industrial hygienists and, I think, for biologists in general. In general. I've got to get away from that word. Material is described as a gas if, in its natural state, it is a gas. Oxygen, nitrogen, etcetera, etcetera. Materials present after being volatilized as a vapor, if in the natural state and at normal temperatures and pressure conditions, the material is a liquid, but then because of heat--and it need not be high heat--it depends on the vapor pressure of the material--you



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have vapors in the atmosphere.

MR. FEATHERSTONE: Generated from the liquid?

A. Generated from the liquid. It's the gaseous phase of a liquid. Perhaps that--

MR. FEATHERSTONE: He's got it.

A. The water in the air today--

MR. FEATHERSTONE: Mr. Wheeler--

A. Okay.

Q. Now, as to the pydraul product, what would be the volatilized material there?

MR. FEATHERSTONE: Pydraul vapor.

Q. Would the witness answer that question?

A. Pydraul vapor.

Q. So it would just be a gaseous form of the liquid pydraul?

A. I don't know how to explain it any other way.

Q. Do you recall what prompted your department to order up the tests with Kettering Labs that we were just discussing?

A. Yes.

Q. And what was that?

A. Recognition that there could be in industry a situation where equipment could fail and the kind of circumstance that I've described could occur.

Q. And you don't recall if these tests done by



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Kettering Labs were done after the product had already been on the market or prior to being marketed? Is that correct?

A. I believe they were done before marketing or certainly in conjunction with the early marketing efforts.

Q. And that's your first recollection of yourself being involved in any toxicity studies for pydraul. Is that correct?

A. Other than the acute studies we discussed earlier.

Q. Are you familiar with the term aroclor?

A. Yes.

Q. What is an aroclor product?

A. Aroclor is the trade name for a series of mixtures of chemical materials known as polychlorinated byphenyls.

Q. And do you recall when aroclors first started to be made by Monsanto?

A. Only from what I've read.

Q. And from what you've read, what approximately was the time?

A. The late '30s.

Q. And are aroclors components of the pydraul fluid?

A. I believe some of them are. Yes. Let me rephrase that, Sir. Some of the pydrauls contain some



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aroclors.

Q. All right. I'm talking on just pydraul fluids which contain PCBs. Pydraul fluids which contain PCBs, they would all include aroclors as components of them. Is that correct?

A. If I understand your question correctly.

Q. All pydraul fluids which contain PCBs, components of those fluids would contain aroclors. Is that correct?

A. Yes.

Q. Do you recall or do you know in a general sense how the pydraul-- And from now on I'm referring to pydraul as PCB pydrauls. Do you recall how the pydraul fluids are manufactured?

A. It's a mixture of the components of the fluid.

Q. And other than the aroclors as components of the fluids, do you recall what other chemicals go into the making of pydraul?

A. Not of a specific pydraul.

Q. Are the aroclors the main components of the pydrauls?

A. I don't know.

Q. Do you know if the toxicity studies-- The usual series of toxicity studies that we referred to before, were they done for the aroclors?



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A. Would you rephrase that, please.

Q. Earlier you stated that the pydraul fluids-- your department was involved in the same acute type of tests in their research development stage and the like. Was that same pattern followed for the aroclor products?

A. There had been investigations of the aroclors preceding their involvement in the pydrauls.

Q. And pydrauls--

A. Or certain of the aroclors, Sir.

Q. Would the toxicity tests, the toxicity studies run for the aroclors?

A. Yes. Several of them.

MR. FEATHERSTONE: I'm sorry. Was the question would or were there?

MR. HYNES: Were.

A. I understood him to say were there.

MR. FEATHERSTONE: I'm not sure that's right. Court reporter, was that--

REPORTER READS BACK.

MR. HYNES: I thought it was were. I'm sorry.

MR. FEATHERSTONE: Why don't you rephrase the question and then you can give him the answer. I mean, would doesn't make-- There wasn't a question there if the word would was in it.

Q. The toxicity studies which were done for the



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aroclors, in your department's evaluation of the pydraul fluid, would you have used the-- Or do you know if you used the results of the toxicity studies for the aroclors in evaluating the pydraul fluids?

A. Yes.

Q. And how was that evaluation done?

A. We had conducted chronic inhalation studies on some of the aroclors beginning, my recollection is, in the early '50s. So we had good inhalation data on the aroclors that led to the setting of a threshold limit value by a government agency as to the safe levels for worker exposure.

Q. In your department's evaluation of the pydraul fluids-- I take it the evaluation was it can be marketed for its intended purposes. Correct?

A. Yes.

Q. At any point in time you recall, were you ever notified of any change or proposed change of use in the pydraul fluid?

A. Proposed change of use?

Q. Intended use of the product?

A. As I understand your question, no.

Q. It originally was meant to be used as a hydraulic fluid. Is that correct?

A. Pydrauls?

Q. Pydraul.



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A. It was intended for uses initially as, my recollection is, hydraulic fluids. Subsequent uses came up, such as air compressor fluids, but again the same principles applying in terms of use.

Q. Was your department ever involved in any evaluation of the manufacture of the pydraul fluids in terms of impurities in the fluid or anything of that nature in the manufacturing process?

A. Our department, no.

Q. What department would be involved in that?

MR. FEATHERSTONE: You mean might have been?

MR. HYNES: Right.

MR. FEATHERSTONE: If such a thing happened?

MR. HYNES: Right.

MR. FEATHERSTONE: Do you have any idea?

Q. A quality control type of operation is what I'm looking for.

A. My understanding is that quality control was a constant practice because of the--particularly because of the dielectric uses of the fluids which were--

MR. FEATHERSTONE: He's talking about pydraul.

Q. I'm talking about pydraul.

MR. FEATHERSTONE: Do you know what department was responsible for quality control in the manufacture of pydraul fluids?



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A. Research and Plant Quality Control Laboratories.

Q. Are those two different departments? Research is one and plant quality control department? Are those two different entities?

A. In most cases, yes. One at the plant, one at a division or central research.

Q. I take it each plant had their own quality control department?

A. Yes.

Q. As to the aroclor fluids, would it be the same answer? That the research and plant quality control labs or departments would be involved in determining any impurities in the product?

A. Yes.

Q. Was your department ever involved in any discussions or evaluations of any findings of either research or plant quality control with regard to impurities in either the pydraul or the aroclor fluids?

A. No.

Q. If certain impurities would be found of a highly toxic nature in an aroclor product or a pydraul product, would they, as a matter of course, have notified your department of a finding?

A. Yes.

Q. Or should they have?



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A. Yes.

Q. And you don't recall any such discussion. Is that correct?

MR. FEATHERSTONE: He has already testified to that. Do you want to affirm that again?

A. Well, I'm under oath. I want to be honest. I have to keep in mind a little bit the time frame. Some time in the early '70s, I believe, our research laboratories looked for specific impurities and found none.

Q. What were those impurities they specifically looked for? Do you recall?

A. I believe they were so called hydrofurans or chlorinated furans.

Q. That would be like dibenzofurans?

A. No. I don't think that's--

MR. FEATHERSTONE: Were you involved in this, Mr. Wheeler?

A. No. Only to see the results.

Q. You evaluated the results and no impurities of this nature were found. Is that correct?

MR. FEATHERSTONE: Wait a minute. His testimony was that these other departments conducted that investigation and the no finding was their conclusion.

MR. HYNES: And he said he reviewed that.

Q. Isn't that what you said?



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A. I was made aware of the fact that they had found negative results. Yes.

Q. Fine. That's all I wanted to know. It was their responsibility to find it?

A. Yes.

MR. FEATHERSTONE: To look for it.

Q. The area of pydraul warning labels, the labeling on pydraul products. Do you recall your department being involved in determining what labeling should be on the pydraul products?

A. Only as a part of our review of all labels.

Q. Do you specifically recall any pydraul warning labels?

A. My recollection is we recommended use such that there would not be repeated and chronic exposure, the material to be used in closed systems--

MR. FEATHERSTONE: The question only is whether you recall the pydraul labels. Answer yes or no.

A. Yes.

Q. What do you recall about those pydraul labels?

MR. FEATHERSTONE: You mean what they contained?

MR. HYNES: Right.

A. I don't recall the exact wording on the label.

Q. Generally what do you recall the wording on the labels?



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A. That prolonged and repeated vapor inhalation be avoided, that prolonged and repeated skin contact be avoided.

Q. You also mentioned a minute ago something about use in closed systems. Do you recall that being on the label?

A. I don't believe we were that specific. I believe we said use with adequate ventilation.

Q. Maybe the labeling is a broader category. Let me see if I can clear this up in my own mind. I think of labeling as a label on a product, a fifty five gallon drum, a quart bottle, whatever. If a product is shipped-- Is that correct? My understanding of labeling, at least as I explained it?

MR. FEATHERSTONE: Do you mean is that what the witness refers to when he uses the term label?

MR. HYNES: Right.

Q. Is that what you mean by labeling? A label that would be on a drum or a container of the product?

A. Yes.

Q. Pydraul, as I understand it, was also shipped in bulk shipments, a car load or a tank car load on occasions. Do you know if that is true?

A. I'm not aware of that.

Q. If-- Assuming that it is true--



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MR. FEATHERSTONE: Is that a hypothetical question?

MR. HYNES: Sounds like it.

MR. FEATHERSTONE: Okay.

Q. Assuming that pydraul is sometimes shipped in a car load, tank car load, lot, were there any procedures that you are aware of within Monsanto as to get the warnings that are contained on the label to the customer?

A. Yes.

Q. And how would that be done?

A. Again through technical bulletins. The technical bulletins included references to the label precautions or contained the same precautions, maybe in a little more elaborate way than the side of a label would permit.

Q. Any other way that you can recall?

MR. FEATHERSTONE: You mean that he is aware of, even though he's not involved in it?

MR. HYNES: Right.

A. Through correspondence from customers and prospective customers.

Q. I take it these technical bulletins are made available to all customers. Is that correct?

A. Yes.

Q. Do you recall any-- Back to the pydraul labeling again, I believe you stated the label stated prolonged vapor inhalation and skin contact should be



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avoided, use with adequate ventilation. From your first recollection of pydraul labels until your present recollection, do you recall any changes in the warnings on the label?

A. Yes.

Q. And what changes do you recall and when?

A. There was a change some time, I believe, in the '60s that included the statement that the pydrauls did have chlorinated hydrocarbons as components.

Q. Do you recall any other changes, other than that?

A. Yes.

MR. FEATHERSTONE: What time frame are you talking about?

MR. HYNES: I told him from his first recollection of pydraul labeling to his current recollection, what changes have been on the label. He said in the mid-'60s--

MR. FEATHERSTONE: No. He said some time in the '60s.

MR. HYNES: Some time in the '60s, they added a statement that chlorinated hydrocarbon was a component.

Q. What other changes do you recall and when do you recall these changes in labeling being made?

MR. FEATHERSTONE: And is your question in the time period up through the time he retired from the company?

MR. HYNES: Yes.



WATER_PCB-SD0000056194

MR. FEATHERSTONE: You mean the time after PCB fluid was withdrawn from the market?

MR. HYNES: No, no. I'm sorry. Again we're just talking about any pydraul fluid which contained PCBs.

MR. FEATHERSTONE: Pydraul fluid. PCB pydraul fluid.

A. In 1970 there was a change in the label, which cautioned people about disposal of any of the fluid such as they could get into the environment.

Q. Did you say that was in the '70s or in 1970?

A. I believe it was in early 1970.

Q. And that labeling was to all the pydraul products which contained PCBs?

A. Yes.

Q. Going back to the change in the '60s where you added chlorinated hydrocarbons on the label--

MR. FEATHERSTONE: He didn't do that.

MR. HYNES: I'm saying you, Monsanto.

MR. FEATHERSTONE: Well, you keep shifting between you, meaning Mr. Wheeler, you, meaning the department, you, meaning Monsanto, Jim. That's a problem. At least I have a problem with that. I'm not a chameleon.

MR. HYNES: You're turning colors.

MR. FEATHERSTONE: It's hard for me to say those long words.



WATER_PCB-SD0000056195

Q. On the change in labeling where chlorinated hydrocarbons was added to the label, do you recall what prompted that change?

A. No.

Q. Do you recall why adding chlorinated hydrocarbons to the label is at all significant from a warning standpoint?

MS. OLIVER: I object to the form of the question. Significant to who?

MR. HYNES: Significant to Dr. Wheeler.

MR. FEATHERSTONE: Mr. Wheeler.

MS. OLIVER: Today or in the 1960s?

Q. In the 1960s, why was the addition of chlorinated hydrocarbons to the label significant?

A. I don't recall.

Q. Had chlorinated hydrocarbons been a component of the pydraul product throughout the existence of the sale of the product?

A. If you're referring to PCB containing pydrauls, PCB is a chlorinated hydrocarbon.

Q. Could you define what a chlorinated hydrocarbon is?

MR. FEATHERSTONE: You mean what the term refers to?

MR. HYNES: Right.



WATER_PCB-SD0000056196

A. It almost takes a lecture in chemistry, organic chemistry.

Q. Just a brief definition chemically what a chlorinated hydrocarbon is.

A. A chlorinated hydrocarbon is a compound that contains carbon as the basic molecule, hydrogen and chlorine. And there are many, many kinds of chlorinated hydrocarbons. There could be one carbon, there could be--

MR. FEATHERSTONE: You have answered the question.

Q. Has the chemical term, chlorinated hydrocarbon, been used in the field of chemistry for many years or is it a new term?

A. I think I heard about it when I was a freshman in chemistry.

MR. FEATHERSTONE: When was that?

A. 1933.

Q. So it's not a new substance or anything?

A. No, Sir.

Q. Anyone with a chemistry background would know generally what a chlorinated hydrocarbon is?

A. That's correct.

MS. OLIVER: I'm just going to object for the record.

Q. In your opinion?

MS. OLIVER: The witness said there were many



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compounds which are chlorinated hydrocarbons.

MR. HYNES: Right.

Q But the general generic term of chlorinated hydrocarbon is something that should be known by any person in the field of chemistry. Is that correct?

MS. OLIVER: I'm going to object to the foundation. What Mr. Wheeler testifies should be known to people in chemistry, I'm not sure there's any foundation for that.

MR. FEATHERSTONE: I don't have any objection, Jim.

A I don't understand what the objection is.

MR. FEATHERSTONE: We don't have to debate the objection. Is there a question pending?

MS. OLIVER: Is there a question pending?

MR. FEATHERSTONE: Yeah.

MS. OLIVER. Yeah. And my objection.

MR. FEATHERSTONE: Do you remember what the question is.

MR. HYNES: Would you read back the question.

REPORTER READS BACK.

A The field of chemistry, yes.

MR. FEATHERSTONE: Do you want to break at this point? Are you done with this line of interrogation about the field of chemistry?

MR. HYNES: Yeah. We can start up then later.

RECESSED: 12:15 p. m., March 10, 1981.



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RECONVENED: 1:05 p. m., March 10, 1981.

Q. We were talking before the break of a change in labeling and I believe you said you recalled a labeling change in 1970 where there was some caution put on there in terms of disposing of the product in the environment. Is that correct?

A. It was specifically with the aroclors. Yes.

Q. Was that with any product containing the aroclors or containing PCBs or was that specifically just the pydrauls?

A. I said aroclors, Sir. You said pydrauls. I cannot recall that there was a label change that included the composition or PCB inclusion in any of the pydraul formulations where there were PCBs in the formulation for the reason that my recollection is we were at the stage of phasing out fluids that contained PCBs. So there was no reason to include that statement on the label.

Q. Am I understanding you right that you don't have any recollection of any of the pydraul products containing PCBs having that labeling change?

A. I don't recall but this is some time ago.

Q. I understand that. Just the best you can recall. That's all we can ask for. But you do recall labeling changes on other products which contained PCBs having this cautionary instruction or labeling of don't



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dispose in the environment or words to that effect?

MR. FEATHERSTONE: He said the product aroclors. You said other products. Do you mean other than aroclors?

MR. HYNES: No, no, no.

MR. FEATHERSTONE: Aroclors are a product.

MR. HYNES: Right.

Q. Let's go back to what you said. Did Monsanto sell any products that were called aroclors or were the aroclors components of other products with different trade names?

MR. FEATHERSTONE: Or both?

A. I think I answered that question earlier. The aroclors was a series of Monsanto trademark products containing polychlorinated biphenyls, made up of polychlorinated biphenyls.

Q. Right. And were they marketed under the name of aroclors, was my question?

A. Yes.

Q. So this cautionary labeling on disposal to the environment, was that on any products, other than a product marketed under the trade name aroclor? Do you recall?

A. Not that I recall.

Q. And the best you recall, it was around 1970 or in 1970?



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A. That's my recollection.

Q. You just stated that that was not on pydraul products as you were phasing out the pydraul products containing PCBs. Is that correct?

A. I don't think I said, Sir, that it was not on them. I don't really recall.

Q. I'm sorry. I didn't mean that.

MR. FEATHERSTONE: His testimony was as to his recollection of that, at that time, Monsanto was phasing out PCB pydraul.

Q. Now, do you recall if any other Monsanto products which contained PCBs had that cautionary labeling on it, other than what you just said, the aroclors?

A. I don't know of any other products that contained the aroclors?

Q. So any product which-- Monsanto products which contained PCBs, which were marketed, what were the trade names of these various products? Would it be-- What would be the trade names to denominate a PCB product, other than pydraul and aroclor?

A. I don't know of any.

Q. Do you recall the name therminol?

A. That's right. Yes. That was definitely a product that contained PCBs.

Q. I'm just trying to get the names.



WATER_PCB-SD0000056201

A. You've refreshed my memory, Sir.

Q. Right. So therminol, pydraul, aroclor, products using those trade names are the only ones that you now recall which contained PCBs?

A. That's right.

Q. Do you recall if this cautionary labeling in 1970 was put on the therminol products?

A. I don't recall.

Q. Do you recall, at the time in 1970, if the therminol products were being phased out?

MR. FEATHERSTONE: You mean reformulated?

MR. HYNES: Reformulated.

Q. The PCB formulation was being phased out and being replaced by a non PCB formulation?

A. I believe that's the case.

Q. Similar to pydraul?

A. Yes, Sir.

Q. Do you recall if this phasing out was done within the same time frame for the therminol and pydraul?

A. That's my recollection.

MR. FEATHERSTONE: The answer was, that is your recollection?

A. It is my recollection that the PCB phase out included not just pydrauls but therminol fluids.

Q. But there were aroclor products which were



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continued to be marketed, which contained that cautionary labeling in 1970?

A. I believe so for the dielectric uses.

Q. Now we're getting into my next question. What types of products were continued to be marketed by Monsanto?

A. I'm sorry I anticipated your question.

Q. That's okay.

MR. FEATHERSTONE: Well, it's okay for you but--

Q. To the best of your recollection, what were the uses of Monsanto products which contained PCBs? We already know pydraul. You said hydraulic fluids. What were the other Monsanto products used for which contained PCBs, as best you can recall?

MR. FEATHERSTONE: I think the question, Mr. Wheeler, is, what other types of Monsanto products contained PCBs? I'm not sure that Mr. Wheeler knows all the usages for those products.

MR. HYNES: I understand that.

A. Well, as you have indicated, Sir, the therminols, which were a functional fluid in a sense but were heat transfer fluids, still intended for use in closed systems, contained aroclor or PCB products. And then, of course, the aroclors themselvs.

Q. The pydraul was for hydraulic systems, hydraulic fluids. The therminols were heat transfer fluids. And



WATER_PCB-SD0000056203

then the various aroclor products. Do you recall the uses of these various aroclor products?

A. Not all of them. There were many of them.

Q. The best you can recall, what were some of the uses of them?

A. As plasticizers in solid plastics; components of erosion and corrosion resistant paints; I believe, to some degree in adhesives. I think there was limited use in rubber gasketing. Those are the ones that come--

Q. And the dielectric use?

A. The dielectric use, of course.

Q. Can you just briefly tell me what you understand a plasticizer to be? A plasticizer use of aroclors?

A. A plasticizer is a component of an end plastic product where varying degrees of flexibility may influence the characteristics of that end product and, in this case, adding fire resistance characteristics to that end product, as opposed to other plasticizers that would not lend that characteristic to it.

Q. And a corrosion resistant paint? Just a paint that is not going to corrode as easily when exposed to weather, whatever its uses are?

A. That's right.

Q. Adhesives. What type of aroclor use was made in adhesives?



WATER_PCB-SD0000056204

MR. FEATHERSTONE: You mean how was aroclor used in--

MR. HYNES: Yeah.

Q. How were aroclors used in adhesives?

A. My understanding is it was there again as a component to add flexibility to the adhesive.

Q. And the dielectric use of aroclors is-- How were aroclors used in a dielectric field?

A. My understanding is that they were coolants for use in electrical equipment identified as transformers and as capacitors.

Q. The dielectric use was as a self-contained transformer or capacitor or whatever? The aroclor was inside it? Sealed?

A. A sealed unit. Yes, Sir.

Q. Earlier you mentioned the word, a closed system. What did you mean? What do you mean in regards to the therminol or pydraul products by the term closed systems? What did you mean by that?

A. My understanding of a hydraulic--

MR. FEATHERSTONE: He wants to know what you mean by a closed system.

A. A closed system to me is a series of vessels, pipes, pumps, which, in the case of the pydrauls, was operated under pressure and, to maintain pressure, there



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would have to be a, quote, closed, quote, closed system, to function properly.

Q. And what's your understanding of the word closed systems with regard to the heat transfer fluids, the therminols?

A. In this case, the therminol was heated in a vessel and then pumped through appropriate piping to another vessel that needed to be heated for whatever process might be involved.

Q. Do you recall if the therminol fluids went through the same testing procedures that you outlined before for the pydraul and aroclors, to the best of your recollection?

A. Yes.

Q. That would be standard practice. Right?

A. Yes.

Q. And in this process, am I correct in saying the industrial hygiene department-- I'm using industrial hygiene department again. The medical department, of which you're in the industrial hygiene area. Am I correct in assuming that the purpose for the tests and your evaluation of these products was to determine if there were any risks to workers in the Monsanto plants which manufactured the products and determine what risks there may be for the customer's plant, the customers which utilized these



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products? Is that correct?

MR. FEATHERSTONE: You mean was that one of the purposes?

MR. HYNES: Right.

A. Any risk that may be. Yes. I think that was your question.

Q. Right. And is it also-- Was it also one of the functions of your group to minimize any risks to exposure to these products?

MR. FEATHERSTONE: You mean in Monsanto's plants?

Q. Either in Monsanto's plants or in a customer's plant?

A. Yes.

Q. And an essential element in that decision on your part, the decision making on your part, was to know the intended uses of either the product or the manufacture of the product. Isn't that correct?

A. Yes.

Q. Did your group, your department, have any obligation under your normal conduct of your normal practice to investigate the potential uses or intended uses of this product, other than the information you received from marketing or product development, or did you pretty much rely on those people to come up with the intended uses and exposures?



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MR. FEATHERSTONE: To come up with, you mean to communicate--

Q. Communicate to your department?

A. I think again it's a two part question, a yes or no. To answer the second part of the question, did we rely on the information to come to us from others, that's true.

Q. And of your own initiative, do you recall if your department ever verified the information received from product development or research as to potential exposure?

A. No.

Q. That was their function? To come up with that information so you could evaluate the risks?

A. Yes.

Q. When do you recall first learning that PCBs were reported in the environment?

A. My recollection is that there was a report in a Swedish newspaper that a Swedish scientist--

MR. FEATHERSTONE: The question is when.

A. I'm sorry. Some time in the late '60s.

Q. And do you recall how you learned about this?

A. Yes.

Q. How was that?

A. Correspondence from some of our European



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representatives.

Q. Monsanto subsidiary or-- I don't want to use the word subsidiary if it isn't a subsidiary.

A. Monsanto's representatives located in Europe.

Q. And what were you told or what was in this communication?

A. Dr. Kelly received a memo or a letter, indicating that there had been a report in a Swedish newspaper. After an interview with the Swedish scientist, in which he indicated that in his search for the identification of--

MR. FEATHERSTONE: Mr. Wheeler, the question only asked how you became aware of it. You've answered the question. A memorandum to Dr. Kelly.

Q. All right. And what was contained in that information? What information did you receive?

MR. FEATHERSTONE: That he can remember receiving?

MR. HYNES: Yeah.

A. I remember seeing the memo to Dr. Kelly. And my recollection is that our representatives in Europe had heard of or had seen a newspaper account in Sweden that a Swedish scientist involved in--an analytical chemist scientist involved in trying to identify materials in pesticide residues, unknown chemical compounds, using new techniques that he had developed.

Q. And in this communication, it was this doctor's



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conclusion, the Swedish scientist's conclusion that these residues were PCBs?

A. There was no conclusion drawn as to whether he had correctly identified PCBs or not.

Q. And once you received this communication, what did you do about it?

MR. FEATHERSTONE: Well, Mr. Wheeler?

Q. I say you in terms of your group, the medical department. Did you take any action?

MR. FEATHERSTONE: Which is, what did the medical department do as a result of that?

A. The medical department recommended that our European representatives be in touch with the Swedish scientist. They were given, as corroboration of the scientist's findings, an advertising blurb from the--

MR. FEATHERSTONE: Wait a minute. The medical department instructed the Monsanto representatives overseas to contact--

A. The scientist.

MR. FEATHERSTONE: The scientist. All right. That answers the question.

Q. And how were they supposed to contact this scientist? What instructions were given to this European representative?

A. Initially, I think, it was correspondence.



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Q. By correspondence-- What did you tell them in the correspondence to do or what was he directed to do by the medical department?

A. By correspondence, I intended to tell you, Sir, that his contacts with the Swedish scientist initially were by correspondence, subsequently by visits.

Q. And what was your Europen representative directed to do with regard to this Swedish scientist?

A. To establish a contact that would lead us, through him, to get more details of what the scientist had reported to the public press.

Q. And did you subsequently learn what those details were?

A. Yes.

Q. And how did you learn it?

A. I believe we were-- Our representative was provided with the details of the analytical technique.

Q. And he forwarded them to your department?

A. Beg pardon?

Q. And he forwarded those details to your department, medical department?

A. Yes, but, more importantly, to our own analytical research chemists. These were beyond our ability to interpret.

Q. And did you subsequently find out the results



WATER_PCB-SD0000056211

of your analytical chemists? Did they analyze the data they received from Sweden?

MR. FEATHERSTONE: They didn't get data. They got an analytical technique.

Q All right. What did they do with that technique, the best of your knowledge?

A This prompted our analytical people in St. Louis to contact the Swedish scientist by correspondence to get written detailed examples of the technique used, the instrumentation that was used in an effort to set ourselves up to see if we could corroborate the findings of this material involved with other pesticide residues, as, in fact, being an accurate and definitive method.

Q And did your people-- Were they able to verify the method, the technique, as being accurate?

MR. FEATHERSTONE: The Swedish technique?

MR. HYNES: Yes.

A After many months, with modifications, yes.

Q Getting back to again-- My original question was when you, the medical department, first learned of reports of PCBs in the environment. And you just explained the Swedish technique, which, I believe, led to their determining that there were PCBs in the environment, using this technique. Is that correct?

A No. Not the way you phrased the question.



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Q. I asked you how you first learned that there were reports--when you first learned, how you first learned that there were PCBs reported in the environment. Did the Swedish scientist report that there were PCBs in the environment?

A. He reported that he had identified what he described as PCBs in environmental samples when he was looking for pesticide residues.

Q. And the techniques that he used in this report were the ones we were just discussing where your analytical people modified his techniques to find out it was a valid technique to identify such substances. Is that correct?

MR. FEATHERSTONE: Wait a minute. The report, Mr. Hynes, was a newspaper account supposedly as a result of an interview with some analytical chemist. You haven't established that there was any discussion in the newspaper account of any techniques. The testimony has been that Monsanto contacted some of its own people overseas and said, go find this guy, and they did.

Q. And they received the data from him as to what his technique was to come up with these results that were reported and your analytical people modified those techniques and found, with modifications, that it was a valid technique to identify these compounds. Is that correct?

MR. FEATHERSTONE: After many months. Add that,



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too. That's what he testified.

Q. I just want to verify that that's correct. Is that a correct statement?

A. I think, as I understand the way you phrased it, yes.

MR. FEATHERSTONE: There's going to be a chronic exposure here pretty soon.

Q. Once the technique was verified after several months, with modifications, what do you recall your department's involvement in identification of PCBs in the environment was?

MR. FEATHERSTONE: If any.

A. Our involvement was to be kept informed by the analytical people of, not only the Monsanto effort in developing its own capability of analysis, but in contact with scientists all over the country and abroad, working with people to see if the Swedish technique could be duplicated in other people's laboratories.

Q. And was that technique, to your knowledge, verified in other laboratories?

A. In many cases, no.

Q. You say this information was first brought to your attention some time in the late '60s? The original--

A. '67, '68.

Q. And did Monsanto verify at any point that



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PCBs were, in fact, in the environment?

A. The term environment is such a broad term. Can you be more specific?

Q. All right. Verify that it was in lakes and rivers in the United States?

A. Not by our own analysis, as I recall.

Q. Lakes and rivers of any foreign country? Do you recall?

A. Again, not by our own analyses.

Q. I'm just talking about your own analysis now. In the air in the United States?

A. No.

Q. In sewage treatment plants?

MR. FEATHERSTONE: Now, Mr. Wheeler is not an analytical chemist.

MR. HYNES: No. I'm asking--

MR. FEATHERSTONE: Analytical chemists do this stuff.

MR. HYNES: I'm asking his knowledge of Monsanto finding out PCBs in the environment of their own testing.

MR. FEATHERSTONE: Which he didn't participate in?

MR. HYNES: I'm asking his knowledge. If he says he has knowledge, I particularly want to ask him what his involvement is in it.

A. I have no knowledge of that.



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Q. Do you recall Monsanto verifying that PCBs were found in, for want of a better word, ground? I'm thinking in terms of dump sites, shorelines. Any PCBs found in residue like that? Ground, dirt?

A. Not to my knowledge.

Q. Did Monsanto, to the best of your knowledge, conduct any investigative tests to determine if PCBs were in the environment at all?

A. No.

Q. Do you recall ever reading any reports or being informed of any reports that someone else or some other group had identified PCBs in any lakes or rivers in the United States?

MR. FEATHERSTONE: You mean had anybody reported that they had found some?

MR. HYNES: Yeah.

MR. FEATHERSTONE: Whether or not it had been corroborated?

A. Well--

MR. FEATHERSTONE: Wait a minute. Mr. Hynes, whether or not it was corroborated by Monsanto?

MR. HYNES: No. First reported. They received a report or were informed of a report of it being found. I'm not talking about corroborating it. I'm talking about his first knowledge that someone else reported finding



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PCBs in lakes or rivers of the United States.

A. At some time, and I can't recall the date, a Dr. Riseborough reported again having found materials which he identified as PCB in some environmental samples.

Q. Do you know where those samples were supposedly taken?

A. The West Coast, I believe.

Q. And to the best of your recollection, is that the first report that you're aware of of such a finding in the United States?

MR. FEATHERSTONE: Well, such a reported finding. Alleged finding, Mr. Hynes.

A. That's--

MR. FEATHERSTONE: Wait a minute. Alleged finding?

MR. HYNES: Yeah. Fine.

A. Yes.

Q. That's your first recollection?

A. Yes.

Q. Did you or anyone in the medical department attempt to verify those findings?

A. No.

Q. Do you know of anyone else, other than Monsanto, who attempted to verify those findings?

A. I don't recall of any.

Q. Other than Dr. Riseborough--



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MR. FEATHERSTONE: Riseborough.

MR. HYNES: Riseborough. Okay. It all reads the same in the transcript anyhow.

MR. FEATHERSTONE: I could always say let the record show that Mr. Hynes can't pronounce that last name.

MR. HYNES: If we find out that it's really Riseborough, you're in real trouble. I'm going to amend the transcript.

Q. Other than Dr. Riseborough's report, do you recall the next reported finding--anyone else finding PCBs in lakes or rivers in the United States?

A. Not chronologically.

Q. Would it be safe to say, subsequent to Dr. Riseborough, there were several reports all in the same time frame?

MR. FEATHERSTONE: All in the same time frame as Dr. Riseborough's report? Is that a fair statement? If it is, tell him it is. And if it isn't, tell him it isn't.

A. If the time frame is '68 and '69, it would be the same time frame. Yes.

Q. Do you recall any specific reports, other than Dr. Riseborough's?

A. About alleged findings in the United States?

Q. In the United States. Right.

A. There were so many.



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Q. You don't specifically recall any particular author or geographic area or anything of that nature?

A. Not-- No. Not specifically.

Q. Do you recall if Monsanto sought to verify any of these reported findings?

A. Sir, I wish you would-- Could you define for me verify?

Q. All right. A report comes out that says there are PCBs in this river. I would assume there would be a protocol where samples were taken, methods to analyze them. I'm just thinking generally of a scientific report.

MR. FEATHERSTONE: Wait a minute now, Mr. Hynes. Your questions have asked for any knowledge that he had of any reports. Newspaper reports, popular press reports, all sorts of communications were included in those questions and now you're assuming that his testimony went to scientific reports.

MR. HYNES: The only one he specifically recalls was Dr. Riseborough's.

MR. FEATHERSTONE: That doesn't mean--

Q. To verify, I mean that Monsanto would either contract it out or do it themselves to go out to that location, take samples, do an analysis of either the sediment, the water, fish, birds, whatever would be the subject of the report. Do you recall Monsanto doing anything of



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that nature?

A. No.

Q. Do you recall Monsanto ever requesting and receiving samples from the author of a particular report?

A. I don't recall.

Q. Again we're in the 1968, 1969 area. Is that correct?

MR. FEATHERSTONE: Is that the limitation you were placing on--

MR. HYNES: No. That's what Mr. Wheeler said when I was talking about time frame. '68, '69.

MR. FEATHERSTONE: Okay. And that's the time frame that applied to your last questions?

MR. HYNES: Right.

Q. That's what I took your answers to be. In that time frame. Is that correct?

A. Yes, Sir.

Q. Subsequent to that time, '68, '69, did Monsanto initiate any testing programs to determine if there were PCBs in any lakes or rivers in the United States?

A. Not to my knowledge.

Q. Do you recall if Monsanto received information from other persons or groups who were doing such testing?

A. I'm sure we did.

Q. Going from that '68, '69 to a '70 to '72



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period, do you recall reviewing any reports from other people as to finding PCBs in lakes or rivers of the United States?

MR. FEATHERSTONE: Any reports, Mr. Hynes, or scientific reports?

MR. HYNES: Any reports.

A. I expect, dozens.

Q. Do you recall reviewing any scientific reports in that regard?

A. A number.

Q. Do you recall any authors or the subject matter of any of these reports specifically?

A. No.

Q. Do you generally recall what the reports that you reviewed said?

A. There were a number of reports, and I'm speaking now of scientific literature, of finding PCBs in environmental samples, some reporting methods of analysis that were not as complete and detailed as to satisfy a number of scientists outside of Monsanto, including those in government agencies, that the alleged PCBs had, in fact, been identified.

Q. And again, concerning scientific reports, do you recall any particularly concerning the Great Lakes that you reviewed in that '70 to '72 time period?



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A. No.

Q. Was it part of your responsibilities to keep abreast of the scientific and non-scientific reports of the PCBs in the environment in this 1968 through 1972 period?

A. Some aspects of it.

Q. What aspects?

A. As a matter of course, one in the field of industrial hygiene reads many, many technical journals monthly. Weekly, perhaps. And part of my function was to, if I came across any material relating to--any published material or data relating to PCBs, to be sure that it was circulated to those in Monsanto who were involved in the problem. I'm sure I did not read every journal that came into the company or that was necessarily available. When we had reports from the many, many people that we were in touch with, collaborating with, providing them samples, providing them our thoughts on the analytical techniques--When these people would call to our attention a published article in a journal that may have been a little obscure for our normal reading, we would get a subscription to that journal so that we could again try to keep abreast of everything that was being developed, whether or not it related to the biological or industrial hygiene effects or anything concerning a Monsanto product because this was not just limited to PCBs.



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Q I believe you just stated that you would correspond with various people. I assume you mean the medical department in that regard?

A Yes.

Q Provide samples, discuss the analytical techniques.

A Our role was to provide the samples, not to discuss the analytical techniques but to be sure that they were in contact with our own analytical specialists.

Q All right. If a researcher for some university, as an example, was doing some work on PCB research, the medical department would be contacted and you'd refer them to the-- Is it Analytical Lab? Is that correct?

A Analytical group that was involved.

Q They would verify the techniques that this university researcher would be using or assist them in the analytical techniques?

MR. FEATHERSTONE: We've lumped a bunch of things together. One is a request for samples. The other one is a verification of analytical techniques. Which one do you--

MR. HYNES: I'm talking about the analytical techniques.

Q The medical department wouldn't be involved in that, other than referring the person to the analytical



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group in Monsanto. Is that correct?

A. That's right.

Q. In terms of samples of a product, would the medical department provide that to the researcher?

A. Only to ensure that the requester got the sample.

Q. Would the medical department be the receiving point within Monsanto to get these requests and you would just refer them out to the various people in Monsanto who would fill the requests. Is that correct?

A. Essentially.

Q. But if someone requested-- But if someone requested toxicity data on a particular aroclor or PCB product--

A. It was our responsibility to provide that data.

Q. That was your responsibility to provide that. You say some time in 1970 there were label changes made on the aroclor products, the best you recall, to add in a precautionary instruction not to--to take steps to prevent the aroclors from getting into the environment or words to that effect. And that labeling change was the responsibility of your department to make that recommendation. Is that correct?

A. Not the way you phrased that.

Q. All right. You said there was a labeling



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change in 1970, reflecting environmental release of the product or words to that effect.

MR. FEATHERSTONE: Wait a minute. Let's be more precise than that. It was a cautionary instruction.

MR. HYNES: A cautionary instruction to take steps not to--

MR. FEATHERSTONE: Discharge aroclors in the environment.

MR. HYNES: Discharge aroclors in the environment.

Q How was that-- How was the decision made and who made the decision to put that cautionary labeling on the product?

MS. OLIVER: Just so the record is clear, Mr. Wheeler, didn't you say that the word was dispose of the aroclors in the environment? That was the caution, I think.

MR. FEATHERSTONE: Nobody has ever asked him what the cautionary instruction said. Is that a question?

MS. OLIVER: I think the witness testified earlier that the caution was directed to disposal of the aroclor in the environment. I don't think anyone has talked about discharge. If we're going to be precise, then we should--

MR. HYNES: Okay. Let's clear it up.

Q To the best of your recollection, what was



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the cautionary language on the labels in 1970 dealing with--

A. Eleven years later I cannot tell you what the label said, Sir.

Q. But it was something to the effect of either disposal or discharge into the environment? Some caution to prevent that or caution customers not to do that?

A. To the best of my recollection, the words directed themselves to avoiding letting the material get into the environment.

MR. FEATHERSTONE: That takes care of both of us, Roseann.

Q. That's fine. Back to the other question, if I can remember it. Whose responsibility in Monsanto was it to recommend that labeling change?

A. The decision was reached in conjunction with the business group and the labeling section of Monsanto, who had the principal responsibility for development and printing of labels.

Q. And what involvement did your department, the medical department, have in the change of instructions on the label?

A. My recollection is that it was to agree with the suggestions probably of the business group that such a precautionary comment should be there.

Q. It wasn't initiated, this change, by your



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department. Is that--

A. Not to my recollection.

MR. FEATHERSTONE: Please, Mr. Wheeler, wait until Mr. Hynes finishes his question. You're both too fast for me.

Q. You referred to the business group. What would the business group be? Would that be in the marketing end? You refer to the business group. What is the business group?

A. The total business group would have included marketing, development and research.

Q. Do you know or do you recall where this change initiated in the labeling?

A. No.

Q. And the best of your recollection, your department's involvement was you reviewed the labeling change and evaluated it in the way you normally would any labeling change. Is that correct?

A. Yes.

Q. Were you involved-- Was the medical department involved in the decision to reformulate the pydraul and therminol fluids?

A. Not to my recollection.

Q. Do you recall when the medical department was advised that the therminol and pydraul fluids were going to be reformulated?



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A. No.

Q. Are you saying that the decision to reformulate these two product lines was made in what you call the business group?

A. Yes.

MR. FEATHERSTONE: As far as you know?

A. As far as I know.

Q. And is that a normal practice or was that a normal practice at Monsanto when a product reformulation was made not to involve the medical department? Was that the normal course or the normal practice there?

A. No.

Q. The next question is: Do you recall any other instances where a product was reformulated?

A. The answer to the question, Sir, based on earlier testimony today, that we would become aware of a change in a product either in the research or development stage. So we were aware that reformulation efforts were under way through the normal course of our evaluation of new products.

MR. FEATHERSTONE: And it's your testimony that it wasn't the medical department's responsibility to reformulate products?

A. No.

Q. You didn't make suggestions on reformulations



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of products?

A. Oh, no.

Q. Ever?

A. No. Not that I recall.

Q. Do you recall being involved in any-- Or your medical department. Do you recall the medical department being involved in any recommendations to restrict sales of any of the pydraul or therminol products?

A. Yes.

Q. And what do you recall?

A. We were involved in a business group presentation, our participation being to discuss the possible effects.

Q. The effects in what regard?

A. The reported possible effects of PCBs in the environment.

Q. And when was this presentation made and, if there were more than one, how many presentations were made?

A. The one I was referring to was late '69.

Q. And were you involved personally in that?

MR. FEATHERSTONE: I see the makings of a foundation.

A. I certainly sat in on some of the discussions of what the presentation was to include and actually was a participant in the presentation.



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MS. OLIVER: I'm sorry. Would you repeat the answer.

MR. FEATHERSTONE: Would you please read back the answer.

REPORTER READS BACK.

Q. And who was this presentation made to?

A. The top corporate management committee.

Q. What is this committee? Who made up this committee?

A. My recollection is it included the chairman of the Board, the president of the company, several vice presidents.

Q. And do you recall what the presentation was from your department?

A. A review of the literature as we knew it at that time, scientific literature, a review of the chronic toxicology studies that we had undertaken beginning in late '68 and '69, and our view that there was still considerable doubt, not only on our own part but as expressed in the scientific literature, that the materials identified as PCBs were actually PCBs and, if so, what was the significance.

Q. I'm not clear as to what you mean by that last part. You said considerable doubt that the materials were PCBs and then I didn't get the last portion.



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MR. FEATHERSTONE: Do you want the answer read back?

MR. HYNES: Yes. Why don't you read that.

REPORTER READS BACK.

Q. And what was the significance. What do you mean by what was the significance of what. I don't understand that.

A. No one had established that there was any effect if, in fact, there were PCBs in the environmental samples in conjunction with other chlorinated hydrocarbons, specifically pesticide residues, that this was having any proven effect.

Q. That's what was the effect. Okay. After that meeting, do you recall any other meetings where either you or other members of the medical department made similar presentations to Monsanto?

MR. FEATHERSTONE: To top management again?

MR. HYNES: To anyone within Monsanto.

Q. Another business group? I don't mean just to an individual or something but I mean in a formal presentation of this type.

A. Not a formal presentation. No.

Q. And you say this was some time in 1969, as you best recall?

A. October or November is my recollection.



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Q. The chronic toxicity studies which you say were initiated in '68, '69, which you talked about at this meeting, were they, at the time of that meeting, completed or were they still ongoing?

A. I think I indicated, Sir, that they had started in late '68 or early '69.

Q. Right. So they were still ongoing?

A. Still under way. Yes, Sir.

Q. Did you have any preliminary results that you discussed?

A. Yes. It's customary in a chronic toxicology study to sacrifice some animals after the first ninety days and look at them at periodic intervals after that time until the study is completed.

Q. Do you recall which company was subcontracted out to do these chronic studies?

A. Industrial Bio-Test Laboratories in Chicago.

Q. And they were the company that did all of the chronic tests which you're referring here in '68, '69?

A. That we sponsored, yes.

Q. Am I correct in assuming that this management business group, the upper management group that the medical department made the presentation to, that is the group that made the determination to restrict the-- Strike that. To reformulate the therminol and pydraul products?



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A. My recollection is that they agreed to a program of that nature that had been recommended by the business group, that was recommended by the business group.

Q. And the medical department's involvement in this was solely this presentation?

MR. FEATHERSTONE: What do you mean? Do you mean the presentation to top management?

MR. HYNES: Right.

A. Yes, and as I indicated in response to your earlier question.

Q. Did you make any recommendations in this presentation? You, meaning the medical department. Did the medical department make any recommendations of specific action to take in this presentation?

A. I can't recall specifically.

Q. Do you recall if-- Strike that. Would you categorize your presentation as a factual presentation of the state of knowledge in the medical department as to PCBs in the environment, the effects of PCBs in the environment? Would that be a fair characterization of your presentation?

A. The alleged effects of materials in the environment.

Q. Right. The best you recall, would the medical department make a recommendation to management to restrict



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selling a product, stop selling a product, reformulate it? Would that be the usual type of presentation that the medical department would make?

MR. FEATHERSTONE: Wait a minute. Are we now off this particular meeting?

MR. HYNES: No, no, no. I'm talking in general if the medical department would make recommendations or presentations of this type.

Q. Would it be expected of the medical department in the normal course of practice within Monsanto to make such recommendations to reformulate, to--

MR. FEATHERSTONE: You're assuming in your question that it was the medical department that made this recommendation in this particular case and the testimony--

MR. HYNES: No, no, no. I'm not making that assumption.

MR. FEATHERSTONE: That's what it sounds like.

Q. Mr. Wheeler, you said you don't recall if you made any recommendations--the medical department made any recommendations to top management in this meeting. What I'm asking is: Would it be the normal practice of the medical department to make such recommendations to top management?

A. If there was evidence that there was an immediate threat to health, obviously, it would be part of the



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medical director's responsibility.

Q. But in a general sense, that would be the type of situation where you would make a recommendation like that? For an immediate threat of health, if you thought there was an immediate threat to health?

A. Only if there had been-- The only other instance would be where there were repeated inquiries or reports that there were skin irritation cases, for example, that apparently couldn't be avoided by good industrial hygiene practice, good medical practice, use of protective clothing, etcetera. I can't think of this ever happening but this is the type of situation that would have led the medical department to say you've got to do something about this.

Q. Do you recall any subsequent presentations which the medical department made to upper management relating to PCBs, other than this meeting in 1969?

A. To my knowledge, there were none that the medical department participated in.

Q. Do you know of any other such presentations that were made that you were informed of, regarding PCBs?

A. I'm not certain that there were any.

Q. There may have been but you don't really know. Is that correct?

A. That's right.



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Q. The aroclors at this point, the aroclor products--

MR. FEATHERSTONE: Wait a minute. When you say aroclor products, do you mean the products marketed as the trademark aroclor?

MR. HYNES: Right. Aroclor. I'm not talking about the therminol or the pydraul.

Q. They continued to be marketed with the cautionary label after this 1970 date that you were talking about. Is that correct?

A. I don't know for how long.

Q. My next question was, do you know of any marketing restrictions on the aroclor trade name products subsequent to the 1970 phase out or reformulation of the therminol and pydraul?

A. I think I testified earlier that the only uses that continued to my knowledge were in the dielectric usage.

Q. And was that subsequently terminated or restricted?

A. I believe it was terminated.

Q. And do you recall when that was?

A. No.

Q. Was it before you left the company?

A. I'm sure.

Q. Do you recall any medical department involvement



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in the decision to terminate the marketing of aroclor products?

A. No.

Q. To the best of your knowledge, did Monsanto ever verify at any point in time that the PCBs, in fact, were getting into the environment?

MR. FEATHERSTONE: I take it that includes verifying that PCBs were in the environment?

MR. HYNES: Yes.

A. By its own analytical techniques?

Q. No. By information supplied to you by scientific journals or otherwise that satisfied the-- I'm defining what I mean by verification.

MR. FEATHERSTONE: Why don't you just say agreement?

MR. HYNES: All right.

Q. Did at some point Monsanto agree that PCBs, in fact, were in the environment?

A. I think Monsanto agreed with the reported findings in some instances that this was the case.

Q. And can you recall specifically what instances Monsanto was in agreement that PCBs were, in fact, in the environment?

A. Was your question when?

Q. No. My question was, did Monsanto ever-- I've



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forgotten what--

MR. FEATHERSTONE: The question was--

Q. The question was, what were those reports that Monsanto agreed--

A. I don't recall.

Q. Was the medical department ever involved in any determinations as to how PCBs got into the environment?

A. Not determination as I understand determination. What do you mean, Sir? Determination?

Q. Well, did the medical department ever attempt to verify the method or the way that PCBs got into the environment?

A. No.

Q. To the best of your knowledge, was the medical department ever informed by any other group within Monsanto as to how PCBs got into the environment?

MR. FEATHERSTONE: At any time?

MR. HYNES: Yes.

A. I'm sure we were informed in only theoretical or how could that possibly get there sort of discussion, rather than based on analytical data or determination by others that the PCBs were in environmental samples.

Q. Do you know of any other groups or individuals within Monsanto who attempted to determine how the PCBs got into the environment?



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A. I'm not aware of any.

Q. You stated that, in the '68, '69 area, a series of chronic toxicity studies were being conducted or initiated by Monsanto and being done by Industrial Bio-Test. Up to that point, do you recall any chronic toxicity studies being done on any PCB type product sold by Monsanto?

A. Yes.

Q. Do you recall when they were done?

A. There were some definitive inhalation studies done, I would say, in the early '50s on two of the aroclor products.

Q. Do you recall which aroclor products they were?

A. I believe it was 1242 and 1254.

Q. Were the IBT studies limited to inhalation chronic studies?

A. No.

Q. Were there any other chronic studies prior to the IBT studies you just talked about that dealt with anything other than inhalation, that you can recall?

A. Again, I don't think I got your question.

Q. Okay. You stated that you recall a chronic toxicity study--

A. A chronic inhalation toxicity study.

Q. Do you recall any other chronic toxicity studies, other than an chronic inhalation study, done prior



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to these IBT chronic studies?

A. No.

MR. FEATHERSTONE: On aroclors, obviously?

MR. HYNES: On any PCB product.

A. The IBT studies did not include inhalation.

Q. What were the IBT studies, chronic IBT studies, designed to determine, if you recall?

A. We developed, in conjunction with the scientists at IBT, but more importantly, representatives of the Food and Drug Administration, the U. S. Department of Agriculture, the Fish and Wildlife Service, a whole series or battery of tests that we thought would be appropriate to determine, if, in fact, the PCBs were in the environment in levels where determined that were agreed to be reproduceable, what would the effect be, with emphasis on the possibility that PCBs might get into the food chain. We asked-- After discussing the outlines and, in great detail, suggested protocols with the toxicologists, particularly in the Food and Drug Administration, we asked for their input as to whether the study should be more comprehensive, had we overlooked studies that would make the results more meaningful, and incorporated any suggestions that they offered. My recollection is that they had few, if any, recommended changes and suggestions that we use a different dose level or we use more animals on a particular dose level, that we sacrifice



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more animals at a different--after a certain period in the experiment than we had anticipated. But--

MR. FEATHERSTONE: I think you answered the question, Mr. Wheeler. You're giving Mr. Hynes some things to ask about.

Q. And I assume somewhere around 1970 or 1971 you received the results, the final results, on these chronic studies from IBT. Is that correct?

A. I had left Monsanto by 1977.

Q. No, no. I said 1970, '71.

A. No, Sir, because the chronic studies, and I think we got into this earlier today, involves a two year administration of the material.

Q. Right. That's-- Well, when did you get the results? It will be easier to ask it that way. When did you receive the final results from the IBT chronic studies?

A. I believe it was early '72.

Q. And do you recall generally what the findings were of those studies?

MR. FEATHERSTONE: Do you have a particular study in mind, Mr. Hynes? You've seen the documents there. There were a number of studies done and I believe it's an unfair question. It depends on what you're looking for and what animal used and what dosage--

MR. HYNES: All right. We'll get into specific



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studies later.

MR. FEATHERSTONE: You might want to take a break, too. We've been going for an hour and a half.

MR. HYNES: Okay.

RECESSED: 2:25 p. m., March 10, 1981.

RECONVENED: 2:35 p. m., March 10, 1981.

Q Do you recall if any-- Talking of the 1968 through 1973 time period, do you recall any toxicity studies being contracted for by Monsanto dealing with PCTs, rather than PCBs?

A Chronic studies?

Q Any type of toxicity studies?

A I don't recall of any.

Q What--

A Excuse me. You said PCT, being polychlorinated terphenyls?

Q Polychlorinated terphenyls.

A Okay, Sir.

Q Were the polychlorinated terphenyls, the PCTs, sold by Monsanto under the trade name aroclor?

A Yes.

Q What is the difference chemically between a PCB and a PCT?

A There are more carbon atoms in the material.

Q In the PCT?



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A. Yes.

Q. Any other chemical differences that you know of?

A. No.

Q. Do you recall if the PCTs were a product which was marketed at the same time as the PCBs were? Strike that. When were the PCTs first marketed by Monsanto, to the best of your recollection?

A. Before 1947.

MR. FEATHERSTONE: 1947 being the date you came on board at Monsanto?

A. That's right.

Q. So they were marketed before you started work?

A. To my recollection, yes, Sir.

Q. Do you recall reviewing toxicity data on PCTs, say, prior to 1970?

A. Only in conjunction with review of any of Monsanto's products.

Q. Technical bulletin revisions and things of that nature?

A. Yes, Sir.

Q. Do you know of or do you recall any significant differences between the toxicity data for PCTs versus PCBs?

MR. FEATHERSTONE: Mr. Hines, what is the relevancy of your examination on PCTs. I've let you ask



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a few questions here just to see whether you can establish any and I don't see any. The case is not a PCT case. In your own words, it's a PCB case. And while we argue over whether it is, in fact, a PCB case, it certainly involves the chemical PCB.

MR. HYNES: Subsequently the PCTs-- Subsequent to the-- There was a time period where A 200 B was sold to Johnson and, as I understand it, the A 200 B product contained PCTs as a major component, versus PCBs.

MR. FEATHERSTONE: That is correct.

MR. HYNES: And all I'm trying to get at is to see if there is any significant difference between the two in terms of toxicity with regard to the A 200 B. Maybe there's something coming up in the case that it could occur. I'm not talking about our proof in the case. I'm talking about possible defense in the case from Johnson.

MR. FEATHERSTONE: Defense in the case from Johnson?

MR. HYNES: I'm talking about mitigation of damages. PCTs aren't dangerous; therefore, they don't have to be ~~drugs~~ dredged. So much of the stuff in the harbor and in the ditch is PCTs, not PCBs.

MR. FEATHERSTONE: Well, I'm not going to debate this point with you. I'll let him answer a couple more questions and see what happens, whether it looks to me like



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you're establishing anything that's relevant. All right. The question, as I understand it, Mr. Wheeler, and correct me if I'm wrong, Mr. Hynes, is: Are you aware of any difference in the toxicity between PCT and PCB?

MS. OLIVER: I thought the question related to toxicity data.

MR. FEATHERSTONE: I'm sorry. Why don't you just ask the question again, Mr. Hynes?

Q. Are you aware of any significant differences in the toxicity data between PCTs and PCBs?

A. According to my recollection, there is considerable difference.

Q. And to the best of your recollection, what is the difference?

A. PCTs are much less toxic.

MR. FEATHERSTONE: Than PCBs?

A. Than PCBs.

Q. And is that based on the acute data-- Or what type of toxicity tests are you referring to? Acute and chronic? Or do you recall?

A. I don't recall that we did any chronic. So it would be acute.

MS. OLIVER: On what?

MR. HYNES: Acute studies on the PCTs.

Q. Mr. Wheeler, do you recall any studies which



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Monsanto contracted to be done in the biodegradation of PCB products or PCBs?

A. Yes.

Q. Do you recall when those studies were first contracted for?

A. I believe, in late 1968. Perhaps not until 1969.

Q. Do you recall who was the company that did the tests?

A. I don't recall the name. These were arranged for by our research group at North Wales with a university laboratory.

Q. That's North Wales, England?

A. Yes. Great Britain.

Q. The people in Wales might start a revolution or something over there.

A. They're not English.

Q. Do you recall the purpose of the biodegradation studies?

MR. FEATHERSTONE: Other than what the name implies?

Q. What does the name imply?

A. Which question--

Q. What's the purpose of the studies?

A. The purpose of a biodegradation study is to



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determine through standard techniques, if possible, whether a material in an aqueous medium will degrade--will be degraded by the action of bacterial organisms that are in that medium.

Q. What do you mean by degrade?

A. The chemical composition of the material is altered.

Q. Did the medical department receive the results of that study?

A. Yes.

Q. And did you review them?

A. Yes.

Q. Do you recall what the findings were?

A. My recollection is that the findings confirmed work that had been done in our own laboratories in St. Louis and in North Wales that, indeed, the lower chlorinated PCBs did degrade.

Q. What do you mean by lower chlorinated? Is there a-- The nomenclature, as I understand it, is the aroclors 1042, 1048, 1054. What would you consider the lower chlorinated aroclors or PCBs to be? What percent of chlorine?

MR. FEATHERSTONE: Wait a minute. 1054, 1042, that doesn't mean anything to me. I think it's 12.

MR. HYNES: Did I say 10?



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MR. FEATHERSTONE: You said 10.

MR. HYNES: I apologize. I meant to say 12.

A. It is my understanding that those polychlorinated biphenyls which had fewer than five chlorine atoms in them were degraded.

Q. And was there a determination made that polychlorinated biphenyls with greater than five chlorine atoms were not degraded?

A. Yes. Under the conditions of the test.

Q. I understand that. What was the significance of this determination that the lower chlorinated PCBs degraded in the situation, the test situation?

MR. FEATHERSTONE: Significance to whom?

MR. HYNES: The significance to Monsanto.

Q. Was this used to determine or to help verify the findings of PCBs in the environment, to identify them? Was that the purpose or the significance of this finding?

A. One of them. Yes.

Q. And what were the other, if there were other, purposes of the findings?

A. To determine if, in fact, the lower chlorinated materials did disappear or be degraded.

Q. Do you recall of any other outside consultants who did a biodegradation study of PCBs for Monsanto?

A. No.



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Q. Now, you stated that in house some work was done on biodegradation. Is that correct?

A. Yes.

Q. Do you recall the group within Monsanto which did this research?

A. The group in the analytical group that I referred to before. I don't recall the specific title.

Q. And do you recall when they did this research?

A. Not exactly.

Q. Was it before or after the work which was done in the United Kingdom?

A. At the same time.

Q. Am I correct in saying that the two groups, the one in the United Kingdom and the one in house in Monsanto, came to similar conclusions?

A. Yes.

Q. Do you recall any studies being commissioned by Monsanto with any outside firms to determine whether PCBs bio-accumulated in any form of animals?

A. Only as a part of the studies that were done by IBT.

Q. Are you talking again of the chronic studies which were done in '68, '69?

A. As an extension of the normal examination of tissues would be done in a chronic toxicology study.



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Q. But there were no separate, distinct studies just to determine bio-accumulation. Is that correct?

A. Not that I recall.

Q. Do you recall if Monsanto ever did any in house?

A. I don't recall.

Q. Do you recall ever reviewing any scientific literature reports of bio-accumulation tests which were done with PCBs?

A. No.

Q. As part of the IBT chronic studies that we were discussing, would they make a recommendation-- Not recommendation. Would they make a determination that the substance was or was not carcinogenic? Would that be a component of those chronic studies?

A. Definitely.

MS. OLIVER: I'm sorry. The answer was definitely?

A. Definitely.

MR. FEATHERSTONE: What was the question. Would you read back the question, please.

REPORTER READS BACK.

A. Insofar as the animals were concerned, of course.

Q. Do you recall if Monsanto Commissioned any



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studies from any outside contractor to specifically look for carcinogenicity in the PCBs?

A. Yes.

MR. FEATHERSTONE: Wait a minute. Carcinogenicity in the PCBs?

MR. HYNES: Whether the PCBs were carcinogenic. That would be a better way of putting it.

Q. And you said yes. Was this other than the IBT studies we were discussing?

A. No.

Q. That would be included in those IBT chronic studies?

A. The animal tissues acquired in the IBT studies were subsequently examined by other--by pathologists, including those of the National Cancer Institute, other than the pathologists that IBT would normally use and, I believe, by two other consulting pathologists not associated with Monsanto or IBT.

Q. Other than those pathological examinations, do you recall any other studies commissioned by Monsanto which were done?

A. Carcinogenic potential?

Q. Carcinogenic potential. Right.

A. No.

Q. Were any studies of that type ever done in



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house by Monsanto?

A. No.

Q. Did you review any studies relating to carcinogenicity? Any other studies reported in the literature dealing with PCBs?

MR. FEATHERSTONE: At what period of time, Mr. Hynes?

MR. HYNES: At any time.

A. I don't think I ever encountered any in the literature.

Q. Did you encounter any in any other way?

A. We were informed by a Dr. Kimbrough that she thought she had found evidence of carcinogenic potential in one or more rats as a result of feeding high levels of one of the PCBs.

Q. Do you recall which one of the PCBs it was?

A. No.

MR. FEATHERSTONE: When was this?

A. I believe 1972.

Q. Did the medical department attempt to verify those findings?

A. There's the word verify again, Sir.

Q. Well, try to duplicate those findings in any way?

A. No, because we already had our own evidence



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from the IBT studies.

Q. Did you-- Did the medical department have the opportunity to review the raw data in Dr. Kimbrough's study?

A. I don't recall that we did.

Q. Did you have an opportunity to review-- Did the medical department actually review her protocol or her study at all?

A. My recollection is that she came to St. Louis and we met with her and she told us verbally her protocols, if you will, and what she thought she had found.

Q. Did the medical department take any action with regard to her oral presentation to you?

A. My recollection is we asked for the opportunity to have other pathologists, other than her--I don't believe she is a pathologist, examine the tissues.

Q. And did other pathologists examine the tissues?

A. I believe so.

Q. Do you recall who they were?

A. No.

Q. And do you recall ever receiving any reports from them or reviewing reports from them?

A. I recall learning, by what means I don't recall, that no one else had confirmed her identification of the cells. And that included again, I believe, the



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pathologists with the National Cancer Institute.

Q. Do you recall-- Going back to the '50s again where you said some time in the '50s the pydraul was going through the process of evaluation within Monsanto and your department was involved in that in a normal way and, I think, you said it would be a normal practice or at least you recalled that the toxicity data developed for aroclors and other similar PCB products would have been reviewed at the time that the pydrauls were being evaluated by your department. Is that correct?

A. For those pydrauls that contained PCBs.

Q. Say, a pydraul that contained aroclor 1042 or 1048, you would review the data of the particular aroclor that--

A. I don't think we had an aroclor 1042.

Q. Well, I'm just using as an example--

MS. OLIVER: 1242.

MR. HYNES: Did I say 10 again? Sorry.

Q. But you would review the toxicity data on the particular aroclor which was a component of the pydraul. Is that correct?

A. I'm sorry for the interruption because now I don't know the question.

MR. FEATHERSTONE: He also testified he doesn't have any specific recollection with respect to pydraul, Mr.



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Hynes.

MR. HYNES: I understand that but--

MR. FEATHERSTONE: You're asking what might have been?

Q. I'm saying, what the business practice would be would expect the toxicity data available on the component products would be reviewed while you were reviewing the pydraul?

A. That's right.

Q. If your department, the Medical Department, in your review of the toxicity data with the pydraul fluid, if you had been informed at the time-- Again, when the pydraul fluid was going through the development stage when in your department, if you had been informed in the use of the product that the pydraul would be getting into sewers, into lakes, into rivers and thereby exposing a fish population, would that have changed your determinations as to restricted labeling and the like? Your recommendations on the product?

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

A. That's a hypothetical question.

Q. Yes, it is. It's a hypothetical question.

MR. FEATHERSTONE: I object to the form of the question.

A. And what time frame again are you talking about,



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Sir?

Q. When the pydraul product was beginning to be marketed or in the process. You said it was some time in the early '50s.

A. I think I may have said mid-'50s.

Q. Mid-'50s.

A. And now again what's the question?

Q. If your department had been informed by the business group or whoever would inform you as to the intended uses of a product--if you had been informed that the product would be getting into a waste disposal system, would leak into rivers, into streams, into lakes, would you have changed your determination or your evaluation of the product?

A. This is a twenty-twenty hindsight question, Sir. I don't know how I can answer it.

Q. Well, you said an important consideration is the intended use of the product. Is that correct?

A. Yes.

Q. And as you recall, the intended use of the pydraul product was in a closed hydraulic system?

A. That's right.

Q. And I take it there was some concern of a leak in a system hitting hot metal or a hot object and vaporizing?

A. Yes, Sir.

Q. That was an obvious concern. But if, in



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addition to that, the fluid itself would be getting out into rivers and streams, thereby exposing fish population, vegetation, potentially human beings to this PCB substance, would your evaluation of the product at that time have been different?

MR. FEATHERSTONE: I object to the form of the hypothetical question.

A. And again the word presumably--

Q. Sir, what word presumably?

A. Huh?

MR. FEATHERSTONE: What was the word presumably?

A. I think he had-- I think his question contained the word presumably. Can you read back the question?

REPORTER READS BACK.

MR. FEATHERSTONE. And there's an objection to the form of the hypothetical as incomplete and improper.

A. Do I have to answer?

MR. FEATHERSTONE: Well, if you can. You don't have to if you cannot.

A. I don't know that I can be responsive to the question. What did he say? That--

MR. FEATHERSTONE: Wait a minute. That's an answer.

A. All right. I cannot be-- I don't believe I can be responsive to the question because, as I indicated



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earlier, this is twenty-twenty hindsight.

Q. What other information would you need to be responsive to the question.

MR. FEATHERSTONE: You mean, how should you correct your hypothetical, Mr. Hynes?

MR. HYNES: No. I'm asking him what other information would he need.

A. Excuse me. May I again ask for the question? I don't recall if you included human beings or whether your question--

MR. FEATHERSTONE: Yes. He assumed exposure to human beings.

A. Then, obviously, if there was a question of human exposures that we could foresee or that we had any reason to assume could develop, this would have been taken into consideration.

Q. And if-- And that would not be your department's responsibility to have that information? It would be the business group or the private development group? It would be their responsibility to provide you with that information. Isn't that correct?

A. Yes.

MR. FEATHERSTONE: That information, Mr. Hynes, being the potential for exposure to human beings in the situation that you hypothesized?



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MR. HYNES: Yes.

Q. And if you had been provided with information that the PCBs would be--that fish would be exposed to PCBs in large quantities, you would expect that information to be provided to you to make that evaluation; wouldn't you?

MR. FEATHERSTONE: Would you please reread the question, Madam Court Reporter.

REPORTER READS BACK.

MR. FEATHERSTONE: Try it again. I still don't understand it.

REPORTER READS BACK.

Q. Okay. Strike it. If there was information available that fish would be exposed to PCBs in large quantities, you would expect that information to be provided to you by the commercial development group or the product development group?

MR. FEATHERSTONE: I object to the form of that question.

Q. You can answer the question.

A. I don't-- I still don't think I understand the question, Mr. Hynes. I--

MR. FEATHERSTONE: Wait a minute. You've answered the question. You told him you don't understand it. He's a capable lawyer.

Q. If there is information available that the



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PCBs would be getting in large quantities into a river or a lake, would you consider that information to be important to you in making a determination of whether the product should be marketed in the manner outlined by the product development group?

MR. FEATHERSTONE: Are we talking about any product now?

MR. HYNES: Yes.

MR. FEATHERSTONE: Or are we on pydrauls?

MR. HYNES: We're on any PCB product.

MR. FEATHERSTONE: And who has knowledge of this information you're assuming?

MR. HYNES: I'm assuming it's knowledge of someone within Monsanto.

MR. FEATHERSTONE: Someone in Monsanto has knowledge that large quantities of PCB fluid is being discharged into a river where there's lots of fish. Is that--

MR. HYNES: Right.

Q. Would that type of information be important to you in making your evaluation of the product?

A. I can't answer what my action would be to a hypothetical question that dates back to 1954 or '55.

Q. Why?

A. For the simple reason again I can't tell you what I would have done any particular circumstance, hypothe-



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tical circumstance, twenty five years ago.

Q. Then today would that be important information to you in making that determination if you were still working for Monsanto?

MR. FEATHERSTONE: I object to that.

Q. In your former capacity?

MR. FEATHERSTONE: If he were still a professional. He's a retiree. I object to it. We've got compounded speculation.

Q. May I rephrase that again? Would that information be important to an industrial hygienist position that you had when reviewing a product for market development? Would that information be important in determining whether a product should be marketed in that way or not?

A. Only with further investigation of the product.

Q. All right. It would cause a person in that position to further investigate the product. Is that what you're saying?

A. Today, yes.

Q. And would that have been the same in mid-1950s?

A. The question didn't come up.

MR. FEATHERSTONE: In connection with pydraul?

A. In connection with pydraul.

Q. If the question had come up, would it have been important?



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A. Again, Sir, I can't answer that question.

Q. Would the reason be that the state of the art would be different today than it was in the mid-1950s? Is that why you can't answer the question?

A. I couldn't explain it better.

Q. Am I correct in saying that in the state of the art at that time it would not be a consideration? Or you don't know if it would be a consideration?

A. It's not my recollection that it was a consideration.

MR. FEATHERSTONE: Well, wait a minute. No, no, no.

A. Because--

MR. FEATHERSTONE: Wait a minute. You guys are talking cross purposes. Mr. Hynes' question to you was-- I don't know if I can get it right-- But does the fact there have been developments in the state of the art between the 1950s and late 1970s or 1980s play a role in the determination of whether the information he's providing you is significant? Your answer was yes. And I don't understand your follow up question, Mr. Hynes.

MR. HYNES: At this point I don't remember what my follow up question was.

A. I don't either. I'm sorry.

MR. FEATHERSTONE: I think what you've got to do, Madam Court Reporter, is give the previous question and



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answer because I think Mr. Hynes was asking for an explanation of Mr. Wheeler's answer and the answer Mr. Wheeler gave was not really yes. It was, I couldn't have said it better myself, or something like that.

REPORTER READS BACK.

MS. OLIVER: I'm still confused, Mr. Hynes.

MR. FEATHERSTONE: So am I. The record is confusing.

Q. The consideration would be the PCBs were entering a waterway in large quantities and exposing fish to the PCBs. The state of the art in the 1950s, would that have been a consideration in the Medical Department's evaluation of the product for marketing?

MR. FEATHERSTONE: You mean the types of tests run?

MR. HYNES: Not the type of tests.

Q. Would that information on the product getting into a waterway in large quantities, exposing fish to it, would that be a consideration as to your department's evaluation of the product?

A. No.

Q. So you're saying that the state of the art in the mid-'50s, that would not have been a consideration. Is that correct?

A. That's right.

Q. In the state of the art in the mid-'50s, would it have been a consideration in your department's evaluation



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of a product if the PCBs were getting into a waterway of any type in large quantities? Period. The prior question was and exposing fish. This is without the exposure of fish.

MR. FEATHERSTONE: What's the question?

MR. HYNES: The same question without fish.

MR. FEATHERSTONE: Oh, yeah. The record for the last fifteen pages is-- We go back and forth about this question and that question. What is the question?

Q. The state of the art in the mid-'50s, would it have been a consideration in your department's evaluation of a product that the PCBs were getting into a waterway in large quantities?

MR. FEATHERSTONE: I object to the form of the question.

A. I don't know the definition of large.

Q. Several hundred gallons a day.

MR. FEATHERSTONE: I still have the same objection.

A. Not if the discharge was within the permit system of a plant that might have that kind of loss.

Q. Would your department be expected to be notified that that type of discharge was within a permit system? You just said if it was within a permit system. Would that be a consideration of your department's evaluation?

A. I think it's a question we would ask.

Q. If you got, in the mid-1950s, the information



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that we were just discussing, your department would then make an evaluation whether you need more than the normal acute tests? The information that you would need to-- You would analyze that information and make a determination in your judgment whether you needed more than the standard acute toxicity tests. Is that right?

A. I can't answer it because again this is if. I don't know how we would have responded, Sir.

Q. The state of the art today would be different than in the mid-'50s in this regard?

A. As I understand the state of the art, yes.

MR. FEATHERSTONE: If you're done with that line of questioning, Mr. Hynes, I'd like to take a break before I explode.

RECESSED 3:25 p. m., March 10, 1981.

RECONVENED: 3:30 p. m., March 10, 1981.

Q. Mr. Wheeler, the IBT chronic studies that were begun in '68 and '69, would I be correct in assuming that they were done--one of the reasons they were done was because of the information being made available then of the PCBs getting into the environment? Fish, birds and the like? Was it partly in response to that information?

A. It was in response to-- It was in response to the unproven allegation that it might get into the food chain.



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Q. And what do you mean by getting into the food chain?

A. Into fish, in particular, which would end up for human consumption.

Q. If that information were made available--would have been made available to you in the Medical Department in the mid-'50s, the information that PCBs were reported to be getting into the food chain, would similar types of studies been commissioned by Monsanto in the mid-'50s?

A. Without question.

Q. Even if they were unconfirmed reports at the time?

A. If we could duplicate the data that had been presented in the reports. We and others.

Q. By duplicate the data, do you mean the data that there was PCBs in the environment, the organisms, in the food chain? Is that what you mean by duplicate the data?

A. Using the reported techniques.

Q. Would information that PCBs were getting into bodies of water which were fished commercially--would that information, had you received it in the mid-'50s, led Monsanto to do IBT type chronic studies in the mid-'50s?

MR. FEATHERSTONE: You're assuming there's no evidence that it's getting in the food chain?

MR. HYNES: Right.



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MR. FEATHERSTONE: Just sitting on the bottom of the lake.

MR. HYNES: I'm saying getting into a body of water which is commercially fished.

A. Well, as actually happened, if we could confirm the data in the original reports that such was the case, yes, we would have initiated chronic studies.

Q. And, again, it wasn't your responsibility to come up with this information? It was the product development group or--

MR. FEATHERSTONE: I object to that, Mr. Hynes. There has been no testimony that it was somebody's responsibility to come up with information that the PCBs were going in the lake.

MR. HYNES: I said this type of information.

Q. The potential use of the product-- Strike that. Would it-- In your judgment, in the mid-'50s, would disposal of the PCB product have been a significant determination or significant piece of information for your medical department to use when evaluating these products?

A. I don't understand that question either. Significant, I--

MR. FEATHERSTONE: You've already said you don't understand it.

Q. Let's do it this way. In your department's



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evaluation of a product, the normal evaluation that you would do, would the disposal, the ultimate disposal of the product after it was marketed, the disposal by the customer, would that have any significance, information of that kind have any significance to your department's evaluation of that product?

A. Only if there was some evidence that there might be an effect from such disposal.

Q. And who would determine if-- Within Monsanto would any determination be made of an effect of that disposal, an effect caused by that disposal?

MR. FEATHERSTONE: His answer was that there might be an effect.

A. I'm confused again. What did I say?

MR. HYNES: Would you read Mr. Wheeler the question and answer again.

REPORTER READS BACK.

Q. You said evidence that there would be some effect--

MR. FEATHERSTONE: There might be.

Q. Evidence that there might be some effect from the disposal. Would your medical department make that determination, that there might be some effect, or would this come from scientific literature?

MR. FEATHERSTONE: Or both.



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Q. Or both?

A. I think we had to review what data we could find in the literature, the results of any toxicity work, if you will, that we had done on the product and then, in our judgment, make a determination as to whether more work ought to be done to determine if there was an effect.

Q. If the information-- Strike that. You said that the disposal, the ultimate disposal of a product, would be a consideration in your evaluation if that disposal might cause some effect. Would it be the responsibility of the product group which was supplying information to tell you about the disposal of the product and your department would make an evaluation if there was some effect? Or would they just inform you that here is the disposal and there's been some reported effect of this disposal? I'm trying to distinguish between the disposal versus the effect of the disposal.

MR. FEATHERSTONE: Well, I object to the form of that question.

Q. Would the information of disposal-- Forgetting about effect for a minute, would the information about the ultimate disposal of a product be the type of information the medical department would need to make an evaluation of the product?

MR. FEATHERSTONE: Object to the form of the



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question. Are we talking about pydraul? Are we talking about--

MR. HYNES: Why don't we--

MR. FEATHERSTONE: Why don't you ask him what information they had on pydraul back then? What are we talking about? I'm going crazy. I'll have to take another break.

Q. On a PCB product-- Let's do it this way and make Bruce happy. On evaluating a PCB product, would the ultimate disposal of the product have any significance to your department's evaluation of that product for marketing?

MR. FEATHERSTONE: He's already answered that question.

MR. HYNES: I don't think he has.

MR. FEATHERSTONE: He answered and I think he said only to the extent that there might be an effect.

Q. Again, I ask you. Would the ultimate disposal of the PCB product have any significance to your department in your evaluation of the product?

MR. FEATHERSTONE: Other than what he's already said generally?

MR. HYNES: Yes.

A. Only if there could have been any suspicion that there might have been any problem or involvement as a result of the disposal.



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Q. Who would make the determination to inform your department of the disposal, make a determination that there might be some effect from the disposal? Would that be the product group that would decide to inform you? Let's strike that. You said that it would only be significant if there might be some effect from the disposal. How would that information be communicated to your department?

MR. FEATHERSTONE: Which information?

A. Which information? Disposal or effect?

Q. Disposal first.

A. I don't recall getting any disposal information on--

MR. FEATHERSTONE: On PCBs?

A. On PCBs.

Q. If you had gotten disposal information-- Forgetting about effect just for a minute, if you had gotten information relating to PCB's ultimate disposal, would that in any way have caused you to change your evaluation of the product?

MR. FEATHERSTONE: The question, Mr. Hynes, has already been answered.

A. I don't know how I can rephrase the previous answer.

MR. FEATHERSTONE: You don't. The previous answer stands.



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MR. HYNES: The previous answer to what? On the questions regarding pydraul?

MR. FEATHERSTONE: Your previous question, Mr. Hynes, was whether, if they had knowledge or he was given knowledge of the disposal of a PCB product, would that have somehow affected his recommendation. And he said only if there was some suspicion that there might be an effect. Now, that's the answer to what you're--

Q. Some suspicion that there might be some effect. What I'm trying to get at-- You're talking about disposal would be significant if there might be some effect to this disposal. Talking about the effect, who would make the determination that there might be some effect? Would that information first come from the product development group or would that information come from the medical department? Somewhere somebody has to make a determination that there might be some effect with the disposal.

A. But that wasn't your question.

MR. FEATHERSTONE: Don't debate him.

Q. Who would make or where would that determination be made or that judgment be made that there might be some effect with this disposal. Would that be within the medical department?

A. If it was brought to our attention.

Q. If what was brought to your attention?



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A. The fact that there was disposal and in our judgment such disposal led to the review of data to see if it might have an effect or even a suspicion of an effect.

Q. So if the product development group did not inform the medical department of the disposal techniques or the disposal of the PCB products, then, of course, your department couldn't make any determination of whether there was or was not any effect of this disposal. Is that correct?

MR. FEATHERSTONE: You've got a compound question there, Mr. Hynes. All of a sudden you've now got disposal techniques.

MR. HYNES: I'm sorry.

MR. FEATHERSTONE: And disposal in the same breath.

Q. If the information of the ultimate disposal of the product was not brought to the attention of the medical department by the product development group, then your department could not make a determination if there was or was not an effect on this disposal--relating to this disposal. Is that correct?

A. If I understand your question, that's correct.

MR. FEATHERSTONE: If he didn't know about it, he couldn't do anything about it.

MR. HYNES: Exactly.

Q. Do you know of any instances where a product development group learned independently of the medical



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department of a potential effect in disposal of any of its products?

A. No.

MR. HYNES: I don't want to be accused of beating a dead horse to death so I'm going to stop.

MR. FEATHERSTONE: Are you telling us you're done?

MR. HYNES: I don't have any more questions right now.

* * * * * *

QUESTIONS BY MS. OLIVER:

Q. Mr. Wheeler, when you joined Monsanto, did you have any toxicology training?

A. Not as such.

Q. What type of training did you have?

A. I think I indicated that I had had the type of training that a sanitary engineer or a pre-med school student would have, which included biology, physiology, the elementary courses in biology, physiology, bacteriology, communicable diseases, a course in statistics.

Q. When you started with Monsanto and you began evaluating some toxicology data with Dr. Kelly-- Is that what you testified?

A. Yes.

Q. Did you have any training for that from Monsanto?



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A. Did I have any training?

Q. Did you have any training in evaluating these toxicology reports that you were getting?

A. Under Dr. Kelly's supervision.

Q. You didn't attend any kind of training program sponsored by Monsonto on toxicology?

A. No.

Q. In the 1950s, was it just you and Dr. Kelly who would review and evaluate these toxicology reports?

A. With our consultants, yes.

Q. I think you said in 1960 Dr. Hunt became a full time toxicologist?

A. Yes.

Q. Before that time, were there any part time toxicologists hired by Monsanto?

A. No.

MR. FEATHERSTONE: Roseann, your question is other than the people to whom they contracted these studies?

MS. OLIVER: Yes.

Q. In house toxicologists?

A. No, Ma'am.

Q. After 1960 were other toxicologists hired by Monsanto for in house work?

A. Yes. For in house work but not the actual animal experimentation. Monsanto did not have its own



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animal research facilities.

Q. It was contracted out to do the actual testing?

A. That's right.

Q. But you had in house toxicologists--

A. Yes.

Q. --that analyzed the results?

A. Yes.

Q. Between the years 1960 and 1968, how many toxicologists were hired by Monsanto besides Dr. Hunt?

A. Two.

Q. So there were three altogether?

A. I don't remember if the third one was hired before or after Dr. Hunt's demise.

Q. The medical department, so far as we know, has Dr. Kelly and an industrial hygienist?

A. He had an assistant medical director.

Q. Was that in the 1950s?

A. Not full time in the '50s. No.

Q. In the 1950s, besides Dr. Kelly and you and Mr. Garrett, as the industrial hygienists, were there any other people employed in the medical department?

A. Nurses, technicians, two or more part time doctors.

Q. And they were to handle worker safety, inspect--



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A. Clinical work, principally.

Q. Clinical work?

A. Yes.

Q. What type of clinical work?

A. When somebody is injured or is ill, they come to the clinic for an aspirin or for a bandaid over the splinter that they got in their finger.

Q. Okay. Was the medical department in St. Louis or the medical department-- Strike that. Were there medical departments within Monsanto besides the one you were in in St. Louis?

A. Each plant had medical attention available on a part time or full time basis.

Q. Did each plant have an industrial hygiene department and a medical director like Dr. Kelly?

A. It's a two part question. They did not have industrial hygienists. I think the term was plant physician, rather than medical director, in terms of the doctors.

Q. What was Dr. Kelly's title?

A. Medical Director for Monsanto Corporation.

Q. And he supervised the medical activities of the entire corporation?

A. That's right.

Q. And you, as industrial hygienist, supervised the industrial practices for the entire Monsanto Company?



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A. Yes.

Q. In the 1950s, when you and Dr. Kelly were reviewing the toxicology reports for products or chemicals for the Monsanto Company, at any one time would you be involved in reviewing fifteen new chemicals or ten new chemicals? Can you give me an estimate?

A. This is a point where I need a definition of new chemical and what stage of--what the stage was within Monsanto.

Q. Okay. When a sample was sent to you from the research department in the earliest stages of development of a product--

A. I beg your pardon. In research?

Q. In research. At a period of time in the 1950s, was it common practice? Were you receiving samples of ten a day or a hundred a day? Can you tell me?

A. My recollection is that it was more than a hundred or a hundred and fifty a year.

Q. And those would be the products or the chemicals that you would run these acute screen tests?

MR. FEATHERSTONE: You mean that he would have had contracted?

MS. OLIVER: Had contracted.

A. Yes. Most of them were from the agriculture research efforts. Maybe half of them.



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Q. But you and Dr. Kelly would be involved in reviewing the results of all these tests?

A. Yes.

Q. How about in the area of product development? When the product moved one step closer to being marketed and you had samples of the product from the development area, can you give me any estimate of how many a year you got from that?

A. Probably not more than ten.

Q. And on those ten, you and Dr. Kelly would evaluate the data that you had gotten before?

A. That's right.

Q. You mentioned that you were the president of the American Industrial Hygiene Association?

A. Yes.

Q. In 1959?

A. Yes.

Q. How long were you president of the association?

A. One year after being president-elect the previous year.

Q. In your testimony concerning some articles that you published in the late '50s or early '60s on the administration and management of industrial hygiene programs, you said that those articles emphasized partly what type of programs should be included in plants. Can



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you tell me what--

A. What, more importantly--

MR. FEATHERSTONE: Wait a minute, Mr. Wheeler. There's no question asked.

Q. Could you tell me in what areas you felt programs should be set up or be included? Do you understand what I'm saying? Let me rephrase it. You wrote some articles in the late '50s or early '60s on industrial hygiene programs and management of those programs and in your articles you discussed what type of programs should be included and set up. Can you tell me what types of programs, in your opinion, should be set up?

A. It related more to the lines of responsibility, the corporate headquarters. My view was that the industrial hygiene function belonged in a medical department, reporting to a medical director, who, in turn, did not report to a safety director or personnel group but reported to a higher level or corporate administration, whether it be research, engineering, production, so there was a limited number of people between the medical director and through him the industrial hygiene and top company management.

Q. So the industrial hygienist could better implement his programs or the practices he felt were necessary or were appropriate?

A. It gave him a stature of dealing with the



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plant management and with our employees, through their unions, that we were an unbiased group of people who were not influenced by the personal practices and other considerations.

Q. I think you testified earlier today that you, in the 1950s, were assigned a consulting role to air and water pollution matters in Monsanto?

A. That's right.

Q. How much of your time in the 1950s was devoted to this consulting work?

A. I would guess twenty five to thirty percent.

Q. Did you have any training in environmental concerns or air pollution or water pollution before assuming this consulting role?

A. Our consulting role was related to the effects on humans, the potential health effects on humans, from air pollution and water pollution and the training I had in industrial hygiene and what sanitary engineering courses I had were obviously important.

Q. How would water pollution have an effect on humans?

A. Historically water pollution has been a bigger problem in the area of public health than air, beginning with the typhoid fever and micro-organisms that can cause disease and which were the early forces that led to strong



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sanitary engineering programs within the health departments nationally and in the states.

Q. In performing this consulting role on pollution concerns or matters, were there any factors you looked at in a plant or generally in determining whether any health practices should be set up in that area?

A. I think I testified earlier that, according to my recollection, every plant had a current permit from the appropriate agency to discharge what waste they did discharge from the plant and was not treated on site. Part of our role was then to keep abreast of scientific developments to try to foresee what additional requirements were coming down the road.

Q. So it was basically to keep track of what types of materials were permitted to be discharged in the water and what weren't?

A. Right.

Q. To your knowledge, in the 1950s and in the 1960s, were there any requirements against PCB discharges in the water?

A. No.

Q. In addition to keeping abreast of the developments regarding permit requirements and discharge prohibitions, were there any other specific kinds of considerations or responsibilities you had with respect to water pollution?



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A. Well, I think I included the question of keeping up with developments as best we could through trade journals, through the scientific literature.

Q. Right. In your role as a consulting person for water pollution concerns, were you aware in the 1950s or the 1960s of any standards or prohibitions against the discharge of chlorinated hydrocarbons?

A. Could you speak up a little?

MS. OLIVER: Could you read the question, please.

REPORTER READS BACK.

A. I'm not aware of any in the 1950s. I'm not certain there were any developed even through the 1960s.

Q. You testified earlier about the fact that the term chlorinated hydrocarbons is a well know term in the chemistry field and there are many compounds that fall within the term. What are the most familiar types of compounds of chlorinated hydrocarbons?

MR. FEATHERSTONE: That are chlorinated hydrocarbons?

MS. OLIVER: That are chlorinated hydrocarbons.

A. The general field of industrial hygiene historically has been involved in solvents and, more importantly, they then became involved in pesticides, DDT, chlorophene, toxiphene, etcetera.

Q. To your knowledge, were pydraul fluids



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recognized-- Strike that. To your knowledge, were PCB fluids recognized in the industrial hygienist field as a chlorinated hydrocarbon?

A. Yes.

Q. To your knowledge, were PCB fluids-- Strike that. You testified that in the 1960s, I think, a warning was added to pydraul, advising that it was a chlorinated hydrocarbon. Is that correct?

A. I think I said it contained chlorinated hydrocarbons.

Q. Do you know whether any consideration was given within Monsanto to identifying pydraul as a PCB compound?

MR. FEATHERSTONE: Would you read the question back, Ma'am?

REPORTER READS BACK.

MR. FEATHERSTONE: In the 1960s, when they identified it as a chlorinated hydrocarbon?

MS. OLIVER: That's right.

A. Again I'm going to make a correction. PCBs are not a compound. PCB is a mixture of chlorinated hydrocarbons.

Q. It's a chemical?

A. It's a mixture of chemicals, more accurately defined as polychlorinated biphenyls.



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Q. Do you know if, within Monsanto in the 1950s or 1960s, there was consideration given to identifying pydraul as a polychlorinated biphenyl?

A. Pydraul was not a polychlorinated biphenyl. It was a mixture of materials, including polychlorinated biphenyls.

Q. Okay. Do you know whether, within Monsanto in the 1950s or the 1960s, there was a consideration given to indicating on a label or in brochures or technical bulletins that pydraul contained polychlorinated biphenols?

MR. FEATHERSTONE: Biphenyls.

Q. Biphenyls?

MR. FEATHERSTONE: Biphenol is a different product.

Q. PCBs?

A. Again, I'm sure you would qualify that by saying those pydrauls that contained polychlorinated biphenyls?

Q. Sure.

A. I don't know of any consideration given to making that identification in the 1950s.

Q. How about in the 1960s?

A. I think I testified that the contains chlorinated hydrocarbons was added at some time in the '60s. I don't believe it was in the '50s.



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Q. What I'm asking is: Do you know why pydraul was identified as a chlorinated hydrocarbon rather than a PCB?

A. In the period in question, pydrauls were a trademark product.

MR. FEATHERSTONE: Do you want--

MS. OLIVER: Let's call it a day.

RECESSED 4:15 p. m., March 10, 1981.

RECONVENED 10:00 a. m., March 11, 1981.

Q. Mr. Wheeler, you understand that today we're continuing your deposition from yesterday?

A. Yes.

Q. And you're still under oath from yesterday when the court reporter swore you in?

A. Yes. I understand that.

Q. You told us yesterday, I think, that part of your duties with Monsanto included monitoring the chronic tests that were done for products or chemicals. What type of monitoring did you do?

A. After the protocol had been established by Dr. Kelly and the scientists in the contract laboratory, in conjunction with the Food and Drug Administration or the Department of Agriculture, depending on potential use of the product, my function was pretty much to ensure that the samples got to the laboratory and at intervals, if my



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other travels took me near the area where the work was being done, to stop by, receive progress reports and take those back to Dr. Kelly.

Q. Would I be correct in saying that Dr, Kelly was the person who decided what tests should be run and developed the protocols with your contracting scientists?

MR. FEATHERSTONE: Chronic tests?

MS. OLIVER: Chronic tests.

A. Yes.

Q. During the time you worked for Monsanto before 1970, did Monsanto ever ask consultants concerning what types of tests should be run?

MR. FEATHERSTONE: Are we still on chronic testing, Roseann?

MS. OLIVER: Uh huh.

A. I think I said the protocols were developed by Dr. Kelly, in consultation with the consulting laboratories and other people that were involved.

Q. Do you recall any occasion before 1970 where Dr. Kelly consulted with an outside Monsanto person before contracting with a laboratory to find out what types of tests should be run?

MR. FEATHERSTONE: What's an outside Monsanto person?

MS. OLIVER: Someone not employed by Monsanto and



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not contracted to do a specific job.

MR. FEATHERSTONE: He's already testified to government agencies. You mean in addition to government agencies and the outside contracting labs?

MS. OLIVER: That's right.

MR. FEATHERSTONE: Did Dr. Kelly, to his knowledge, Mr. Wheeler's knowledge, ever contact somebody else?

MS. OLIVER: That's right.

A. Any other contracting labs?

Q. No. Any other scientists, any other person in the toxicology field concerning what types of chronic testing should be done?

A. I'm sure he did. It's the nature of keeping up with the profession.

Q. Do you recall any specific instances--

A. No.

Q. --where this was done?

A. No.

MR. FEATHERSTONE: Again, Mr. Wheeler, please wait until Ms. Oliver finishes her question.

Q. Before contracting out with Bio-Test to do testing on the aroclors and the pydraul fluids in 1968 and '69, to your knowledge, did you or did Dr. Kelly consult with any other persons concerning what types of testing should be done?



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A. Again, I think I said the protocols were discussed with the Food and Drug Administration, the U. S. Department of Agriculture, the Fish and Wildlife Laboratories.

Q. Were you present for those discussions?

A. Several of them.

Q. When did those take place?

A. My recollection would be early '69, while the range finding studies were in progress.

Q. The which studies?

A. The range finding studies.

Q. And what were those?

A. Before embarking on-- , I don't recall if I mentioned this yesterday or not. But before embarking on a chronic two year study, a shorter term study has to be done, giving the animals various dosage ranges to ensure that the animals to be involved in a two year study are not alive without any effects at the end of the period. If so, the study is meaningless. By the same-- The other extreme, if all of the animals are dead, my understanding is that the results would be meaningless.

Q. So range finding tests were done?

A. Yes.

Q. Could you describe for me who did those tests and what they involved?



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A. They were done by Industrial Bio-Test and involved what I just tried to explain. Rats and dogs were given varying doses of the aroclors.

Q. Were they injected with doses?

A. Injected?

Q. Yes.

A. No, because the administration was going to be by mouth.

Q. So it was an oral administration?

A. Yes.

Q. And who determined that that range finding test should be done?

A. I thought I made it clear that this is just the state of the art normal procedure.

Q. Let me ask you this way. There came a time, I take it, when you and Dr. Kelly discussed what tests should be done on the aroclors and PCB bearing--

A. We discussed them. Yes.

Q. And when did that discussion take place?

A. I don't recall a specific date.

Q. Would it have been approximately 1968?

A. Yes.

Q. And did you and Dr. Kelly discuss what types of testing should be undertaken?

A. Yes.



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Q. At the initial time when you and Dr. Kelly discussed this matter, were there representatives from the other agencies and from Bio-Test present?

A. In some of the discussions, yes.

Q. When was it determined that Bio-Test would be the persons who would do these tests?

MR. FEATHERSTONE: When were they hired or when was it determined inside Monsanto?

MS. OLIVER: When was a determination made to hire Bio-Test?

A. To do the aroclor studies?

Q. Yes.

A. I suppose late '68, when we were discussing the protocols.

Q. Did you and Dr. Kelly discuss which outside contracting laboratories could do this work for you?

A. Not to my recollection.

Q. Was there a reason that you used Bio-Test?

A. Yes.

Q. What was the reason?

A. Over the years Bio-Test had become the principal consulting laboratory that we were using for all Monsanto products.

Q. Did you or Dr. Kelly give Bio-Test any type of instructions on how the tests should be run or how



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the results should be reported?

A. Which question would you like answered first, Ma'am?

Q. How they were run?

A. Beg pardon?

Q. How they were run?

A. This is what a protocol does is to establish how a test will be run.

Q. Did you or Dr. Kelly ever discuss with Bio-Test what type of results they should report to you?

A. No, Ma'am, except the truth as they found it and the data that they found.

Q. Do you know if Bio-Test provided you with a discussion of their data and results?

A. Periodically, yes.

Q. Do you recall any tests run by Bio-Test where they just provided you with the data and the results and conclusions were to be determined by Monsanto from that data?

A. No.

Q. Do you recall any tests that Bio-Test ran where they would send the samples or specimens back to Monsanto for analysis?

A. Yes.

Q. Which tests were those?



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A. As the animals were sacrificed, in conjunction with the accepted protocols at that time, various tissues were taken for not only pathological examination but for chemical analysis, the chemical analysis being done by Dr. Richard's group or Bob Keller.

Q. I'm sorry. Did you say the chemical analysis would be done by Dr. Richard's group?

A. Yes.

Q. What type analyses were those?

A. The analyses, as I understood them, were to determine the presence of PCBs in the various tissues examined.

Q. And what part of it was Bio-Test supposed to do?

A. Bio-Test was doing the work with the animals. As they sacrificed the animals, they excised organs, which they then froze and subsequently sent them to Dr. Richard's group.

Q. They didn't do the analysis?

A. Not to my knowledge, Ma,am.

Q. The chemical analysis.

MR. FEATHERSTONE: Wait a minute. What's the question now?

MS. OLIVER: They didn't do the chemical analysis for the organs.



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Q. To your knowledge, did Dr. Richard's group complete the analysis?

A. They completed many early analyses.

Q. And were you informed of the results of their analyses?

A. As in a position of reviewing the correspondence that Dr. Kelly got.

Q. Do you recall what they found in their analyses?

A. My recollection is that they found, as had been reported in others, that the PCBs tended to accumulate in fat and liver tissue.

Q. You mentioned that they did initial analyses. Were further analyses done on these tissues, to your knowledge?

A. The reason for my response as it was is that there were thousands, maybe even tons, of samples that were developed and I'm not sure that all of those tissues were examined. I believe enough were done at the various stages in the progress of the work to give data that could be subjected to statistical analysis for significance.

MR. FEATHERSTONE: When you say examined, Mr. Wheeler--

A. Chemically, Sir.

MR. FEATHERSTONE: For PCB residue?



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A. Yes.

Q. PCB residue means PCB accumulation in the tissues?

A. The identification of PCB per se in the tissues.

Q. The analyses that Dr. Richard's group made were sent to Dr. Kelly, to your knowledge?

A. I believe so. Yes.

Q. Do you know when these analyses were done?

A. Well, again, I think I indicated that this was a progression. I believe there was some animals sacrificed after the first three months of the two year chronic studies, so there would be tissues that would be retained from those animals that were sacrificed. Again at six months and I've forgotten what the next period was. It was probably after twelve months and then eventually upon completion of the study.

Q. Okay. So it was during the period of about 1969 to 1972?

A. Yes.

Q. Did you have any discussions with Dr. Kelly or Dr. Richard or anybody in Monsanto about the significance of Dr. Richard's analyses of the tissues?

A. I don't recall any.

Q. Do you know if the analyses that Dr. Richard



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made of the tissues were factors or considerations in the withdrawal or phase out of any of the functional fluids?

A. I'm not aware that they were.

Q. I think you told us yesterday, Mr. Wheeler, that, when the research department sent a sample over to the medical department, an acute screen was run. Could you explain to me what the term acute screen means?

MR. FEATHERSTONE: He didn't use the phrase acute screen.

MS. OLIVER: I believe that acute screen came out, was part of his testimony yesterday.

MR. FEATHERSTONE: Mr. Wheeler's testimony used the words acute tests.

MS. OLIVER: Well, I don't think that's true.

Q. But do you understand what an acute screen is? Have you heard that term before?

A. Yes.

Q. Could you tell me what that is?

A. It consists of the tests that I mentioned to you yesterday.

Q. And is that a routine series of tests that are run?

A. Yes.

Q. When a sample came from research department, would a chemical be tested or would a product be tested?



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A. I don't think I heard you.

Q. Okay. When a sample would come from the research department for this acute screen series of tests to be run, would you receive a chemical substance or would you receive a mixture of chemicals that was going to be a product?

A. Both.

Q. Both. When you received a mixture of chemicals that was going to be a product, would you run this acute screen on different components of that product?

A. No. Not routinely.

MR. FEATHERSTONE: On the product would you run the acute screen?

A. We'd run the acute screen on the product. I understood her question to be--

MR. FEATHERSTONE: Break down the product into components.

A. Right. My answer to that was, no, not routinely.

Q. Were there any cases in which you would do this that you recall?

A. My recollection would be only if we didn't have some data on the components.

Q. When you received a product from the development section of the company, which was close to being



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marketed, I think you said you would review the existing data and then determine whether additional testing was necessary or appropriate?

A. Dr. Kelly would determine. Yes.

Q. Again, in that situation you wouldn't break the product down to its components. If additional testing was going to be done, it would be done on the whole product?

MR. FEATHERSTONE: He just said that Dr. Kelly made that determination.

Q. Well, to your knowledge of the procedure, the practice?

A. I would say the practice is the same as described for products coming from research.

Q. You also testified yesterday, I think, that, at the development stage of the product, when you got the product for additional evaluation, you were given a clear understanding of the use of the product. Do you recall that?

A. I think I said we were given an idea of the proposed use.

Q. A better idea than you had gotten in the research stage of it?

A. Yes.

Q. In the case of pydraul-- Well, strike that a minute. Are you aware of the different types of pydraul



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fluids that were marketed by Monsanto?

A. Not today.

Q. Do you recall a fluid called F-9?

A. Yes.

Q. Do you recall, Mr. Wheeler, what you were told was its use when it was sent to you from research?

A. I recall only that it was indicated it was to be a product for use in hydraulic systems in applications where there was the possibility of accidents where the material might be sprayed on hot or molten surfaces.

Q. And that information came from the research department?

A. I think, Ma'am, you said this was at the development stage.

Q. Oh, no. I said research. I'm sorry.

MR. FEATHERSTONE: What's the question?

MS. OLIVER: The question was at the research stage.

MR. FEATHERSTONE: What were you told about the intended use of pydraul F-9 at the research stage?

Q. At the research stage?

MR. FEATHERSTONE: If you can remember being told anything.

A. Well, I think I said yesterday that we had a form that came with every sample that had some indication



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of propective use.

Q. Okay. You don't have any recollection today--

A. No.

Q. --about what you were told about pydraul--

MR. FEATHERSTONE: At the research stage?

MS. OLIVER: At the research stage.

A. Only that the form would have indicated that it was a prospective candidate for further research and development purposes as a fire resistant hydraulic fluid.

Q. Did you have any knowledge of hydraulic equipment?

MR. FEATHERSTONE: When?

MS. OLIVER: When pydraul was sent to the lab for research--acute screening.

A. Very limited.

Q. What was your limited knowledge?

A. I remember reading how the use of hydraulic systems were developed over a period of perhaps centuries. Initially men used to get a pail of water out of a well by letting a rope down; did they not? This became more sophisticated when they came up with a system of pulleys. Eventually, engineers came up with a way of relieving the manpower that was necessary to do heavy work. And to me a hydraulic system was like the one I had in my automobile for power steering or for power brakes.



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Q Okay. Later on, when development sent you a sample for further evaluation, you had more of an understanding of its intended use?

A No.

Q You were told that lines could break and the fluid could be squirted out. Correct?

MR. FEATHERSTONE: Onto molten surfaces?

MS. OLIVER: Right.

A Yes. And my concern was about the potential exposure to men, workmen.

Q Do you know how you got that information?

A No.

Q Do you recall any other information you got about the use of the fluid?

A No.

MR. FEATHERSTONE: Obviously, Ms. Oliver, your question meant in addition to what he has already testified?

MS. OLIVER: Sure. Oh, yes. I'm not trying to limit his testimony.

MR. FEATHERSTONE: I'm sorry?

MS. OLIVER: I'm not trying to limit his testimony in any way, Mr. Featherstone.

MR. FEATHERSTONE: All right. Now that I know what your designs are.

Q Were you-- Did you ever have the occasion to



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visit a die casting plant or a plant that used hydraulic equipment?

MR. FEATHERSTONE: Well, why don't you break it into two questions.

Q. A die casting plant?

A. In my forty years of industrial hygiene, I never saw a die casting operation.

Q. Do you know if Dr. Kelly ever visited one?

A. I don't know.

Q. In obtaining information about the new product at the development stage, would a technical bulletin be prepared at the time when you got the sample for additional evaluation?

A. The technical bulletin would be prepared after getting toxicity information or evaluating the data that we had.

Q. In the course of your work, was it your practice or Dr. Kelly's practice to review the information given in the technical bulletins on products?

A. Yes.

Q. Was it your practice to only be concerned with the safe handling, toxicity part of the bulletin or did you familiarize yourself with the entire thing?

A. Our interests in the whole bulletin was only as related to the potential occupational health or industrial



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hygiene problems.

Q. Is there a difference between the occupational health aspects of a product and the environmental concerns regarding a product?

A. The two words are used pretty much synonymously.

Q. Would it be fair to say that, at the same time that you were considering the industrial hygiene problems confronting the workers in plants, that you were concerned with the environmental concerns of the product?

A. The environment outside the work place?

Q. Outside the work place.

A. Only where we had reason to believe that the material would get into the environment outside of the work place.

Q. And if you had reason to believe that a product would get out of the work place, what factors would you consider in evaluating that product?

MR. FEATHERSTONE: Speaking of Mr. Wheeler personally now?

MS. OLIVER: Mr. Wheeler, in conjunction with Dr. Kelly, with whom he worked on evaluating these types of problems.

MR. FEATHERSTONE: You haven't established that, Ms. Oliver. What your earlier questions established is that Dr. Kelly had sole responsibility for many types of



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chronic testing. Mr. Wheeler wasn't involved. So, obviously, their responsibilities within Monsanto were not identical.

MS. OLIVER: Mr. Wheeler was involved with the monitoring of the testing and providing Dr. Kelly with progress reports on the chronic testing. But let's let-- Let's not argue. I'll ask a question and see if we can straighten it out.

MR. FEATHERSTONE: Well, he doesn't have to straighten out your question. You have to straighten out the question.

MS. OLIVER: We can straighten out the subject area. That's what I mean.

Q Mr. Wheeler, in the area of industrial hygiene of the workers in the plant, was it your responsibility, along with Dr. Kelly's, to evaluate the product that Monsanto was going to put in the plant?

A If the intended use, to our knowledge, was such that the material could get into the environment.

Q I just asked you about the industrial hygiene in the plant. Was it your responsibility, along with Dr. Kelly's, to evaluate the product for that purpose?

A In our plants or in customer plants?

Q In your plants, in customer's plants?

A That was the whole purpose of getting the data, of course.



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Q But it was your responsibility, along with Dr. Kelly's?

A Yes.

Q With respect to evaluating a product, a Monsanto product, which could get into the environment outside of the workers' plant, was it also your responsibility, along with Dr. Kelly's, to evaluate that product?

MR. FEATHERSTONE: When?

MS. OLIVER: In the period between 1950 and 1968.

MR. FEATHERSTONE: At any time during that period?

MS. OLIVER: That's right.

A Only if the intended use of the product indicated that it could get into the environment, such as a pesticide.

Q If the intended use that you were aware of and Dr. Kelly was aware of was that it could get into the environment outside of the plant, it was your responsibility, along with Dr. Kelly's, to evaluate that product?

A It was my responsibility to participate in discussions with Dr. Kelly and others as to what the problems might be.

Q Who made the judgment on whether that product should be used in a manner which it could be found outside the plant?

A Who made the decision?



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Q. Uh huh.

A. Dr. Kelly.

Q. In a case of a product where you or Dr. Kelly were aware that the product could find its way outside of the plant, what types of considerations were given to making the judgment that Dr. Kelly would make?

MR. FEATHERSTONE: Wait a minute. When you say a product could find its way outside of a plant, what does that mean? I mean, a product could be manufactured and sold, as is a pesticide, for use outside of a plant. A product can be manufactured for use within a plant but for some reason discharged in the environment.

MS. OLIVER: Or disposed of in the environment.

MR. FEATHERSTONE: Or disposed of in the environment. So you've got at least three cases and maybe my mind's not fast enough to come up with the fourth, fifth and sixth. But what are you talking about, Ms. Oliver?

MS. OLIVER: I'm talking about any product that Monsanto may have marketed--

MR. FEATHERSTONE: Any product?

MS. OLIVER: A product that Monsanto may have marketed which Mr. Wheeler and Dr. Kelly foresaw were suspected would be in the environment. That's all I'm asking about. I'm not making any distinctions about how it got there. I'm just saying that it's there. I'm asking



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for what considerations and what factors were considered by Mr. Wheeler and Dr. Kelly in evaluating their product.

A. It depended on whether it was a pesticide, an additive for detergents, or a component of detergents. It depended on the prospective use of the product.

Q. Was your understanding that the pydraul fluids would not find their way into the environment or were not to be used in the environment outside of the plant?

A. That's right.

Q. What was your understanding of what the pydraul fluids were composed of?

A. What was my understanding?

MR. FEATHERSTONE: Which pydraul fluid are you talking about?

MS. OLIVER: Let's talk about F-9.

A. I was told the specific composition of pydraul F-9.

Q. Is there anything in the specific composition of pydraul F-9 that you were aware of in the 1950s, which, in your opinion, would lead to the judgment that the fluid should not find its way into the environment outside of the plant?

MR. FEATHERSTONE: Ma'am, would you read that question.

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



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REPORTER READS BACK.

MR. FEATHERSTONE: Well, are you asking him to give his state of knowledge today or the state of knowledge he had in 1950. The first word is is.

MS. OLIVER: I thought I referred to the 1950s and that's my intention.

MR. FEATHERSTONE: Well, you did refer to the 1950s but not necessarily in connection with his knowledge in the 1950s. I think, if you see where those words are placed in the question, Ms. Oliver, it's not entirely clear.

Q. I want it to be clear, Dr. Wheeler, that what I'm asking you about is whether what you knew about the product in the 1950s would lead you to believe that it should not be, should not have been in the environment outside of the plant?

A. To my knowledge, the state of the art was such that it would have been no concern.

Q. So it would have been no concern whether the fluid was in the environment or not, outside of the plant?

A. Not in any circumstances that we could envision.

Q. Well, I'm not sure I understand that answer.

A. Well, we--

MR. FEATHERSTONE: Wait a minute, Mr. Wheeler. Don't--

Q. What kind of circumstances could you have



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envisioned?

MR. FEATHERSTONE: Wait a minute. What are we talking about now? Now I'm confused.

Q. I'm talking about whether you knew of anything in the pydraul makeup that would have led you to conclude that it should not be in the environment outside of a plant?

MR. FEATHERSTONE: In the 1950s?

MS. OLIVER: In the 1950s.

A. I think it's an edition of a question you asked before and my answer was no.

Q. Well, you said something about not under any circumstances you could envision and I'm just inquiring what you mean by that?

A. Again I'm repeating myself. There are products at Monsanto made where the uses indicated the materials could get into the environment and I use as an example pesticides, detergent components. No one could foresee at that time that any of the components of the pydraul fluids, if used as recommended, would find their way into the environment.

Q. I'm not sure we're talking on the same wave-length.

MR. FEATHERSTONE: He just explained the words you asked.

A. As I understood it.



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Q What I'm asking is: Was there any component part of pydraul that you felt in the 1950s would not be safe in the environment outside of a plant?

MR. FEATHERSTONE: He's already answered that.

MS. OLIVER: I want to make sure because I think we've had some confusion here. I want to make sure I get an answer to the question.

MR. FEATHERSTONE: You've got it already. He's already said no.

A I'll repeat it. No.

Q Okay. Good. In the 1960s, before 1968, in your opinion, was there any component part of the pydraul fluids which, in your opinion, would not be safe if found outside of a plant environment?

MR. FEATHERSTONE: His opinion in the 1960s now up to 1968?

MS. OLIVER: Up to 1968.

A In my opinion, there still was no reason to be concerned if components of pydraul fluids did accidentally get into the environment.

Q You said, I think, yesterday that the testing that Bio-Test did, the chronic testing in the 1968-'72 period, in your opinion, would have been appropriate in the '50s if the knowledge that came out in the late 1960s was available at that time?



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MR. FEATHERSTONE: I'm sorry. Is that a question?

MS. OLIVER: That was a question.

Q Is that correct?

MR. FEATHERSTONE: Can I hear the question, please?

MS. OLIVER: Sure.

REPORTER READS BACK.

MR. FEATHERSTONE: Objection. It misstates the testimony. Mr. Hynes' question was similar types of tests. Yours says assume the same IBT tests.

MS. OLIVER: Similar types of chronic testing that was done by IBT. That's what I'm asking.

MR. FEATHERSTONE: Chronic testing?

MS. OLIVER: Uh huh.

A The chronic testing would have been done according to the state of the art as it existed in that period, as compared to 1968.

Q Why would the testing have been done in the '50s?

A I was asked a hypothetical question, I believe. Why-- What would Monsanto do if it was informed that any material, my words, any material was getting into the environment, even though we could not determine that to be the case.

MR. FEATHERSTONE: I think the question was more specific. It related to materials getting into the food



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chain. That was the hypothetical you were asked yesterday.

Q. Would that have been the reason why? Because you would have had knowledge that your materials were getting into the food chain?

MR. FEATHERSTONE: Do you understand the question?

A. No.

MR. FEATHERSTONE: The question is, would the chronic tests have been done according to the state of the art in the 1950's if you had knowledge that the material was getting in the human food chain?

A. Yes.

Q. And why would those tests have been appropriate at that point?

A. I think it was an obligation for any company or industry that was concerned with public health and the welfare of the nation.

Q. Would the same types of tests have been done if Monsanto had the information that the products were, not specifically in the food chain, but in the environment outside of the plant?

MR. FEATHERSTONE: I object to the form of the question. I think now-- You can no longer rely, Ms. Oliver, on your definition of outside of the plant meaning in the environment. I mean, it depends on, as he said yesterday, whether the product is a solid versus a liquid. I mean--



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MS. OLIVER: We're talking-- My understanding, Mr. Featherstone, is we're talking about the pydraul fluids and we're talking about the same types of tests that Bio-Test ran later.

MR. FEATHERSTONE: Okay. Now that creates another problem. You and I just had a discussion about the fact that the state of the art changed between the 1950s and 1968. Now you say the same type IBT tests and you're assuming the state of the art was such and I don't know whether that's true or not.

MS. OLIVER: The witness testified that, to the extent available, in the '50s the same types of tests would have been run.

MR. FEATHERSTONE: No. He testified the chronic tests, according to the state of the art of the '50s, would have been done but that doesn't say anything about the same type of tests. IBT ran a particular series of tests, as you well know.

MS. OLIVER: Well, let's ask the witness and let's not get into you testify and me testify. We're getting no place fast.

Q Are the same types of tests-- Were the same types of tests, chronic tests run by IBT in the '68 period, available, to your knowledge, to be run in the '50s and the '60s?



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MR. FEATHERSTONE: She means the precise tests run by IBT in the late '60s.

MS. OLIVER: Well, precise, Mr. Featherstone, means on the exact same animals and on the same thing. Now, let's not misstate my question. I'm asking about the same types of tests.

A. The same types of tests but with different protocols.

Q. Okay. There were protocols available for running these types of tests in the '50s and the '60s?

A. Yes.

Q. And, in fact, Monsanto ran these types of tests on other products in the '50s and the '60s?

A. Yes.

MS. OLIVER: Off the record a minute.

OFF THE RECORD DISCUSSION.

Q. If you had information in the 1950s that these products had been found in the environment outside of the plant, would you have recommended the same types of chronic testing that was done by Bio-Test in the '68 period?

MR. FEATHERSTONE: Wait a minute.

MS. OLIVER: Did you hear the question?

MR. FEATHERSTONE: Yes. My second objection to it, as you will recall, Ms. Oliver, went to what you mean by in the environment. You have earlier stated that it



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meant a product used outside the plant, a product discharged, a product--I can't remember--disposed of outside the plant.

MS. OLIVER: Those were your definitions, Mr. Featherstone. Mine was just outside the plant.

MR. FEATHERSTONE: Well, it really doesn't have any meaning.

Q. Mr. Wheeler, can you answer the question?

A. Not the way it's phrased.

Q. How would you like me-- What would you like me to define in the question to help you answer?

A. I'd like a definition of your use of the term environment outside of the plant.

Q. Okay. In waterways outside of the plant.

MR. FEATHERSTONE: What in waterways outside of the plant?

MS. OLIVER: That the fluids were finding their way or were found in waterways outside the plant.

MR. FEATHERSTONE: Pydraul fluids?

MS. OLIVER: Right.

A. I've forgotten the period we're talking about now.

MR. FEATHERSTONE: The '50s.

A. The 1950s?

Q. That's right. If you had that information in the 1950s, would that have led you to recommend the same



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types of chronic testing that was done later by Bio-Test?

MR. FEATHERSTONE: And again this relates to the fact that it's not found in the food chain?

MS. OLIVER: That's right. In the waterways.

A. Not without confirmation of the fact that it was there and what the quantities were.

Q. You would need to know the quantities?

A. Yes.

Q. But, in your opinion, if it were verified that the pydraul fluids were found in waterways and above a certain level, in your opinion, the chronic testing should have been done or would have been done in the '50s?

A. Only if there was additional evidence that it was present in other organisms in the waterway.

Q. Any other considerations besides those you just mentioned that you would have felt important to make the evaluation for further testing?

MR. FEATHERSTONE: And I take that, in addition to any others that Dr. Kelly might have, who was responsible for this?

MS. OLIVER: Right.

A. Again, I think, that would depend on verification of the levels of the concentrations.

MR. FEATHERSTONE: She's asking whether there's anything else--



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Q. Anything else besides--

MR. FEATHERSTONE: Besides what you've already testified to and what Dr. Kelly might have thought about.

A. I can't speak for Dr. Kelly but I would think an important factor would be whether there was any evidence of any effect of the material.

Q. What type of evidence of effect would be significant to you?

A. Are we talking about the 1950s?

Q. Uh huh.

A. Only if it was an effect-- Only if it was an effect that could conceivably get involved in my area of occupational health or industrial hygiene and I can't conceive of that type of circumstance.

MS. OLIVER: I'm sorry. Can you read that back? I missed it.

REPORTER READS BACK.

Q. Could you explain to me what that means?

MR. FEATHERSTONE: What don't you understand, Ms. Oliver?

MS. OLIVER: I don't understand the answer, Mr. Featherstone.

MR. FEATHERSTONE: The problem has always been one of foundation. You and Mr. Hynes have both established independently that Dr. Kelly was the one who was responsible



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for chronic testing and selection of materials for chronic testing in the 1950s and yet you persist in asking Mr. Wheeler what he would have done had he been doing that job back in the 1950s. And what Mr. Wheeler just hit you with was, listen, my job was an industrial hygienist.

MS. OLIVER: I understand that. I'm asking for an explanation from the witness.

Q. Let me ask this, Mr. Wheeler. Is it your testimony that you would be concerned with the materials in the environment, in the waterways only to the extent that it may have affected the worker in the plant?

MR. FEATHERSTONE: In the 1950s?

MS. OLIVER: In the 1950s.

MR. FEATHERSTONE: Mr. Wheeler personally? You and Mr. Hynes-- We've got a problem with you being Monsanto Company, the medical department or Mr. Wheeler.

MS. OLIVER: I'm asking Mr. Wheeler.

A. I personally?

Q. Uh huh.

A. My answer is that my primary responsibility was in the field of industrial hygiene.

Q. Your primary responsibility was but I think you testified that you consulted on water pollution matters.

A. With our own plants, yes.

Q. Okay. My question then is: Your concern with



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any knowledge that the pydraul fluids were in the waterway would be to the extent that the fluid may have affected the worker in the plant?

MR. FEATHERSTONE: 1950s again?

MS. OLIVER: In the 1950s.

MR. FEATHERSTONE: I object to the form of the question.

A. My responsibility was for Monsanto plants. In the circumstance that you have described of a material getting into a waterway did not relate to customers or any other possible sources.

Q. To your knowledge, was Dr. Kelly concerned with the possibility or potentiality that the products would be found in waterways?

A. What products?

Q. The products such as pydraul.

MR. FEATHERSTONE: No, no, no. That's not good enough. What products. Pydraul or just-- A product such as pydraul is meaningless.

MS. OLIVER: Okay. Let's make it pydraul. I'm easy to get along with.

A. I can't speak for what Dr. Kelly's views were in the 1950s.

Q. It would have been his responsibility to evaluate pydraul if the information that it was in waters or



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waterways was available in the 1950s and the early '60s. Is that right?

MR. FEATHERSTONE: By available, known to Monsanto?

MS. OLIVER: Known to Monsanto. Known to Dr. Kelly and Mr. Wheeler.

Q. Mr. Wheeler?

A. I'm trying to think how I can distinguish between the medical department's responsibilities within the company--

MR. FEATHERSTONE: You don't have to get into that. Answer her question if you can. If you can't, tell her you can't.

A. I can't answer it as I understand it.

Q. Was it anybody's responsibility within Monsanto that you are aware of who would have the responsibility, if the information that pydraul was getting into the waterways, to evaluate the use of the product and the marketing of the product?

A. The information would have come to Dr. Kelly. Yes.

Q. And he would have evaluated whether it was safe or it should continue to be marketed or whatever--if more testing should be done. That was his responsibility. Right?

A. Only if there was confirmation of the fact that



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it was there and proceeding such as we did subsequently, but at that time with the state of the art, in trying to find out the significance of its being there.

Q. Mr. Wheeler, in the 1950s, what was your knowledge of the PCBs? What did you know PCBs to be?

MR. FEATHERSTONE: Wait a minute. You could get a treatise. I don't know. What particular are you thinking about? He's not going to sit here and start talking about PCBs. You can ask a specific question on it, Roseann.

Q. Can you tell me what you understood PCBs to be?

MR. FEATHERSTONE: Chemically?

MS. OLIVER: Chemically.

MR. FEATHERSTONE: All right. Limit your answer to chemically. She has limited the question.

A. To my knowledge, they were polychlorinated byphenyls.

Q. Did you know any of the physical properties of PCBs?

A. Yes.

Q. And what were they?

A. The fact that these were oily liquids, varying degrees of viscosity, low volatility, chemically stable.

Q. And what does chemically stable mean?

A. They were chemically stable in that it was



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difficult, if not impossible, to react them with other chemicals without destroying them.

Q. Do you have any other knowledge of any other properties of PCBs?

A. Other properties?

Q. Yes.

A. Yes.

Q. And what were they?

A. When I worked for the State of New Hampshire in 1938 or 1939, there was a series of--

MR. FEATHERSTONE: We're talking about physical properties?

MS. OLIVER: Uh huh.

A. She said other properties. I assumed, to be honest, I had to mention toxicity characteristics.

MR. FEATHERSTONE: Are we off physical properties now, Ms. Oliver?

MS. OLIVER: Yes. I want to ask about toxicity characteristics now.

MR. FEATHERSTONE: His knowledge of those in the 1950s?

MS. OLIVER: Yes.

MR. FEATHERSTONE: Go ahead.

A. I first heard about polychlorinated biphenyls in 1938 or 1939 as a result of some toxicity work that was



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done at Harvard University.

MR. FEATHERSTONE: Well, Mr. Wheeler, to answer to her question, you only need to talk about what you knew about the toxicity of the compound. She hasn't asked you for a historical perspective as to your source of that information.

A. Toxicity data had been developed and published in the literature in relation to the possible effects on man when PCBs, in conjunction with other chlorinated hydrocarbons, where there had been occupational-- I'm going to stop doing that. Where industrial hygiene exposures had occurred.

Q. And what were the results of those tests or data?

A. The data indicated that, at some level of exposure, the polychlorinated biphenyls, in conjunction with polychlorinated naphthalenes and, I believe, chlorinated benzenes, could have an effect in animals on the liver. This was by the inhalation route.

Q. You got that information as a result of reading a study?

A. Yes.

Q. Down at Harvard. Was that Dr. Drinker's study?

A. Yes. Dr. Cecil Drinker.

Q. Do you recall what Dr. Drinker's conclusions



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on the effect on the liver was?

MR. FEATHERSTONE: From what?

MS. OLIVER: From his experiments.

MR. FEATHERSTONE: On what product?

MS. OLIVER: Talking about PCBs in conjunction with other chlorinated hydrocarbons, I believe.

A. I'm not a bio-chemist or a toxicologist or a pharmacologist to even recall the specific types of injury to the liver of the animals involved.

Q. Okay. Did Dr. Drinker's conclusions relating to PCBs have any significance to you in your work at Monsanto?

MR. FEATHERSTONE: No foundation that Dr. Drinker made any specific conclusions with respect to PCBs, Ms. Oliver. The testimony in even your prior questions concern PCBs in conjunction with other chlorinated compounds.

Q. Did those results have any significance to you, Mr. Wheeler?

A. Yes.

Q. And what significance did it have?

A. As a result of the Dr. Drinker studies, a government committee in the U. S. Public Health Service, including industrial hygienists from state agencies, established a level that would be safe for occupational exposures eight hours a day, five days a week.



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Q A level of what?

A A level of the material in the breathing environment.

Q Of the PCBs in the breathing environment?

A My recollection is that the early definition, the early nomenclature as it appeared in these lists of allowable concentrations of threshold limit values was identified only as chlorinated diphenyls, without any relationship to the different types of chlorinated diphenyls. And I said diphenyls because at that time they were referred to in that fashion and subsequently, for I don't know what reason, became referred to as biphenyls. It's a matter of semantics.

Q So a safe level was established for inhalation by workers of these substances known as chlorinated diphenyls. Is that correct?

A Based on the data in the Drinker studies, a government committee established a number that said, if workers are exposed to no more than this level in their breathing environment in a work week, there should be no effects.

Q Was that level communicated by Monsanto in its pydraul labels and warnings, to your knowledge?

A My recollection is that, by the time the pydraul fluids were developed, we had sponsored the Kettering



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Laboratories long term inhalation studies with two specific aroclors, 1242 and 1254, I believe, to clear up among industrial hygienists some questions raised in the Drinker work. This led the government committee to establish then threshold limit values for those two specific polychlorinated biphenyls. This was related to pydraul. It was related to the other uses of the aroclors.

MS. OLIVER: Can we take a couple minutes break now?

RECESSED 11:00 a. m., March 11, 1981.

RECONVENED 11:15 a. m., March 11, 1981.

Q Mr. Wheeler, before we took a break, we were talking about the toxicology properties of--

MR. FEATHERSTONE: Toxicological properties.

MS. OLIVER: Toxicological. Same thing.

MR. FEATHERSTONE: No. Toxicology is a noun.

MS. OLIVER: I'm going to start correcting your writing.

Q The toxicological aspects or properties of PCBs. Are you aware of any others besides the matters that Dr. Drinker raised in 1939? Or were you aware in the 1950s of any additional--

A I think I told you that we sponsored studies at Kettering Laboratories to develop more data because, I think, I also indicated, the Dr. Drinker work was concerned



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with a mixture of PCBs with other materials, whereas the work we had done concerned only aroclor 1242 and aroclor 1248 per se.

Q. Do you know if Monsanto sponsored any work after Dr. Drinker's study before the Kettering Laboratories studies?

A. Not to my knowledge.

Q. Are you aware of any other toxicological properties--

MR. FEATHERSTONE: Are you? You mean today?

Q. In the 1950s and early 1960s, were you aware of any other toxicological properties of PCBs besides Dr. Drinker's and your Kettering Lab's inhalation studies?

A. The skin irritation potential on repeated and prolonged contact.

Q. And what-- Strike that. How did you become familiar with the skin irritation aspect?

A. Well, in the-- When I joined Monsanto, and now referring to the '55 period that you mentioned, the aroclors had been in commerce from 1929 to 1955, whatever that number of years would be, without causing effects as a result of their industrial use, with the exception that occasionally there would be, as a result of repeated and prolonged exposure, there would be skin effects that would be reported to the medical department.

Q. This is from the users of the aroclors, the



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customers of Monsanto?

A. Yes, Ma'am.

Q. What types of reports would be received by the medical department?

A. Reports is not perhaps the right word. There would be notification to us that they had experienced among their workers cases of skin irritation, what precautions should they take to avoid any further such instances?

Q. And what was done in the medical department with respect to these communications?

A. The medical department responded, reiterating and reaffirming the precautions that we had been recommending, that good hygienic practices be followed in working with these materials, particularly as it related to possible skin contact prolonged and repeated.

Q. Had any chronic studies been done on skin absorption or contact over prolonged periods of time for the aroclors or the pydraul fluids?

A. No, because there was no intended use that people would have that exposure.

Q. I see. And when you got reports of that exposure, you just told them not to use like that or not to see that that happened?

MR. FEATHERSTONE: Well, now you've shifted to that exposure. Do you mean chronic exposure or just meaning



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dermatitis, which is what Mr. Wheeler referred to earlier?

MS. OLIVER: Let me go back and see if I can make it clearer.

Q. The communications you got from Monsanto customers of the aroclors, were those communications describing incidents over long term exposures?

A. You'd have to define long term. We've used it in connection with long term chronic animal studies.

Q. Well, chronic exposure to the worker.

A. I believe the skin irritation would develop without what I would think what our profession would define as a chronic exposure. It may have been daily exposure for a week, two weeks, a month, some short period as that.

Q. Had any tests been undertaken by Monsanto or sponsored by Monsanto to determine the effects of exposure to a worker over a period of time for a week or two weeks?

A. From the skin exposure?

Q. From the skin exposure.

A. No. This was not a part of the state of the art again.

Q. Okay. So it wasn't part of the toxic-- Strike that. The acute screening tests that were done?

A. Only in terms of the acute skin irritation potential in rats that we've mentioned earlier.

Q. You were studying at Harvard when Dr. Drinker's



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study or experiments were underway. Is that right? In the 1938-'39 period?

A. I'm not sure when he did that work. I was not aware of it when I was there as a student.

Q. Were you aware of any other literature concerning PCBs, besides Dr. Drinker's experiments, before the 1950s?

A. No.

MR. FEATHERSTONE: Well, Ms. Oliver, did your question exclude what he learned at Monsanto when he joined Monsanto?

MS. OLIVER: Yeah. I'm not talking about what Monsanto sponsored. I'm talking about other scientific literature.

MR. FEATHERSTONE: I would hate to think that you would exclude Monsanto from scientific literature.

MS. OLIVER: Well, I certainly don't mean to do that.

Q. Did you read Dr. Drinker's report or analysis at the conclusion of his experiments?

A. I don't believe I read them until after I had joined Monsanto.

Q. Was that in the 1950s?

A. I joined Monsanto in 1947. I don't know when I-- In becoming acquainted with Monsanto products, I don't



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know if that was necessarily-- I'm sure it was not a high priority subject because, as I indicated, at that time, there was this whole period of industrial uses with only occasional instances of skin irritation. And that was true up until 1969-1970.

Q. Do you recall learning that Dr. Drinker had found that the chlorinated compounds he was studying were lodged in tissues?

A. I don't recall that.

Q. Were you aware in the 1950s and the early '60s that PCBs were insoluble in water?

A. I believed them to be.

Q. What did that mean to you?

A. That if the material got into water, it would be there as would any heavy oil or maybe even wax candle, if you will, in the case of higher chlorinated ones, which, I believe, within some temperature range, were essentially solids.

Q. Well, are you saying that you believed that, because they were insoluble in water, if they got in the water, they would remain there?

A. Yes.

Q. Were the properties of the PCBs being insoluble in water and the chemical stability that you indicated earlier factors that you considered significant at all in



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determining or evaluating the pydraul product for toxicology data or toxicological data?

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

Q. That's too bad.

A. Well--

MR. FEATHERSTONE: No, no, Mr. Wheeler.

Q. Were the insolubility of the PCBs in water and the stability, the chemical stability, of the PCBs, factors that were considerations in any toxicological evaluations of the pydraul fluids?

A. I'm sure they must have been.

Q. By Dr. Kelly?

A. Yes.

Q. You didn't evaluate those properties in terms of toxicological effects for pydraul yourself?

MR. FEATHERSTONE: You mean-- You can answer that. By the way, are we in the 1950s?

MS. OLIVER: Uh huh.

A. Could you repeat the question, please?

Q. Well, let me rephrase it. You said, I think, that Dr. Kelly would have considered those aspects of the PCBs in evaluating pydraul. It was not your responsibility to do that or you didn't do that?

A. It was not my responsibility.

Q. And you didn't do that? Just so we go one



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step farther and make it clear.

A. I may have participated in discussions. Yes.

Q. Do you recall any discussions with Dr. Kelly about the insolubility of PCBs or their chemical stability?

MR. FEATHERSTONE: In the 195Qs?

MS. OLIVER: In the 1950s.

A. No.

Q. How about in the 1960s up to 1968 or '69?

MR. FEATHERSTONE: The same question with respect to discussions with Dr. Kelly?

MS. OLIVER: Discussions with Dr. Kelly.

A. I don't recall any.

Q. I think you talked a little bit yesterday about the reformulations of some of the pydraul fluids and the phasing out of the fluids in the 1969, '70, '71, '72 period. Do you recall that?

A. I believe it's in the record. Yes.

Q. Do you recall whether any of the PCB bearing fluids sold by Monsanto were taken off the market without reformulation or phasing out? Just withdrawn?

A. I can't answer that.

Q. You don't recall any?

A. I don't know.

Q. Do you recall any discussions with Dr. Kelly or anyone else at Monsanto about whether the PCB fluids



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should be withdrawn from the market or should be phased out?

A. Yes.

Q. Did you discuss those matters with Dr. Kelly?

A. I indicated yesterday that I discussed it, not only with Dr. Kelly, but with others in the company when we were making our presentation to the management committee.

Q. Before making the presentation to the corporate management committee, did you and Dr. Kelly in the medical department discuss the matter of whether the fluids should be withdrawn or phased out?

A. I don't recall.

Q. Did you make any recommendations to Dr. Kelly or anyone in Monsanto concerning whether the PCB fluids should be withdrawn from the market?

A. I don't recall a specific recommendation.

Q. Well, what type of recommendation did you make?

A. I may have agreed with the program, with the part of the program that was presented by others, at the CMC meeting that this was a logical way to proceed.

Q. Do you recall what part of the program that you agreed was a logical way to proceed?

A. I don't recall the details of the presentation. It's my recollection that there was a program offered, which included reformulating and perhaps in some cases withdrawing



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PCBs from the market.

Q. Do you recall Dr. Kelly or anyone at Monsanto indicating to you or indicating in a group in which you were present his belief or recommendation that the PCB fluids should be withdrawn from the market?

A. Do I recollect if Dr. Kelly participated in a discussion where he recommended withdrawal?

Q. Dr. Kelly. Yes.

A. I don't recall.

Q. Do you recall any other person at Monsanto recommending that the fluid should be withdrawn from the market?

MR. FEATHERSTONE: He's already testified-- Oh. Withdrawal from the market?

MS. OLIVER: Withdrawal from the market.

A. I think again only in this group effort for the presentation.

Q. Did someone in the group recommend that the fluids should be withdrawn?

A. I believe the program presented by the marketing group included recommendations to that effect.

Q. Do you recall anyone at Monsanto who expressed any disagreement with the phasing out of pydrauls?

A. No.

Q. Was the medical department asked to test the



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reformulations for the pydraul fluids?

A. I'm sure they were in conjunction with the policies we discussed yesterday.

Q. The general practice?

A. Beg pardon?

Q. The general practice?

A. The routine screening. Yes.

Q. Do you have a recollection specifically of any of the pydraul reformulations?

A. No. At that time we had at least two very well qualified toxicologists who were involved and, although they reported to me and was aware of what was going on, I did not have intimate knowledge of it.

Q. And who were the toxicologists?

A. Dr. George ~~Levinsceus~~ Lewiskas was the chief toxicologist.

Q. ~~Levinsceus?~~ Lewiskas

A. ~~Levinsceus~~ Lewiskas. And I've forgotten when Dr. Paul Wright joined him. I believe it was mid-'60s.

Q. And they would have been the persons to see that the testing of the pydraul reformulations was done?

A. Again, with Dr. Kelly, yes.

Q. And you don't have any specific recollection of what testing was done on these reformulations?

A. No.

Q. Were you advised that the reformulations for



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the PCB pydraul fluids were intended to be compatible with the old fluids and could just be added to a hydraulic machine or to the old juice?

A. I don't remember that I was informed of that.

Q. Do you recall any discussions among anyone at Monsanto about cleaning out or draining hydraulic machines that had used PCB fluids?

A. Because I had very close contacts with Mr. Pappageorge, who assumed the responsibility for overseeing all aspects of the PCB situation in, I believe, January of 1970, in the course of many discussions, he may have mentioned it to me.

Q. Do you recall what he discussed with you generally on that topic?

A. No.

Q. There was discussion, as far as you can recall, about whether--

MR. FEATHERSTONE: He said may have.

MS. OLIVER: Well, I'm asking.

Q. Do you recall any discussions with Mr. Pappageorge or anyone else concerning whether--

A. I recall--

MR. FEATHERSTONE: Wait a minute.

Q. Let me ask the question. --whether PCB bearing fluid which had been used previously should be drained or



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removed from the machines in which it was before the replacement was used?

A. I don't recall.

Q. You don't recall. Do you recall any conversations or discussions with Dr. Richard in which Dr. Richard recommended that hydraulic machines containing PCB bearing fluids be steam cleaned or drained?

A. No.

Q. In this period of 1968 to '72 or so, how often would you be involved in meetings concerning the PCB concerns at Monsanto?

A. You said from 1968 to 1972?

Q. Approximately.

A. I don't know the number but fewer after Mr. Pappageorge received his assignment in January of 1970 than I had been in the earlier period.

Q. And was there a person before Mr. Pappageorge who had the overall responsibility for the PCB concerns?

A. It was a joint effort.

Q. Among whom?

A. Ourselves and the analytical group.

Q. Were you given certain responsibilities in 1968 concerning PCB problem or concern that arose in Monsanto?

A. Yes.

Q. And what were your responsibilities?



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A. My recollection is that Dr. Richard suggested that there be a meeting, not only from research, but from development and marketing and including the medical department, to discuss the Jensen work and the flood of requests that we were getting for samples from people all over the world essentially and to ensure that each of us within our respective areas of interest, as well as responsibility, communicated with the others in the group. My responsibility, of course, was as a designate of Dr. Kelly's, who again was kept fully informed.

Q. Other than working with Bio-Test and the government agencies, I think you mentioned earlier, to come up with testing for the PCB fluids and sending samples out to interested people who asked for them, were there other specific responsibilities or duties that you or the medical department had with respect to the PCB concerns in the period of '68 to '70?

A. Well, as an example, as part of my responsibilities, I visited Professor Widmark in Sweden, as well as people in Great Britain, people whom our representatives in Europe had identified as having an interest in the original Jensen work. I made that trip with Dr. Richard and Dr. Bob Keller to indicate our interest and concern as to what data had been presented, even though it may not have been substantiated, and, again, to help Dr. Kelly arrive at a



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recommendation as to how we should proceed, even though at that time, in April or May of 1969, Dr. Kelly had developed the protocols for the long term studies after the consulation that I've referred to so many times. Part of my trip then was to inform people in the toxicological field, those that we did see, what our programs were and, again, to ask for any input that they had and assurance that, as data developed, it would be made available to them.

Q. As data developed from within Monsanto, it would be made available to other sources or other people?

A. Yes.

MR. FEATHERSTONE: This was in reference to the chronic tests?

A. Yes.

Q. What did Professor Widmark have to say when you visited him in 1969 about the testing or the results that had been found in Sweden?

A. He repeated comments that he had made to our European representatives who had visited him, I believe, in early '68. He was disturbed in a way that his-- I believe Jensen was a student of his. He was disturbed at the way Jensen had revealed what he thought was a breakthrough in analytical techniques, that is, to the press and through a piece of advertising material. More importantly, he thought that the release was premature, that not enough data



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had been generated to confirm Jensen's initial conclusions and welcomed the fact that we were willing to cooperate with him and any others who were involved to the maximum of our ability and to keep them informed of any progress.

Q. Did he give you any reason to believe that the findings by--

MR. FEATHERSTONE: Jensen?

MS. OLIVER: Yeah. I drew a blank.

Q. --Mr. Jensen were not accurate?

A. Yes. As a respected scientist, he felt that the release of the data was premature. I've forgotten how many samples had been done but, if I may say a hundred, he thought there should have been thousands of samples.

Q. Did you learn in the 1968 to '72 period that PCBs had been found in the effluent of Monsanto's plant in Pensacola, Florida?

A. I have a vague recollection of it.

Q. Do you know if any action was taken by the medical department or the research or analytical section with respect to that finding?

A. My recollection is that it was not in the normal effluent from the plant. That plant had a very highly sophisticated waste treatment system to take its wastes. And what happened actually was a leak. Some piece of equipment that had PCBS in it that got into a drainage



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ditch, which was intended to take water run-off from rain off the property. This is the best of my recollection.

Q Did you have any knowledge before this information was given to you in the '68 to '70 period that any of Monsanto's plants were discharging or disposing of PCBs from their effluent?

A No.

Q One of your responsibilities in this period of 1968 or '69 to '72 was to circulate any material on PCBs that you might run across in journals or whatever. Who received the information? Who did you circulate this information to?

A To the research group, to the marketing group, I believe the development group, not only in the U. S. but, the material that appeared to be of significance to our people in Europe. We developed a routine mailing list. I think part of that responsibility for distribution became Mr. Pappageorge's rather than mine after he came aboard.

Q Who in the development group, to your knowledge, were involved in the PCB concerns of Monsanto?

A I don't remember the names. I'm sorry.

Q In the research group, Dr. Richard and Dr. Keller were involved?

A Yes.

Q And Mr. Pappageorge later on in 1970?



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A. Yes.

Q. Were there any other persons that you can recall that were involved on a regular basis with the PCB concerns at Monsanto?

A. My recollection is Howard Burgen was the key man in the marketing area and maybe a designate of his did participate in any meetings. I think, from my standpoint, he was routinely on the list to get any material that I circulated.

Q. Anybody else that you can think of?

A. No.

Q. You mentioned yesterday, I think, the labeling group, who would be in charge of seeing that the labels went on the product-- Did the people in the labeling group have any input as to what type of information went in, to your knowledge?

A. To my knowledge, it had been standard practice before I joined Monsanto and certainly some time after I became involved myself. But the labeling group, which was in another staff department, had to circulate drafts of labels to the medical department, even though there was no indication that there was a pre-requisite for a precautionary statement. It was just a matter of course that the medical department built up in its files copies of all Monsanto labels.



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Q. And the medical department would be the department with the responsibility to put cautionary language on the label?

MR. FEATHERSTONE: Cautionary language for what now? For medical purposes?

MS. OLIVER: For product use.

A. Only insofar as the industrial health problem might be concerned. I'm differentiating that because we had no responsibility for ensuring that, if the material was flammable, that that precaution was mentioned.

Q. I see. Was it corporate management committee that was set up or that met, which you made your presentation or the presentation was made?

MR. FEATHERSTONE: You can't--

MS. OLIVER: Let me start over again.

Q. The corporate management committee that you testified about earlier, was that set up for dealing with the PCB concerns, to your knowledge?

A. Heavens, no.

Q. That was a corporate management committee that met--

A. That met daily, I would expect, certainly weekly, to deal with any problems related to Monsanto's business.

Q. I think you said that, at that presentation, there was expressed the view that there was considerable



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doubt that the materials which Mr. Jensen found in the environment were PCBs and there was some question about the significance of that finding, if they were. Do you recall that?

A. I think what I said was the validity of his results had been questioned, not only by scientists in Great Britain and at that time by scientists in this country, but certainly by Mr. Jensen's superior, in connection with the validity and reproduceability of the method for analysis. And more importantly, no one to our knowledge had offered any evidence that there was an effect of the PCBs in the environment in conjunction with the chlorinated pesticides that were in the environment. And I have to make that distinction because in no case, to my recollection, was there evidence presented that involved PCBs by themselves.

MR. FEATHERSTONE: I'm sorry, Roseann. This was a CMC meeting?

MS. OLIVER: That's right.

Q. After that meeting and any time before you left Monsanto, in your opinion, was there evidence of the effect of PCBs in the environment?

A. I can't recall that there was, again in the absence of the other chlorinated compounds.

Q. When you're speaking of the effect of PCBs in the environment, are you talking about a harmful effect or just an effect?



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A. Any effect.

Q. Any effect. While you were at Monsanto, did you have any evidence or any reason to believe that there was a harmful effect of PCBs found in the environment?

MR. FEATHERSTONE: Any level of PCBs?

MS. OLIVER: Any levels.

A. I don't recall specific instances, although the literature that passed over my desk may well have included reports of effects. But I think I said earlier, to my recollection, I saw none that were definitively attributable to the PCBs.

Q. The Bio-Test tests that were done had what results?

A. There were many, many studies involved and I can't answer that question unless you're more specific.

Q. Were there any studies done that you're aware of that found a harmful effect of PCBs on the test animals?

A. Yes, because the purpose of the experiment is to use levels that would demonstrate a harmful effect.

Q. Do you recall what the harmful effects that were found involved?

A. My recollection is that it varied with the compounds under study and varied with the species of animals and, I believe, even with the sex of the animals.

Q. Do you recall that the studies found effects



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on the livers of the animals?

A. I believe that was so. Yes.

Q. Did the Bio-Test people make recommendations on the toxicity of PCB fluids that they tested?

MR. FEATHERSTONE: They didn't test PCB fluids, Ms. Oliver. You have the tests. Well, there's no proper question. They didn't test PCB fluids, Ms. Oliver. You know that.

Q. From the results of the tests that were conducted by Bio-Test, did Bio-Test make any recommendations of the toxicity of the pydraul fluid?

MR. FEATHERSTONE: Of the pydraul fluid?

MS. OLIVER: That's right.

A. I don't know that Bio-Test even knew anything about pydraul fluids.

Q. They tested the aroclors?

A. They tested the aroclor. Right.

Q. Did they make any conclusions or recommendations on the toxicity of the aroclors?

A. They made conclusions, based on an interpretation of the data. It was not their function to make any recommendations.

Q. Do you have a recollection of what generally their conclusions were with respect to the aroclors they tested?



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A. Their conclusions?

Q. Their conclusions.

A. It is my recollection is that they--

MR. FEATHERSTONE: The answer to that question is yes or no.

A. Yes.

Q. What is your recollection of their conclusions?

MR. FEATHERSTONE: Which tests?

MS. OLIVER: Generally a recollection of the--

MR. FEATHERSTONE: You know, from reading the reports, Ms. Oliver, that there was no general conclusion. The conclusions were formed in conjunction with specific tests on specific animals and specific dosages. Do you have a specific one in mind?

MS. OLIVER: No. The overall testing program by Bio-Test.

MR. FEATHERSTONE: There was no overall.

Q. Can you tell me of what their conclusions were overall after the testing they had done on the aroclors?

MR. FEATHERSTONE: First you have to establish, Ms. Oliver, that there was an overall conclusion made by Industrial Bio-Test.

MS. OLIVER: I'm not establishing that there was an overall conclusion. I'm asking the witness if he can tell me what his recollection is as to the conclusions by



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Bio-Test.

MR. FEATHERSTONE: Any conclusions for any dose level?

Q. Mr. Wheeler, can you--

A. I think I can answer your question, as I understand it, in this fashion. Industrial Bio-Test reached conclusions based on the results of each of the studies that they did and in relation to each of the materials that they investigated.

Q. Do you recall any of the conclusions that they reached on the tests that were done?

A. I have a general idea.

MR. FEATHERSTONE: She's not asking for your idea. She's asking for your recollection.

A. A general recollection.

Q. What is your general recollection?

MR. FEATHERSTONE: To the extent you, Sir, remember a specific conclusion reached by IBT, please place it in the context of a particular test.

A. My recollection is that, in the long term chronic studies with aroclor 1242, to pick an example, the levels of toxicity--the levels that exhibited toxic effects and, particularly the no effect level, was such that there appeared to be no hazard to humans at levels in which the PCBs were being identified in conjunction with other



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chlorinated materials in the food chain.

Q. Were the tests that were run by Bio-Test evaluated by Dr. Kelly?

A. Yes.

Q. Do you know what recommendations Dr. Kelly made, if any, after reviewing the Industrial Bio-Test results?

A. I'm not aware of what his recommendations were. No.

Q. Did you review the test results?

A. Yes.

Q. Did you make any recommendations after reviewing the results?

A. I don't recall specific recommendations.

Q. Did you make any general recommendations?

A. I believe I made a general recommendation or indicated agreement that the final reports be distributed to anybody that we could identify who would have an interest in them, not only in the government, but other scientists who had expressed an interest.

MR. FEATHERSTONE: Let's go off the record a second.

RECESSED 12:05 p. m., March 11, 1981.

RECONVENED 12:35 p. m., March 11, 1981.

Q. Mr. Wheeler, I think you mentioned yesterday that you had a meeting with Dr. Kimbrough, that Dr. Kimbrough



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came out to Monsanto about 1972.

MR. FEATHERSTONE: Did you say about 1972?

MS. OLIVER: In 1972.

Q. Did you have any more communications with Dr. Kimbrough after that time?

A. I did not.

Q. Did Dr. Kelly, to your knowledge?

A. I don't know.

Q. Had you communicated with her before the meeting in 1972?

A. I met and talked with her at a conference called by the National Institutes of Environmental Health Sciences. I think I can pinpoint this one as being between Christmas and New Year's of 1971 and that's where I first met her.

Q. And what was your discussion or communication at that point?

A. I was in attendance with Bill Pappageorge and Dr. Keplinger from Industrial Bio-Test, who was a participant in the program and presented the summary of the Monsanto studies which had been finished at that time. I also took the occasion to present to people from the FDA--

MR. FEATHERSTONE: No, no, no. The question concerned what you and, I think, Dr. Kimbrough talked about. Is that right?



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MS. OLIVER: Dr. Kimbrough? Yes.

MR. FEATHERSTONE: I'm not sure. It may be Mrs. Kimbrough.

A. I think she's a PhD. I'm not sure. She informed Dr. Keplinger in my presence that she had been doing some work with one of the PCBs and she thought she had found an indication that there might be carcinogenic evidence in one or more of her animals.

Q. Who is Dr. Keplinger?

A. Dr. Keplinger is one of the scientists from Industrial Bio-Test Laboratories.

Q. He worked on the tests that were conducted in the chronic testing program?

A. Yes.

Q. In this discussion with Dr. Kimbrough in 1971, were there any discussions about doing any work with Dr. Kimbrough by Industrial Bio-Test?

A. As a result of her comments, the pathologists from Chicago, Industrial Bio-Test, came down to the meeting and, with her and Dr. Keplinger--I did not participate in this--reviewed the slides that she had brought with her. And it's my recollection that, by the same token, the pathologists from Industrial Bio-Test brought representative slides from the work they had done. Subsequently, outside pathologists, and I think I referred to this yesterday,



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including the National Cancer Institute pathologist, reviewed, I believe, hundreds of slides from the IBT work.

Q. Did Bio-Test report to you or to Dr. Kelly on what Dr. Kimbrough's slides revealed?

A. I believe I was told that they did not confirm her identification and, further, the review of the slides that went on almost all night had pretty much convinced her that the cells that she had suspicions about were not, in fact, cancer cells.

Q. The examination of these tissues or cells that Bio-Test took, were those the analyses that were done by Dr. Richard or was that something different?

A. Monsanto does not--did not, and as far as I know today does not, have a pathologist. A pathologist is a specialist at medical training, trained to look at tissues, whether they be from humans or a veterinarian pathologist, in particular, looking at animal tissues to identify any indication that the cells are not normal.

Q. What I'm asking now is-- You testified earlier that Dr. Richard's group at Monsanto did some chemical analyses of tissues, which samples had been sent to them by Bio-Test. Are the samples and the analyses done by Dr. Richard different from the analysis of the tissues that you're talking about with Dr. Kimbrough?

A. A tissue for examination as done by Dr. Kimbrough



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and as done by pathologists--

MR. FEATHERSTONE: She just wants to know whether what Dr. Richard did was different from what Dr.--

A. Completely different.

Q. Dr. Richard looked for the accumulation or presence of PCBs in tissues--

A. By chemical methods.

Q. By chemical methods. And the pathologists that Monsanto contracted with to look at the tissues looked for carcinogenicity or changes in the tissues?

A. They looked for changes, any changes, in the tissues.

Q. Did you arrange for the pathologists to look at the tissues?

A. No.

Q. Did Dr. Kelly arrange that?

A. Dr. Kelly, I think, in conjunction with Dr. Levinscus perhaps.

Q. Mr. Wheeler, when you became aware of the Jensen findings--

MR. FEATHERSTONE: Reported findings.

MS. OLIVER: Reported findings.

MR. FEATHERSTONE: Alleged findings.

MS. OLIVER: Reported findings.

MR. HYNES: They were findings. It's just alleged



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that they're wrong or right.

Q. In the period of 1968, 1969, '70, did you or Dr. Kelly or anyone in the medical department do a search of the literature on PCBs prior to that time?

A. We may have had our library do a search, yes, for literature which we would not normally see. I don't recall that we did but I expect we did.

Q. Up until 1970, were you aware of any studies done that were not sponsored by Monsanto, other than Dr. Drinker's study, on PCBs or aroclors?

MR. FEATHERSTONE: You're talking about possible effects?

MS. OLIVER: Yes.

MR. FEATHERSTONE: As distinguished from the analytical work?

MS. OLIVER: Sure.

A. I'm not aware that there were any chronic inhalation studies or any other chronic studies done.

Q. Were you aware of any studies done, other than Dr. Drinker's, concerning pathologic changes in animals exposed to commercial chlorinated diphenols.

MR. FEATHERSTONE: You mean diphenyls?

MS. OLIVER: Diphenyls. Whatever. Yeah.

A. I have a vague recollection that some scientist, and I don't recall who, and in some government agency that



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I don't recall, published the results of some limited studies following the Drinker work.

Q. To your recollection, were you aware of that study or that report prior to 1968?

A. Yes.

Q. Prior to 1968 do you have a recollection of a study reporting that PCBs were responsible for the death of workers in a plant?

A. Yes.

Q. Do you recall when you heard about that study?

A. In 1937, '38, '39, when I was with the New Hampshire State Health Department.

Q. And what did you know about that study?

A. I don't think study describes the information given me of an instance where in a particular industrial operation involving, not only PCBs, but polychlorinated naphthalenes and other chlorinated benzenes, I believe, due to excessive exposure to vapors, resulted, my recollection is, in a death.

MR. FEATHERSTONE: Is that vapors from the mixture you described, Sir?

A. Yes. This is what led to the Drinker studies.

Q. While you were working for the New Hampshire Health Department, were you involved in the area of work where you became familiar with PCBs in the working place?



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A. I never encountered any PCBs in any establishments in New Hampshire.

Q. But you became familiar with the literature and what they were and that type of thing?

A. Yes.

Q. At any time during the period up to 1970 when you were with Monsanto, did you recommend that the warning labels or the cautionary labels on any of the PCB fluids contain the identification that the product contained PCBs?

A. I participated in discussions. You said 1970. It may have been December, 1969.

Q. Okay. Before 1969?

A. No.

Q. Did you recommend that the labels include the words polychlorinated biphenols?

A. No.

MR. FEATHERSTONE: Biphenyls. Biphenol is a different chemical.

Q. Did you consider that the information that the product contained PCBs was not appropriate to go on a cautionary label?

MR. FEATHERSTONE: I object to the form of the question. What do you mean by appropriate?

MS. OLIVER: Well, let me ask it this way.

Q. Was there a reason why you didn't recommend



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PCBs added to the label of the product?

A. Are you referring specifically to pydrauls?

Q. Any of the PCB fluids?

A. I have to make a distinction because I'm not sure that the aroclor labels did not indicate that they were, in fact, polychlorinated biphenyls. They certainly were identified as such in the technical bulletins and sales literature.

Q. Okay. Well, then pydrauls were not identified as PCB products on the labels. Is that correct?

MR. FEATHERSTONE: Well, they didn't contain the word PCB. He's already testified to that.

Q. My question is though, is there a reason why you didn't recommend that the word PCB appear on the labels of pydraul fluids?

A. I think there were two reasons. One, these were trademark products and, secondly, with the data that we could provide people indicating why we warned repeated and prolonged skin contact and inhalation of vapors and the fact that they were not intended for day in and day out exposures was sufficient to eliminate any potential hazard.

MR. FEATHERSTONE: Sufficient from an industrial hygienic standpoint.

A. Industrial hygiene.

MS. OLIVER: Would you read back the entire answer.



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REPORTER READS BACK.

MR. FEATHERSTONE: I'm sorry. Was it why we warned against repeated exposure and inhalation? Or what was it?

REPORTER READS BACK.

MR. FEATHERSTONE: I think there's a word missing in there. Repeated exposure and inhalation--

A. Be avoided.

Q. The first reason you mentioned was because it was a trademark product. Why would that preclude or make unnecessary the inclusion of the word PCBs on the label?

MR. FEATHERSTONE: Well, your first question is why he didn't recommend.

MS. OLIVER: Well, in Mr. Wheeler's opinion.

MR. FEATHERSTONE: All right. Why did that play a role on what was not recommended?

MS. OLIVER: Right. Why was that one of the reasons?

MR. FEATHERSTONE: That's different. You said preclude. I don't think it does.

MS. OLIVER: No.

MR. FEATHERSTONE: All right. Can you answer that? What she wants to know, and correct me if I'm wrong, is how did the fact that there was a trademark product involved affect your decision not to recommend that PCBs



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be placed on the pydraul label? Is that fair?

MS. OLIVER: That's it.

A. It's my understanding that we were not to reveal at that time composition information about the trademark product.

Q. And that's the period from the 1950s to 1968?

A. From such time as the pydraul fluids were introduced until subsequently there was a change in the label.

Q. The second part of your answer, and correct me if I'm misstating it, was that, because you provided the customers with information on avoiding prolonged use and contact with skin, that it wasn't necessary, in your opinion, to identify that potential hazard of the PCBs?

MR. FEATHERSTONE: Wait a minute. That's not what he said. You asked why PCB wasn't on the label. He said it was unnecessary to use it because there were warnings about avoiding repeated and prolonged skin contact and continued inhalation.

Q. My question is: Why do those warnings, again in your opinion, make it unnecessary or made it unnecessary to place the words PCBs on the label?

MR. FEATHERSTONE: Okay. A different question. Answer that question.

A. I can't. I don't know. Would you read it back, please.



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REPORTER READS BACK.

A. If I understand the question, you've implied that we recommended or agreed that it should be on the label. Did I misunderstand your question? Is there a double negative there or--

Q. No. I don't think so.

MR. FEATHERSTONE: What she wants to know, Mr. Wheeler, is why, having the warnings about avoiding repeated skin contact and against repeated inhalation, why the presence of those warnings on the label affected your decision not to recommend that the acronym PCB or the word polychlorinated biphenyl be on the label?

A. Well, I think my earlier answer indicated that we were also able to provide the customers and users the acute toxicity data, which was the only type of exposure that we could envision.

Q. So the information that you provided to the customer on exposure, in your opinion, made it unnecessary to put the word PCBs on the label?

A. Right.

Q. I think you mentioned earlier that, to your knowledge, the complaints that came in on the use of the aroclors were of skin contact irritations. Is that right?

A. That's right.

Q. With respect to the pydraul fluids, do you



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recall receiving complaints from customers on the use of the pydraul fluids?

A. I believe so.

Q. And what categories or types of complaints were received by the medical department?

A. The same as had been experienced with the aroclors, that due to repeated and prolonged skin contact, there was a skin reaction.

Q. Were there complaints received on inhalation of vapors?

A. Not to my knowledge. I think I did testify yesterday that in the case of-- I believe there were one or two cases where there had been a line ruptured and where the workers were discomforted, not incapacitated, discomforted over a period of time that led the company or the user involved to ask if there were any other significant consequences he should be aware of. There's one other point I have not mentioned and just comes to mind.

MR. FEATHERSTONE: Is it responsive to the question, Sir?

A. It's responsive to the safe handling and resulted to inquiries to us about the toxicity. And that was that the ability or the fact of the accidental splashing of the material in the eyes was particularly painful.

Q. And when you received that information, what



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did the medical department do?

MR. FEATHERSTONE: The medical department generated that information.

MS. OLIVER: I thought it was in response. He received inquiries concerning that or-- Let me start over again.

Q Were these inquiries that you received information to the medical department that, if the material pydraul was splashed in the eyes, it was painful?

A My recollection is that the label included, and this is something we haven't mentioned before, to avoid eye contact; in case of eye contact, flush immediately with water; if irritation persists, see a physician. At some time, I believe Dr. Kelly recommended the kind of treatment that a physician would prescribe to help relieve the pain and to speed up the elimination of the irritation. I think the use of--

MR. FEATHERSTONE: You've answered the question, Mr. Wheeler.

Q What tests did Monsanto conduct or sponsor which led to this information about splashing it in your eye could be painful or these are steps that should be taken if that happens?

A This is the purpose of part of the acute toxicity screening study that I've described where the



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material was dropped in the eyes of rabbits to see what the degree of irritation was.

Q So it's one of the routine acute screenings?

A Yes.

Q I think you mentioned yesterday that the acute screen of tests was run on pydraul F-9 before it was placed on the market. Were the same types of tests run on A 200 before pydraul A 200 was placed on the market?

A I think my testimony indicates that the same type of acute studies would have been done on any of the subsequent pydrauls.

Q Do you have any recollection of what was done for A 200? Any specific recollection today?

A Only that it would have been the acute studies.

Q Once a product was marketed, am I correct in saying that, unless some new information was developed or came to the attention of the medical department, there would be no further toxicity tests on that product?

A That's right.

Q Mr. Wheeler, we've been provided with tests done by or sponsored by Monsanto on the aroclors and pydrauls, I believe, and one of the tests that we received is a November 9th, 1966, test by Younger Labs on the oral lethal dose of pydraul F-9 for rats.

MR. FEATHERSTONE: 1966?



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MS. OLIVER: I believe so.

MR. FEATHERSTONE: I don't believe that's right. Do you have it in front of you?

MS. OLIVER: Let me see. Off the record.

OFF THE RECORD DISCUSSION.

MS. OLIVER: We'll mark it.

DOCUMENT MARKED, "DEFENDANT'S EXHIBIT #1."

Q. Mr. Wheeler, I'd like you to look at what we've marked as exhibit number one. Look at it for a couple of minutes and, if you can identify it for us, I'd like you to do that.

A. All right.

Q. Could you identify what that is?

A. Yes. It's a report from Younger Laboratories, reporting the results of two aspects of a routine acute toxicity study.

Q. Do you have any recollection today of the study itself or the analysis as indicated in the report?

A. No, Ma'am.

Q. A certificate of analysis is not a full report; is it? Or is it?

A. For this type of study, yes. Younger Laboratories was involved in other studies.

Q. Do you know why this study was conducted in November of 1966 for Monsanto?



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A. I have no idea?

Q. This type of study would not routinely be done on a product in the market place unless new information had been learned?

MR. FEATHERSTONE: Is that a question or a statement.

Q. Is that right?

MR. FEATHERSTONE: Why don't you take a look at it.

A. I can't answer whether there was a particular reason for doing the study. I assume there was.

Q. But it would not be a routine type of study that would be done?

A. No.

Q. When you received or the medical department received communications from customers or users of a pydraul product, would those communications provide you with information on how the product was being used by the customer?

A. To some degree usually, yes.

Q. And those communications would increase your knowledge perhaps of the actual uses of the product?

A. That's right.

Q. Did you or anyone in the medical department review all the information that had been accumulated on



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the actual uses of the pydraul fluids by the customers for purposes of toxicological analysis?

MR. FEATHERSTONE: I object to the form of the question. It is compound and without foundation. Other people in the medical department.

MS. OLIVER: Well, Dr. Kelly and Mr. Wheeler.

MR. FEATHERSTONE: It's still the same problem with Dr. Kelly. Mr. Wheeler might have gone on vacation.

Q Well, do you know? I'm just asking for your knowledge.

A Is your question--

Q My question is: Do you know whether the medical department under Dr. Kelly's supervision ever reviewed the communications that had been received from customers to determine the actual uses of the Monsanto products and the way they were being used by the customers for toxicological purposes.

A Routinely.

Q Routinely. And if the information you received provided you with information in the manner in which a product was being used that you weren't aware of before, you and Dr. Kelly would re-evaluate--

MR. FEATHERSTONE: Are we on pydrauls?

MS. OLIVER: Pydrauls.

A Yes.



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Q. Were you aware at any time up until 1968 that Monsanto was discussing with its customers the reclamation and reuse of pydraul fluid?

A. I don't recall.

MS. OLIVER: I'd like you to mark this.

DOCUMENT MARKED, "DEFENDANT'S EXHIBIT #2"

Q. Would you look at exhibit number two for us, Mr. Wheeler, and identify that document. Can you identify it for us, Mr. Wheeler?

MR. FEATHERSTONE: What do you want him to do? Read what it says on it?

MS. OLIVER: No. I want him to identify the document, what it is and its date.

MR. FEATHERSTONE: The date's on it.

Q. Can you identify what document that is?

A. I can only identify the type of document that was used.

Q. Okay. What type of document is it?

A. This would be, by my recollection, a form that was used in advising the labeling section in the traffic department what data we had that should be included or considered in preparing a label.

Q. So the traffic department was responsible for putting the labels on the products?

A. That's right.



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MS. OLIVER: This document, for the record, is a memorandum with the dates of January 21st, 1959, and February 9th, 1959, with the initials EPW at the bottom, and directed to W. W. Wilson.

Q. Do you know who Mr. Wilson was?

A. I can't place him.

Q. Were these the types of memorandums that you routinely sent to the traffic department regarding the labeling?

A. My recollection is that, when a label was being prepared, there was a form that was used, which included distribution to the medical department. This appears to be just part of that form. I think it indicates that this may have been a second page and the traffic department did not initially get this page for some reason.

Q. This is the type of form or similar to this that you would prepare and send to the traffic department for labeling the products?

MR. FEATHERSTONE: I thought the testimony was it was sent to the labeling department to put the label on the product.

A. In conjunction with Dr. Kelly.

Q. This was prepared by the medical department?

A. Items nine and ten, I believe that's correct.

Q. There were other items on this form, to your



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recollection?

A. I think I just mentioned that this is perhaps a second page and the first page-- Apparently when the-- Is there not a reference date to other--

Q. There's a reference that the first one never reached traffic department.

A. This is what led me to state that I think the page must have been lost.

Q. Is what you're saying a form with more than the information that appears here was normally sent to the traffic department and the medical department filled in the appropriate information and somebody else filled in other parts of it?

A. Yes. And there are two dates on this document.

MR. FEATHERSTONE: You've answered her question, Mr. Wheeler.

Q. Do you know what other types of information went on forms that were sent to the traffic department?

A. Some of the physical characteristics, flammability, explosability.

Q. And that would be filled out by another department?

A. By other people.

Q. Do you have a recollection, Mr. Wheeler, of information or correspondance with the Indiana Board of



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Health--

A. No.

Q. --in 1950 regarding an incident in one of the plants in the state involving aroclors?

A. No.

Q. Who was Mr. H. S. Litzslinger?

A. Mr. Litzslinger was, my recollection is, in the development group that was more concerned with the development of fire resistant hydraulic fluids for aircraft.

MS. OLIVER: Let's mark that one number three.

DOCUMENT MARKED, "DEFENDANT'S EXHIBIT #3."

A. Would you look at what we've marked as number three and identify that for us, please.

MS. OLIVER: Off the record.

OFF THE RECORD DISCUSSION.

A. It appears to be a memorandum that I wrote to Mr. Stu Litzslinger.

Q. And it's entitled, toxicity reports on OS dash 95. Do you have a recollection of what OS-95 was?

A. Not having read the memo, no.

Q. If you will take a minute to read it, I want to ask you if you have a recollection of preparing that memorandum.

MR. FEATHERSTONE: While he is doing that, please identify by number exhibits one and two.



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MS. OLIVER: Exhibit number one is a document stamped on the first page 000660 and the last page is 663. Exhibit number two is 0000412. Those are the identifications put on the documents as they were produced to us by Monsanto.

Q Do you recall preparing that memorandum?

A No.

Q In this memorandum, Mr. Wheeler, is a statement-- Strike that. The memorandum appears to be written by you. It has your signature or name at the bottom. Correct?

MR. FEATHERSTONE: It doesn't have his signature.

MS. OLIVER: His name. Excuse me.

Q Do you have any reason to believe that this memorandum was not prepared or sent by you to Mr. Litzslinger?

A I think the document says that, in conjunction with Dr. Kelly, that is the case.

Q On page two of the memorandum there is a statement, quote, I personally have never seen a die casting machine. Dr. Kelly has seen one or two small ones at North American Aviation. That's what you testified earlier, that you had never been in a die casting plant?

A That's right.

Q The last paragraph-- The last sentence in that paragraph states, quote, as we become better educated or better informed as to the degree of exposures, subsequent opinions must be related to these exposures.



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A. Did you refer to the last sentence in that paragraph?

Q. The last sentence of that paragraph, if you'd like to review that paragraph again.

A. I think you quoted, as we become better educated or better informed--

MR. FEATHERSTONE: That's what she read. All she wants you to do is review the paragraph.

A. The whole paragraph?

MR. FEATHERSTONE: Yeah. Just read it to yourself.

A. I've read it.

Q. Okay. I'd like to ask you if that refreshes your recollection as to the circumstances surrounding the preparation of that memorandum?

A. No.

Q. Could you tell me-- If you can, can you tell me what you meant by that sentence?

MR. FEATHERSTONE: How can he if he can't remember the circumstances.

MS. OLIVER: If he can't, he can say no.

Q. Is your answer no, Mr. Wheeler?

A. Was the question do I recall making that statement or what I meant?

Q. Do you recall what you meant by that statement or what is meant by that statement?



WATER_PCB-SD0000056373

MR. FEATHERSTONE: Well, the question is, do you recall what you meant by that statement, even though you can't recall the circumstances.

MS. OLIVER: That's the only thing I can ask him about. I can't ask him in general what that sentence means; can I?

A. To me this sentence is self-explanatory.

Q. When the word subsequent opinions are there, what does that mean?

A. Subsequent opinions to me would mean you may have an opinion and at a later date you make a subsequent opinion.

Q. Based on the new and better understanding you may have of the uses of the product. Is that right?

A. That's the way I read the sentence.

MS. OLIVER: Let's mark these.

DOCUMENTS MARKED AS DEFENDANT'S EXHIBITS 4 THROUGH 6.

Q. I would like you to look at exhibit number four, which appears to be memorandum of a meeting. It has a document identification number at the bottom of 825 through 828. Take a chance to look at that, Mr. Wheeler. Off the record.

OFF THE RECORD.

Q. Have you looked at it, Mr. Wheeler?



WATER_PCB-SD0000056374

A. Yes, Ma'am.

Q. Did you attend a meeting--

A. I don't recall.

Q. --with Industrial Bio-Test Laboratories on aroclor wildlife? Do you recall that?

A. No.

Q. You don't recall that meeting?

A. I don't but, since I'm listed as attending, I'm sure I must have been there.

Q. Does this memorandum refresh your memory as to any of the subjects that were discussed at that meeting?

A. Certainly relating to my responsibilities and participation in the meeting.

Q. I refer you to page three of that memorandum. There is a part of that page that deals with what is identified there as, quote, defense seems to have these elements. Do you recall discussing the defense of Monsanto's aroclor program or products?

MR. FEATHERSTONE: At that meeting?

MS. OLIVER: At that meeting.

A. No. I don't recall the meeting.

Q. You don't recall the subject matter?

A. Not in this sense.

Q. Do you recall the subject matter at any meeting that you were present in which discussed the defense by



WATER_PCB-SD0000056375

Monsanto of its aroclor, PCB products?

A. Not identified as that. No.

Q. Do you recall meetings-- Strike that. Is your testimony, Mr. Wheeler, that you do not recall meetings where the subject of the defense of the aroclor products was discussed?

MR. FEATHERSTONE: He just answered that question, Ms. Oliver.

MS. OLIVER: I just want to make sure that the answer is on record, Mr. Featherstone.

MR. FEATHERSTONE: Madam Court Reporter, would you please read back that last question and answer.

REPORTER READS BACK.

Q. What do you mean by not identified as that, Mr. Wheeler?

A. I don't know what Dr. Richard intended or implied by the word defense.

Q. Well, did you attend meetings in which it was discussed how Monsanto should proceed with respect to the information or the reported findings of PCBs in the environment?

A. Yes.

Q. Did you attend meetings where it was discussed that Monsanto should emphasize the fact that their understanding of the aroclors was that they were not intended to



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be spread around outside of the plant or outside of what you'd call the closed system?

MR. FEATHERSTONE: Emphasize to whom?

MS. OLIVER: To the public.

A. I think my testimony indicates that I attended several meetings where that was discussed.

Q. Did you attend any meetings that discussed the fact that PCBs were reported in atmosphere and streams around Monsanto's manufacturing plants and major customers' plants?

MR. FEATHERSTONE: Wait. I'm sorry. Wait a minute. Madam Court Reporter, would you please reread the question, plus whatever the witness had said.

REPORTER READS BACK.

MR. FEATHERSTONE: When? This document doesn't say that.

MS. OLIVER: At any time. I'm not referring to the document.

MR. FEATHERSTONE: He has the document in front of him.

MS. OLIVER: You're looking at it. Not me.

A. I'm sorry. I was looking at it.

Q. You don't recall any of these five topics of conversation coming up at that meeting?

A. That's right.



WATER_PCB-SD0000056377

MR. FEATHERSTONE: They're also not identified as a topic of conversation.

Q. What I'm asking is whether you have a recollection of any time discussing with anyone in Monsanto reported findings of PCBs in the atmosphere and streams around Monsanto's plants and major customers'.

MR. FEATHERSTONE: I'm sorry. Did you say and major customers or major customers?

MS. OLIVER: And.

A. I am sure I sat in on meetings where the question of sampling the streams near Monsanto plants was discussed.

Q. Was that in the period of 1968 through '71 or '70?

A. In conjunction with my involvement in the PCB problem as it began to develop in 1968.

Q. Then what was discussed at those meetings?

MR. FEATHERSTONE: On which point?

MS. OLIVER: Concerning that point.

MR. FEATHERSTONE: Well, I instruct him not to answer that question. The judge has already outlined for you how you depose that line of questioning.

MS. OLIVER: I don't think that's necessarily true. I think the judge said, if we wanted specific information about what was done, we could do it by interrogatory.



WATER_PCB-SD0000056378

I'm asking for this gentleman's recollection of what the discussions were on that subject and I think I'm entitled to it.

MR. FEATHERSTONE: You may think so but I think you're not so he's not going to answer the question.

MS. OLIVER: Would you certify the question for me.

Q. Do you have a recollection-- Strike that. What is your recollection of discussions of PCBs reported in atmosphere or streams around major customers of Monsanto?

MR. FEATHERSTONE: What time period?

MS. OLIVER: Up until 1970.

A. I don't have any recollection of reported concentrations around customers' plants.

Q. Do you have a recollection that there was a discussion that sampling should be made?

A. No.

Q. Do you have a recollection of any discussion that Monsanto was going to establish an acceptable standard for PCBs in the atmosphere or streams around major customers' plants?

A. No.

Q. Would you look at the last page of the exhibit, which appears to be a chart entitled, aroclor and wildlife. Do you have any recollection of the chart before today?

A. No.



WATER_PCB-SD0000056379

Q. You don't know who prepared it?

A. Only that it's attached to a memorandum of Dr. Richard.

MR. FEATHERSTONE: The question was, do you know who prepared it?

A. No.

Q. If you would, look at what we have marked as exhibit number five, which I also have marked here as Richard deposition exhibit number nine. Look at that. Have you had a chance to look through that, Mr. Wheeler?

A. Yes.

Q. The first page of that is a copy of a note from Bill Richard to Elmer dated 9-9-69. Do you recall receiving the note and the attachment from Dr. Richard?

A. Not today.

Q. Have you ever seen the exhibit before today?

A. I assume so because it was addressed to me but I don't recall it.

Q. There's some writing in the margins of some of the pages of the exhibit. Can you identify whose writing that might be?

MR. FEATHERSTONE: Why don't you refer to a specific page, Ms. Oliver?

Q. The third page of the document?

A. I have no idea. It's not my writing.



WATER_PCB-SD0000056380

Q Do you recall discussing with Dr. Richard that one of the policies Monsanto could take would be to make the government, states and universities prove their case?

A No.

Q So I don't waste a lot of our time today, Sir, is it your testimony that, after reviewing this document, you don't have any recollection of the topics discussed in the memorandum?

MR. FEATHERSTONE: You mean in connection with this memorandum?

MS. OLIVER: The subject matter raised in the memorandum.

MR. FEATHERSTONE: There have been questions asked for two days, Roseann, about certain materials in here. For instance, the chronic toxicity studies. He's not at this point going to tell you he doesn't have any recollection of that because he's testified to them.

Q Let me put it this way, Mr. Wheeler. Do you have any recollection of discussing with Dr. Richard or anyone at Monsanto the possible outcomes of the analytical work and the chemical work--

MR. FEATHERSTONE: As indicated on page one--

Q --as indicated on page one of Dr. Richard's memorandum.

A Not as indicated on page one of Dr. Richard's



WATER_PCB-SD0000056381

memorandum.

Q. Dr. Richard states, we can prove some things are okay at low concentrations to give Monsanto some defense. Do you have any recollection today of what Dr. Richard meant?

MR. FEATHERSTONE: I object to the form of the question. How does he know what Dr. Richard meant? You already asked him whether he discussed it with Dr. Richard. There's no foundation for answering the question.

Q. Do you know what-- Do you have any recollection of that subject matter being discussed between you and Dr. Richard?

A. I think I have already testified that I don't recall having discussed with anybody the defense, in quotes, which Dr. Richard, I think, used rather loosely.

Q. Well, what I'm asking is, do you have a recollection in 1969 that Monsanto could prove some things are okay at low concentrations, referring, I'm sure, to aroclor functional fluids?

MR. FEATHERSTONE: Could prove or thought they could prove, Ms. Oliver? It appears under probable outcomes.

A. I've already testified that I was one of a group of people that were involved in the presentation and it's obvious to me that this is a very informal, abbreviated brainstorming idea that Dr. Richard wanted to discuss and I



WATER_PCB-SD0000056382

believe that I must have participated in discussions with not only him but others involved in the presentation.

Q Did you agree in 1969 with the statement that appears there under probable outcome, we can prove some things are okay at low concentrations?

MR. FEATHERSTONE: Do you mean did he agree with that at any time?

MS. OLIVER: In 1969. At or about the fall of 1969.

A I think I've also testified--

MR. FEATHERSTONE: Wait a minute. I think you just have to answer the question.

Q Yes or no?

MR. FEATHERSTONE: Well, yes or no if you can do it. The question is, in 1969, the fall of 1969, did you agree with the statement, and it doesn't have to appear in a document, stating that we can prove some things are okay at low concentrations? Period.

A Yes.

MR. FEATHERSTONE: Fine.

Q What did you believe you could prove were okay at low concentrations?

A The whole purpose of the chronic toxicity tests which I have described were intended to establish safe levels.



WATER_PCB-SD0000056383

Q. Dr. Richard's second statement is, we can't defend against everything. Do you recall any discussion with Dr. Richard or anyone else about what was defensible and what wasn't in terms of the aroclor fluids?

A. No.

Q. The second sentence reads, some animals or fish or insects will be harmed. Did you have any information concerning that statement in 1969?

A. No.

Q. I take it you don't know where Dr. Richard got his information?

A. I think, as I indicated, this was a brainstorming thing and--

MR. FEATHERSTONE: Well--

A. Dr. Richards was making suppositions or proposing possibilities.

Q. The last sentence on that page reads, therefore, we will have to restrict uses and clean up as much as we can starting immediately. And I think you testified about your presentation to corporate management committee concerning the phasing out and restricting of uses of the products. Do you have any recollection of discussing with anyone at Monsanto a clean up?

MR. FEATHERSTONE: Of what?

MS. OLIVER: PCBs.



WATER_PCB-SD0000056384

A. Only as it was involved again with this group presentation.

Q. What did the presentation-- What part of the presentation-- Strike that. Let me start again. How did the presentation involve the clean up aspect?

A. It wasn't my area of responsibility or involvement so I don't recall.

Q. Were you present during that part of the presentation?

A. Of course.

Q. What do you recall about it, if anything?

MR. FEATHERSTONE: He just told you he doesn't recall.

Q. You don't recall what that part of the presentation dealt with?

A. No.

Q. Page two of Dr. Richard's memorandum, he has a section called water pollution seems to be the first issue. Did you have a discussion with Dr. Richard or anyone else at Monsanto concerning water pollution by aroclors?

MR. FEATHERSTONE: At the time of this memorandum?

MS. OLIVER: At the time of the memorandum.

A. I presume so, following the issue of the memorandum, yes.

Q. You don't recall any discussion?



WATER_PCB-SD0000056385

A. I don't recall any. No.

MR. FEATHERSTONE: She doesn't ask you to presume anything. Just what you recall, Sir.

Q. Do you recall any conversations with anyone at Monsanto about water pollution in the period of 1968 to 1972?

MR. FEATHERSTONE: Aroclor?

MS. OLIVER: Aroclor.

A. PCBs?

Q. Yes.

A. Yes.

Q. And when were those conversations? During the entire period?

A. Principally in reporting what I had learned--

MR. FEATHERSTONE: The question is when.

A. Subsequent, I believe, to the visit to Europe at which time I had an opportunity to meet face to face with the people that had reported finding the PCBs, in conjunction with the pesticide residues, and reporting back to our people then the gist of their comments.

Q. Other than that report after your European communications--

MR. FEATHERSTONE: Visit.

MS. OLIVER: Visit.

Q. Do you have any other recollection of discussing



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water pollution by aroclors with anyone at Monsanto?

A. Yes.

Q. When was this?

A. After our analytical group had satisfied themselves that they could duplicate the analytical technique, it seemed appropriate to look for PCBs in the effluent of the Monsanto plant.

Q. Did you have any discussions regarding water pollution in or around customers of Monsanto's plants?

MR. FEATHERSTONE: You mean the plants of the customers of Monsanto?

MS. OLIVER: Uh huh.

A. Not that I recall.

Q. Page three of the memo refers to Johnson Motors. Do you see that? Do you have any knowledge of the operations of Johnson Motors in 1969?

A. I don't recall any.

Q. Did you know that Johnson Motors was a customer of Monsanto's pydraul fluids?

A. I don't recall.

Q. Did you find that out subsequently?

A. Only since I've been involved with this current deposition.

Q. If I can refer you to page four of the memorandum, the last section, designated inland waterways. In the



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margin there is Wheeler slash Richard. Typed in and next to that is be close enough to Great Lakes studies to judge situation. Are there animals which are being affected by the concentrations found? Do you recall discussing with Dr. Richard that you would be involved in that type of endeavor?

A. No.

Q. Did you monitor or obtain Great Lakes studies to judge whether there were PCBs in the Great Lakes?

A. I believe I testified that part of my function was to review literature from any kind of scientific journals. I don't recall specifically references to the Great Lakes studies.

Q. And you don't recall being asked to specifically look into Great Lakes studies?

A. No.

Q. Look at exhibit number six.

MS. OLIVER: While he's doing that, mark these, please.

DOCUMENTS MARKED AS, "DEFENDANT'S EXHIBIT #7," AND "DEFENDANT'S EXHIBIT #8.".

Q. Have you looked at exhibit number seven?

A. Six.

Q. Six. Okay. The document, Sir, appears to be a memorandum from you to a Mr. Cameron dated January 29th, 1970, re status of aroclor toxicological studies. Do you



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recall preparing and sending that memorandum?

A. No.

Q. Who is Mr. Cameron?

A. Mr. Cameron was, I believe, the-- I believe he was in the development or marketing group in the Brussels office, in the group that was concerned with PCB containing products.

Q. That were being sold in Europe?

A. Yes.

Q. Okay. Paragraph three of the memorandum reads: Our interpretation is that PCBs are exhibiting a greater degree of toxicity in this chronic study than we had anticipated. Do you have a recollection, Sir, of what information you had available to make that statement?

A. I've looked through the cover page which you've referred to and glanced briefly at the data that's summarized in the attachments.

MR. FEATHERSTONE: The question is, what data did you have available that led you to write that statement? I think that's what she asked you. Is that right, Roseann?

MS. OLIVER: That's right.

A. My explanation would be that, based on the range finding studies, based on any previous toxicological work with PCB containing materials, we had expected--Dr. Kelly had expected that the animals would show a--



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MR. FEATHERSTONE: Mr. Wheeler, she has not asked for an explanation of that sentence. She has asked for a source of information, the information on which that's based.

A. I don't recall.

Q. Do you recall what degree of toxicity you had anticipated PCBs to show before this memorandum?

A. No.

Q. You say they're exhibiting a greater degree of toxicity than you had anticipated. Could you explain what you meant by that?

A. Than we had anticipated.

Q. Based--

A. I don't-- Your question was that I, Mr. Wheeler, anticipated, I believe. The memo says we had anticipated.

Q. Then you're referring to-- We means Dr. Kelly and you?

A. Yes.

Q. I'd like for you to explain what that statement means.

MR. FEATHERSTONE: Means or meant?

MS. OLIVER: Meant.

Q. When you wrote it, Mr. Wheeler.

MR. FEATHERSTONE: To the extent you recall that, tell her what it meant when you wrote it, other than what



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it says.

A. I thought I started to say that my recollection is that--

Q. I think you did and Mr. Featherstone cut you off, Mr. Wheeler.

MR. FEATHERSTONE: No. What I did was, Ms. Oliver, I had him to answer the question you posed, as you well know.

Q. Why don't you tell me what it means, Mr. Wheeler?

MR. FEATHERSTONE: Is the question now what it means or what it meant?

MS. OLIVER: What it meant.

A. I think more importantly--

MR. FEATHERSTONE: No, no. Answer her question.

A. I can't tell you, looking at a document on March 16 eleven years after the drafting of the document precisely what I meant or maybe even in general terms.

Q. You had done other toxicity tests. Monsanto had sponsored toxicity tests and, based on the information you had accumulated up to that point, you and Dr. Kelly did not believe that there would be a degree of toxicity exhibited that you later found. Is that a fair statement?

A. I think, yes.

Q. Okay. The last paragraph or sentence of that memorandum says, we have additional interim data which will



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perhaps be more discouraging. Do you recall what data you had that you thought might be more discouraging?

A. I have no idea.

Q. Do you have a recollection that you, in fact, obtained data which was more discouraging? You and Dr. Kelly?

A. No.

MR. FEATHERSTONE: Are you done with exhibit six, Ms. Oliver?

MS. OLIVER: Uh huh.

Q. Would you look at exhibit number seven, Mr. Wheeler.

MR. FEATHERSTONE: Do you want him to read it?

MS. OLIVER: Yes.

Q. Have you had a chance to look at the document, to read the document, Mr. Wheeler?

A. Yes, Ma'am.

Q. This appears to be a memorandum from you to Mr. C. F. Callis dated July 3rd, 1969. Is that correct?

A. Yes.

MR. FEATHERSTONE: Well, it's correct as far as--

MS. OLIVER: It appears to be.

MR. FEATHERSTONE: No, no, no. You added, I think, your own pencil mark on it, Ms. Oliver.

MS. OLIVER: That's right.



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MR. FEATHERSTONE: The appropriate asterisk by something which interests you, which I don't believe was on the original document.

MS. OLIVER: You're right, Mr. Featherstone. That's my pencil mark.

Q. Without referring to that pencil mark, is that the document--does that appear to be a document prepared by you, Mr. Wheeler?

A. Yes.

Q. Do you have any recollection of preparing this document on or about the date it bears?

A. Preparation of the document, no.

Q. Okay. Do you have a recollection of the subject matter of the document?

A. I've previously testified that I was aware of biodegradation studies being conducted within Monsanto.

Q. Okay. And this memorandum reflects the biodegradation studies to be undertaken. Is that correct?

A. That's right.

Q. Who is Mr. Callis?

A. I think it's Dr. Callis and he was the director of the research facility activities in the inorganic chemicals division.

Q. And the memorandum discusses an immediate problem and what is termed as a long range proposal on page



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two. Did you discuss with-- Strike that. Had you made the determination, Mr. Wheeler, of what was the immediate problem with respect to biodegradation studies?

MR. FEATHERSTONE: I object to the form of the question. The question assumes or suggests that there was a problem with biodegradation studies.

A. What was the question, please?

Q. The question was, did you make the determination of the immediate problem with respect to biodegradation studies of aroclors?

MR. FEATHERSTONE: Same objection.

A. I believe the terminology was to differentiate in terms of priorities the types of programs which might be undertaken.

Q. And who determined the priorities?

MR. FEATHERSTONE: For what?

MS. OLIVER: For the programs to be undertaken.

MR. FEATHERSTONE: As reflected in the document?

MS. OLIVER: As reflected in the document, relating to biodegradation studies of the aroclors.

A. I believe it was a concensus reached by Dr. Richard's group and ourselves. This was after our trip to Europe and reflects our thoughts as to what we had learned there.

Q. Why was the knowledge whether PCBs would



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degrade biologically and the extent to which they might degrade biologically be immediate priority or problem?

MR. FEATHERSTONE: Priority.

MS. OLIVER: The memorandum speaks in terms of problem.

MR. FEATHERSTONE: And he spoke in terms of priority.

MS. OLIVER: Okay. I said or.

A. I think, the references to the publications up to that time, the question of biodegradation of PCBs and which PCBs had arisen.

Q. Who suggested, if you recall, Mr. Wheeler, the long range proposal that's discussed on page two of the memorandum?

A. I don't remember ever having discussed with-- With Dr.-- Well, it was Mr. In my memos, it would have been Mr., whether he was a doctor or not. He was not, to my recollection, involved in the type of research we were normally involved in. I'm referring now to toxicity studies.

MR. FEATHERSTONE: We've been sitting here a long time. I understand it. But her question was, who made the suggestion or suggestions as contained under the heading of long range proposals?

Q. If you recall.

A. I don't recall.



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Q. You don't recall-- Strike that. Do you recall being involved in any discussions concerning the need for studies on wastes at Monsanto's plants?

A. May I see that document?

Q. Uh huh.

A. Only as it relates to the paragraph which follows.

Q. And could you tell me what you recall?

MR. FEATHERSTONE: Wait a minute. Madam Court Reporter, what's the question.

REPORTER READS BACK.

MR. FEATHERSTONE: I think he answered that; didn't he?

MS. OLIVER: Only with relation to what appears in paragraph two.

MR. FEATHERSTONE: Wait a minute. I want to hear it from her.

REPORTER READS BACK.

MS. OLIVER: And I want to know what Mr. Wheeler's recollection is.

MR. FEATHERSTONE: Well, Mr. Wheeler, to the extent that you can answer that question generally, without getting into a detailed discussion of Monsanto plant effluents, you may. If you can't, tell me and--

A. I think I can do it very simply by stating that



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this was not related to any evident or prospective PCB problem.

Q. Was there consideration given, Mr. Wheeler, to studies on the waste within Monsanto plants or around Monsanto plants with respect to the aroclor or PCB problems?

A. My recollection is that there were analytical tests carried out.

MR. FEATHERSTONE: The question asked for a yes or no answer.

A. Repeat the question, please.

MS. OLIVER: Please read it back.

REPORTER READS BACK.

A. May I ask for your definition so I can understand the studies?

Q. Well, any type of-- Well, I mean study in the broader sense of the word. Any consideration given within Monsanto?

A. There was consideration given to measuring or examining effluent streams that left the plant to determine if there were PCBs present.

Q. And was that in the period of around 1969, Mr. Wheeler?

A. Yes.

MR. FEATHERSTONE: Would you read back his prior answer, please.



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REPORTER READS BACK.

Q. Did you ever hold the title of environmental manager, Mr. Wheeler?

A. I believe it was manager of environmental health.

Q. Okay. And when did you acquire that title?

A. My memory is mid-'60s, perhaps early '60s.

Q. Did your duties change at all from what they were before you acquired the title, manager of environmental health?

A. No.

Q. Were your responsibilities as manager of environmental health different from industrial hygienist?

A. When I received the title of manager of environmental health, I had another title other than industrial hygiene.

Q. What title was that?

A. I think at one time I had the title of director of industrial hygiene. At one time I had the title of assistant director of the medical department.

Q. Was the environmental health a new section within the medical department?

A. I believe I testified yesterday to Mr. Hynes' questioning that, beginning in early 1950s, we had received responsibility for some degree of consultation with plant



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managers--

MR. FEATHERSTONE: The question was, was there a separate section within the medical department denominated environmental health? Named environmental health?

A. Not per se.

Q. Were there people that worked for you on matters involving environmental health?

A. The toxicologist, Mr. Garrett.

Q. Mr. Garrett was an industrial hygienist?

A. Yes.

Q. What I'm asking, Mr. Wheeler, is whether you just got a new title to go with your old responsibilities in the 1960s or whether there was a change in the medical department?

A. My recollection is that there was a change in corporate personnel policies and the differentiation between manager and director was such that the change was made.

Q. Would you look at exhibit number eight.

MR. FEATHERSTONE: Is there a reason there's a handwritten twenty three at the bottom?

MS. OLIVER: I don't know. We got it like that as far as I know.

MR. FEATHERSTONE: You couldn't have gotten it like that. It's an original inkspot.

Q. Exhibit number eight, Mr. Wheeler, is a



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memorandum or appears to be a memorandum from Mr. Pappageorge to several people within Monsanto, including E. P. Wheeler, concerning aroclor labeling, dated April 13th, 1970. You testified earlier, I think, that in 1970 the label on the aroclors was changed to include the words polychlorinated biphenyls. Is this your recollection of what the label consisted of?

A. I believe so.

Q. Do you know what use was made of the inventory of pydraul fluids that Monsanto had as it was phasing out one fluid and putting in a new one?

A. No.

Q. You don't know whether Monsanto sold whatever they had and then started with the new reformulation?

A. No.

Q. One more thing. You testified yesterday, I think, that at some time in the period of '68 to '72, the research department or the lab did some testing on impurities in PCB fluids?

A. I believe that's right.

Q. And to your recollection, when did that testing take place?

A. It was after our 1970 meeting in Europe because--

MR. FEATHERSTONE: That answers the question.



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Q. And do you know why this testing was done?

A. It's my recollection that the University of Utrecht Laboratory had done some work on PCBs using, not only Monsanto material, but a German comparable product, had looked for impurities and found an impurity in the German material that was not in the Monsanto material. And we wanted to confirm that.

Q. Do you know what impurity was found in the German material?

A. I believe it was a chlorinated dibenzofuran.

Q. And who in the research or chemical department at Monsanto was in charge of finding out whether there was this impurity in the PCB fluids?

A. Dr. Richard's group.

Q. Dr. Richard's group. Okay. And do you recall receiving information that that impurity was not found in the fluids?

MR. FEATHERSTONE: Was not found?

MS. OLIVER: Was not found.

A. That's my recollection.

Q. Do you recall whether that information you got was in the form of a written report or was it a conversation?

A. I would expect it was probably a written communication.

Q. Do you know if, before Dr. Richard's group



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tested for that impurity, there had been any work done by Monsanto to determine whether there were any impurities in the PCB fluids?

MR. FEATHERSTONE: I've let you ask a series of questions, Ms. Oliver. What does this have to do with the lawsuit?

MS. OLIVER: Finding out whatever I can about PCB fluids, Mr. Featherstone.

MR. FEATHERSTONE: What do your questions about impurities or supposed impurities in a fluid or a search for impurities in a fluid have to do with the merits of your complaint against Monsanto or the Government's complaint against us or our answers to any of those things or our cross claims against you?

MS. OLIVER: Certainly, with respect to our claim against Monsanto, a product that was not reasonably safe for use, we're entitled to find out what was in the product, including impurities.

MR. FEATHERSTONE: Your allegation is that we didn't warn you about PCBs or about the effects, etcetera, related to PCBs. What does some unidentified impurity have to do with it?

MS. OLIVER: I think it goes basically to the work that was done, Mr. Featherstone.

MR. FEATHERSTONE: Well, you've learned from the



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witness that, to his recollection and understanding, there were no impurities found in the fluids and I think that's sufficient.

MS. OLIVER: Are you going to instruct him not to answer whether there was any testing done prior to that Richard's group work to determine whether there were any impurities?

MR. FEATHERSTONE: To humor you at this hour, I'll let him answer that question and that's it.

Q To your knowledge, Mr. Wheeler?

A May I have the full question?

Q Sure. Do you have any knowledge of whether there was any testing done, prior to this work being done by Dr. Richard's group to determine what, if any, impurities may have been present in the PCB fluids?

MR. FEATHERSTONE: Sold to Johnson or Outboard Marine?

MS. OLIVER: PCB fluids.

MR. FEATHERSTONE: Functional fluids?

MS. OLIVER: That's right.

MR. FEATHERSTONE: No. Limit it to pydraul, Mr. Wheeler. You weren't sold any functional fluids, other than pydraul.

MS. OLIVER: Let's don't prolong this. If you're going to direct him to answer only to pydraul, then I want



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the answer to pydraul.

MR. FEATHERSTONE: Fine.

A. Am I so directed?

MR. FEATHERSTONE: Yes. Limit your answer just to pydraul fluids.

A. I'm not aware that there was any other work of that type done in connection with impurities.

Q. Are you aware of any work of that type done with respect to any other functional fluids sold by Monsanto?

A. No.

MS. OLIVER: I don't have anything more. We can take a break.

RECESSED 2:30 p. m., March 11, 1981.

RECONVENED 2:40 p. m., March 11, 1981.

* * * * * *

QUESTIONS BY MR. HYNES:

Q. Mr. Wheeler, do you recall that there was a series of letters sent out to Monsanto customers, I believe, beginning in '69, running through the early '70s, notifying customers of PCB products that there were reported problems in the environment? Do you recall seeing any of those letters?

MR. FEATHERSTONE: You mean presence in the environment?

MR. HYNES: Presence.



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A. I recall there being a mailing of only one letter. You said a series. I'm not aware of a series.

Q. The one letter that you recall seeing, were you involved in any way in the preparation of the contents of that letter?

A. I believe I was. Yes.

Q. Do you recall what your involvement was?

A. As a participant of a group, again, that prepared the document.

Q. Do you recall what other people were in the group besides yourself?

A. I believe marketing, Bill Richards, Mr. Pappageorge, somebody from the labeling group.

Q. Do you recall when that letter was sent out to the customers?

A. No. Not the specific date.

Q. Do you recall what-- You mentioned Mr. Pappageorge and you said he started becoming involved in the PCB situation at Monsanto some time in mid-1970, I believe. So would it be after that date?

A. I believe he got the assignment January 1, 1970. It was after he-- This raises a question about my memory. Bill Pappageorge was involved so it had to be after January, 1969, that the letter was prepared and sent out.



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Q. '69 or '70?

A. Now you're confusing me because I--

Q. It was some time after Bill Pappageorge--

A. Let me correct myself. I think I may have said the letter went out in '69 because I think you mentioned '69. I think the letter was prepared either in December, '69, or drafts were made in 1969 and the letter went out in early 1970.

Q. Do you recall which customers, which category of customers were to receive that letter?

A. To my knowledge, all customers of any of the aroclors, any material that included PCBs that we could identify.

Q. Do you recall the contents of the letter?

A. Only insofar that it indicated that the question of the presence of PCB in the environment had become an issue, that the issue was not clear but it was Monsanto's belief that all customers should have knowledge of the concern and that extreme effort should be taken to control the possibility of the material getting into the environment.

Q. Do you recall any specific aroclors or trade name products which were referred to in that letter?

A. No.

Q. And that's the only letter you recall being involved with in making recommendations or preparation of



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the letter?

A. That's right.

Q. Earlier, I think it was yesterday, you discussed that some of the studies sponsored by Monsanto had found that the lower chlorinated aroclors degraded or the higher chlorinated aroclors didn't. Is that a correct statement of what you said? I'm trying to recall it.

A. I don't know if it's a correct statement of what I said. I believe the fact is correct.

Q. My question then is, the degradation that was found in the lower chlorinated aroclors, what form does that degradation take? Does the aroclor itself, the PCB, disappear? Or is it a lesser chlorine content? What form does that degradation take?

MR. FEATHERSTONE: You established yourself yesterday, Mr. Hynes, that Mr. Wheeler wasn't involved in that.

MR. HYNES: What is his knowledge of that, what his recollection is that degradation shows?

MR. FEATHERSTONE: To the extent you have any recollection or any understanding of it, Mr. Wheeler, go ahead and testify to it. You've got the documents, Mr. Hynes.

A. My recollection is that the biodegradation studies indicated a disappearance of the lower chrlorinated



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polychlorinated biphenyls as entities.

Q. In your department, the medical department's evaluation of a chemical or a proposed product, either from the research department or the commercial development department, was it the normal practice in your department to do a literature search or review anything in the scientific literature relating to the chemical or similar chemicals?

A. I believe routinely.

Q. That's in addition to any prior testing or studies which had been done or sponsored by Monsanto. Correct?

A. Yes.

Q. Earlier I think you stated that you had recalled one product which was referred to the medical department by, I believe, commercial development. It was a change in the product. It was sold in a diluted form and now they were proposing to sell the product in a concentrated form. And you had said that your department had, I believe, recommended that the product not be sold in that concentrated form?

A. Right.

Q. My question then is: The authority or responsibility of the medical department in a situation like that, did you have a veto power over the further development or the sale of products or was it a recommendation to the management of the company that would be the medical



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department's recommendation that that product not be marketed?

A It was Dr. Kelly's responsibility and I can't think of an instance when management didn't agree with a recommendation of that type if he made it. I don't know if that answers your veto question.

Q The normal practice would be, if that occurred, that you would assume from your experiences that management would follow Dr. Kelly's recommendations. Do you know if, within the company policy or practices, that they were compelled, management of the company was compelled to follow Dr. Kelly's recommendations?

MR. FEATHERSTONE: What's the relevance of this? You already know what the practice is or was to the extent that Mr. Wheeler knows about it.

MR. HYNES: Just finding out what the authority of the medical department was with regard to their recommendations for any products. It's a good product, it's a bad product, we need more tests.

MR. FEATHERSTONE: He testified at great length about this yesterday, Mr. Hines. I hope this is your millión dollar question because I think this is the last question we're going to entertain on the subject. You can answer the question.

MR. HYNES: If you remember the question.



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MR. FEATHERSTONE: Madam Court Reporter, please read back the question.

REPORTER READS BACK.

A. Is that the question?

Q. Yes.

A. Within Monsanto, as I expect there is in every company, there is an operating procedure manual. It spells out the areas of responsibility and authority of key people in the corporation, particularly managers of divisions, the directors of staff--

MR. FEATHERSTONE: You don't have to tell him what's in the manual, Mr. Wheeler. All you have to do is tell him what the answer is to his question.

A. My recollection is that that corporate policy manual spelled out in clear terms what Dr. Kelly's responsibilities and authority was.

Q. And do you have any present recollection of what that manual stated the authority and responsibilities were with regard to my question?

A. I think only in that people did not argue with a recommendation that Dr. Kelly made.

Q. Okay. Fine. In your experience in Monsanto in dealing with PCBs, polychlorinated biphenyls, aroclor products, did you ever have any occasion to see people use as a shorthand for PCBs, polychlorinated biphenyls, the



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term phenyls, p-h-e-n-y-l-s?

MR. FEATHERSTONE: Just that alone?

MR. HYNES: Right. Just that alone.

A. No.

Q. How about the word phenols? P-h-e-n-o-l-s?

A. No.

Q. Mr. Wheeler, in your experience with Monsanto and Monsanto sponsoring and your department evaluating chronic toxicity studies, is a significant part of the studies done by the contracting company-- What significance does an examination of animals which die during the test period have with relation to the results which are found in those studies?

MR. FEATHERSTONE: Wait--

MR. HYNES: Let me rephrase it.

Q. In a chronic toxicity study, I believe you said that it is expected that, during the life of the study, some test animals will die throughout the study, whatever time. Is it an important part of a chronic toxicity study for an examination to be made of the animals which died during the test period?

MR. FEATHERSTONE: I object to the form of the question and there's no foundation, Mr. Hynes. He told you that this was work done by outside laboratories and Mr. Wheeler himself is not a toxicologist.

MR. HYNES: Right. But he stated he has evaluated



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and reviewed the chronic studies sponsored by Monsanto as part of his job.

MR. FEATHERSTONE: Well, he's evaluated the data reported to him by outside laboratories.

MR. HYNES: Right.

Q In your experience, is it an important part of the study for an examination to be made of test animals which died during the test period during the chronic toxicity studies?

A Yes.

Q And why is it, in your opinion, important for examinations to be made of test animals which died during the test period?

MR. FEATHERSTONE: Important to Mr. Wheeler, who's reviewing the data reported?

MR. HYNES: Yes.

A As in animal or human population, people die of various reasons. It may be bacterial reasons completely unrelated to the experiment that's in progress. But to try to determine and rule out a cause and effect relationship from the test compound, a careful examination is made of those animals that die. This is my understanding, Sir.

MR. HYNES: Would you mark these, too, please.

DOCUMENTS MARKED, "PLAINTIFF'S EXHIBIT #1," AND "PLAINTIFF'S EXHIBIT #2."



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Q Mr. Wheeler, would you take a look at plaintiff's exhibit number one, please.

MR. FEATHERSTONE: Do you want him to read this?

MR. HYNES: Just take a look at it. This is document-- I think its 618, the stamp number on the front. It's the letterhead of Industrial Bio-Test Laboratories, Inc. The title is report to Monsanto Chemical Company sub-acute dermal toxicity of aroclor 1242. On the next to last page there is a date, March 27, '63.

MR. FEATHERSTONE: Well, Mr. Hynes, attached to the document--

MR. HYNES: The attached last page of the document shouldn't be there, number 449. I don't know how that got there but it's a document from Liberty Mutual. You can just pull that off.

MR. FEATHERSTONE: There are a couple things attached to here. I have a 449, a May 23, 1960, letter to Liberty Mutual and what looks like a page bearing the number 863, which is identified as-- It looks like a page from the exhibit that Ms. Oliver showed the witness, some Younger Laboratory certificate of analysis, page four, November 9--

MR. HYNES: I don't have that on my copy so that should be taken off.

Q Mr. Wheeler, would you just briefly look at exhibit number one and tell me if you recall the purpose of



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this test run by Industrial Bio-Test?

A. No, because in my testimony I did not mention this kind of study. It's a complete surprise to me that we had it done.

Q. Could you tell me what category you would put this test into? Acute? Subacute? Chronic? Is there a category like that that you can put this test into?

MR. FEATHERSTONE: The witness just told you that he-- Well, told you in his own way that he doesn't recall this study. Now, in order for him to do that fairly, I think, Mr. Hynes, it would require him to read the report. I will note for your benefit that the headline says subacute.

MR. HYNES: Subacute. Right. I just want to identify it from the title or anything else in the document which identifies it as a subacute toxicity study.

Q. Is that what you would take this document to be?

A. Based on the title, yes.

Q. And you don't recall-- I believe you just said you don't recall the reason why this test was done?

A. That's correct.

Q. And the date of this report on the last page says March 27th, 1963. Aroclor 1242 is a product which had been marketed for a period of time by Monsanto. Is that



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correct?

A. 1242 was a product that had been manufacured--

Q. Aroclor 1242 had been marketed by Monsanto for a number of years prior to that?

A. Yes.

Q. Was a subacute toxicity study the type of study that the medical department would routinely order in reviewing or evaluating a chemical or a product?

MR. FEATHERSTONE: Well, this refers to a subacute dermal test.

MR. HYNES: Subacute dermal. Fine.

Q. Is that the type of routine study which would be ordered by your department?

A. No.

Q. I refer you to page fourteen of exhibit number one. Under the heading number two microscopic pathologic findings, I refer you to this second sentence, which reads, animals that died during the test exhibited advanced post mortem changes; consequently their tissues and organs were not examined microscopically.

MR. FEATHERSTONE: That's two sentences, Mr. Hynes.

MR. HYNES: All right. Beginning in the second sentence and finishing up in the third sentence.

Q. Do you have any recollection of reviewing this report and those findings?



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A. No.

Q. Would those two sentences which I read to you have led you in your normal practice to go back to the sponsor, in this case IBT, to redo the tests? Would they be any concern to your department, in your experience?

A. This would indicate to me that, not infrequently, test animals die for whatever reason, related or unrelated to the experiment. It may be on a Friday and they're not found until late Saturday or sufficient time has elapsed that post mortem changes have occurred in the tissues so that pathological examination would be meaningless.

Q. In other words, once the post mortem changes set in, there's no way you can determine any problems in that tissue because the post mortem will change the physiology somehow of the tissues. Is that what you're--

A. That's my understanding.

Q. Does this mean-- In your mind would this mean that there's no way of telling why those animals died during the test period?

A. I think that's correct.

Q. Exhibit number two--

MR. FEATHERSTONE: We're done with one?

MR. HYNES: Yes.

Q. Exhibit number two, entitled, report to Monsanto Chemical Company, subacute dermal toxicity of



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aroclor 1248, again on Industrial Bio-Test letterhead, numbering sequence in the front beginning with 583 and ending with 598. The date on the last page of March 4, 1963. From the title, Mr. Wheeler, do you infer that it's a similar type of test that we just discussed in exhibit number one?

A. I would infer that.

Q. I refer you to page twelve of exhibit number two under the heading number two, microscopic pathologic findings, the second and third sentences of the first paragraph, animals that died during the test exhibited advanced post mortem changes; consequently, their tissues and organs were not examined microscopically. Again, that is a similar finding as to the exhibit number one we just discussed?

A. That's my understanding.

Q. And I take it your answers to my questions would be the same relating to this as the other, relating to the significance of the finding of those two sentences?

A. That's correct.

Q. Do you recall-- At this point do you recall at any time in your reviewing of acute data or subacute, chronic data which Monsonta sponsored, similar types of findings in studies reported to you? In other words, with the animals dying and post mortem changes set in and not being able to evaluate the tissues microscopically?

MR. FEATHERSTONE: Do you mean some animals during



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the test period died and there were post mortem changes and, therefore, no examination?

MR. HYNES: Right.

MR. FEATHERSTONE: As reported by the people--

MR. HYNES: Right.

A. I think I testified, in answer to your earlier question, Sir, that it's not uncommon. In fact, the reverse may be true. It's rare that you can conduct an experiment without losing some animals for some reason unrelated to the test material.

Q. I understand animals will be lost during the test period. My question relates to animals being lost in the test period where they cannot be examined microscopically because post mortem changes have set in. Do you recall that being a common occurrence in those types of tests?

MR. FEATHERSTONE: Well, they certainly can be examined microscopically. What those sentences say is, because of the post mortem changes, the animal tissues were not. And according to the witness's testimony, that would be because there had been changes; therefore, by examination you couldn't determine why the animal died.

MR. HYNES: Yeah.

MR. FEATHERSTONE: Okay. Well, your question says because of these post mortem changes they couldn't be microscopically examined and that isn't true.



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MR. HYNES: Sure, they could be but would what was found be significant?

MR. FEATHERSTONE: In their judgment.

MR. HYNES: Right.

MR. FEATHERSTONE: Okay. So what's the question?

Q Was that occurrence, where post mortem changes set in in language here where they were not examined microscopically because of the post mortem changes, was that a common occurrence in these types of tests, in your experience?

A I think I answered that question yes.

Q Fine. You stated yesterday Dr. Hunt was hired for the medical department as a toxicologist. Is that correct?

A Yes. Dr. William Hunt.

Q And he was hired some time in the early '60s?

A I believe that's right.

Q And prior to that time, the medical department did not, other than Dr. Kelly, and I'm not sure if he's a toxicologist, had no toxicologists working for them? Is that correct?

A That's correct.

Q Am I correct that both you and Dr. Kelly reviewed, did all these medical evaluations, medical department evaluations of the chemicals that were referred from the research department, commercial development



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department? The two of you were the only two reviewing the data to make your judgment whether the product was safe, unsafe? It was just the two of you? That's all I want to find out.

MR. FEATHERSTONE: For what period of time?

MR. HYNES: Up until Dr. Hunt was hired.

MR. FEATHERSTONE: Excluding any recommendations or advice they got from the outside people who did the tests?

MR. HYNES: Well, if they evaluated, the outside.

Q. But in the medical department the work was done by you and Dr. Kelly alone up until you hired Dr. Hunt. Is that correct?

A. That's correct.

Q. Do you recall whose decision it was, whose recommendation it was to hire a toxicologist for the medical department?

A. Dr. Kelly's.

Q. And do you recall discussing with him the reasons for hiring a toxicologist?

A. I don't recall.

Q. Have you ever been deposed before?

A. No. Thank the Lord.

Q. And I take it, also, you've never testified in any case before. Is that correct?

A. That's correct.



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Q Do you have any personal notes or logs that you have in your possession now concerning the PCB situation at Monsanto while you were working there.

MR. FEATHERSTONE: Well--

Q I'm talking about your own personal notes, not records which are at Monsanto or you were shown at Monsanto. I mean something that's your own personal notes, ledgers, anything of that nature.

A Perhaps the copy of my airline tickets on my trip to Europe, some mementos.

MR. FEATHERSTONE: I think he means something substantive.

A No, Sir.

MR. HYNES: I'm done.

* * * * * *

QUESTIONS BY MS. OLIVER:

Q Mr. Wheeler, were you involved in preparing data sheets for toxicological and safe handling information for Monsanto?

MR. FEATHERSTONE: Is that a particular form, Ms. Oliver?

MS. OLIVER: I've got several different forms but they have toxicological and safe handling information on them.

A Yes. I was involved in the preparation of



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some of them.

Q. Were these data sheets internal Monsanto forms or were they reports to some government or other outside Monsanto entity?

A. These were internal forms.

Q. And was one prepared for every product that you and Dr. Kelly evaluated?

MR. FEATHERSTONE: PCB product or just every product?

MS. OLIVER: Well, we'll start with every product.

Q. Was it a practice to prepare a toxicological and safe handling information sheet for every product you evaluated?

A. I doubt that we prepared them on samples from our earliest research efforts.

Q. Once the product came from the development group and was nearer the marketing stage, was one prepared--a form prepared as a routine matter?

A. It is my recollection that it was. Yes.

Q. Were these sheets updated at any time?

A. Yes.

Q. How often would they be updated?

A. If additional work was done, again when there was a change in the product or a change in the use or a change in the bulletin.



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Q. And were those kept in the medical department? The forms?

A. Yes, among other places.

Q. What other departments of Monsanto would have access to that information on those forms?

MR. FEATHERSTONE: Access to information on the forms?

MS. OLIVER: Access to these forms as filled out by the medical department.

A. Anybody.

Q. Who did you send them to or who did the medical department send the forms to?

A. The individual that had prompted the revision and any people that would be associated and needed to know the information on the form.

MR. FEATHERSTONE: That's an internal Monsanto document, Sir?

A. Yes, Sir.

Q. And were those prepared during the period of time of the 1950s up until 1968?

A. I don't remember when we developed the form but, from its inception, to my knowledge, even after I left Monsanto, it was-- Certainly during my tenure at Monsanto.

Q. Do you have any knowledge, Mr. Wheeler, of any work done on toxicity of aroclors by Swan Chemical Company?



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A. No.

Q. In the course of your employment with Monsanto, did you have occasion to read any reports or correspondence from Swan Chemical Company relating to aroclors?

A. I may have.

Q. Do you recall any, Sir?

A. Only as it would have been associated with the Swan Chemical Company during the interim or during Monsanto's purchase of the company, long before I joined Monsanto.

Q. Was it your understanding that Monsanto purchased the Swan Chemical Company?

A. Yes.

Q. Were you involved at all, Mr. Wheeler, in the preparation of letters prepared by Monsanto people to send the customers of PCB products in 1970 and after that?

MR. FEATHERSTONE: You mean any kind of letter?

MS. OLIVER: Letters concerning PCBs and fluids and the phasing out of the fluids.

MR. FEATHERSTONE: Obviously, other than the letter he already testified to in connection with Mr. Hynes' examination?

MS. OLIVER: Right.

A. Most of the correspondence was the responsibility of Mr. Pappageorge in the period you're mentioning.

Q. You didn't participate in forming or drafting



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a form letter for different of the aroclor or pydraul products to be sent out to customers?

A. I expect I participated in some such letters. Yes.

Q. What were you asked to do with respect to the drafting of these letters?

A. To provide, subject to Dr. Kelly's review and approval, presentation of data that would be meaningful and then the interpretation of that data.

Q. So any of those letters that contained toxicological information would have been reviewed by you or Dr. Kelly for that information?

A. That's correct.

Q. Other than you and Dr. Kelly, were there any other persons in the medical department who got involved in the PCB concerns from 1960 until the time you left?

A. Yes.

Q. And who were those persons?

A. Dr. Hunt was more involved in monthly contacts with the consulting laboratories.

Q. The Bio-Test chronic studies?

A. Yes. And, I believe, subsequently Dr. Levinscus and his associate. I can't remember his name.

Q. In your and Dr. Kelly's evaluation of the pydraul fluids, did you consider that, during the use of



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the fluid, there may be chemical changes in the fluids?

MR. FEATHERSTONE: Is this pydraul fluids?

MS. OLIVER: Uh huh.

A. I think my testimony has indicated that our understanding was that one of the advantages of the fluids was that they were chemically stable.

Q. So you didn't consider that there would be any chemical changes during the use of the fluids?

A. That's right.

Q. You mentioned earlier in your testimony that the recommendation was made to use or have adequate ventilation in case the PCB fluid came in contact with hot molten or flame and vapor was developed. Is that correct?

A. I believe I testified that, if there were--

MR. FEATHERSTONE: Wait a minute. Would you read me her question, please.

REPORTER READS BACK.

MR. FEATHERSTONE: Did you testify to that? That is her question. If you did, yes. If you didn't, no, or to the extent that you can recall it.

A. To the extent that I can recall it, yes.

Q. Did you consider the effect of this PCB vapor being ventilated and finding its way outside of the plant area?

A. No.



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Q Why not?

A No reason to be concerned.

Q In your opinion, there wouldn't be any harful effect from it being outside of the plant?

A In the gaseous environment of the plant, the answer is no.

Q Were you aware, at any time up to 1968, that hydraulic equipment leaked hydraulic oil?

A My understanding was that there could be occasional accidental leaks.

Q Do you know what the diposal method of the fluid that leaked was?

A No.

Q Did you consider the fact that there might be these leaks or, as you testified earlier, a line could burst and fluid could squirt out, significant in terms of evaluating the fluid toxicologically?

MR. FEATHERSTONE: He's already testified they did tests--

Q Other than the inhalation tests that you testified?

A No.

Q I want to make sure I understand something you testified about earlier, Mr. Wheeler. I asked you about the customer complaints regarding PCBs and I think you



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mentioned there were complaints occasionally of skin irritation.

A. I think I said inquiries.

Q. Inquiries. Okay. Was the action that was taken by the medical department to contact these customers or-- Strike that. Was the action that was taken in response to these inquiries to contact these customers to advise them of the cautions to be used with the product?

A. Yes.

Q. Did those inquiries serve as a basis for the medical department to initiate any chronic testing of the product?

A. No.

Q. Mr. Wheeler, was the same type of testing that you testified to concerning pydraul F-9 done on the PCB fluids that were used in paints and additives? Strike that. Adhesives?

MR. FEATHERSTONE: PCB fluids used where?

MS. OLIVER: As adhesives and paints.

MR. FEATHERSTONE: Those aren't PCB fluids.

MS. OLIVER: In the products.

A. PCB fluids were not used, to my knowledge, in anything other than the functional fluids, heat transfer, things that we discussed.

Q. Well, the aroclors were in some paints and in



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some adhesives. Is that correct?

A. Yes.

Q. Okay. Was the same type of testing that was done for the pydraul F-9 and the A 200 that you testified about earlier done for the adhesives and the paint that had aroclors?

A. What type of testing are you referring to?

Q. I think you referred to the acute screen and inhalation testing.

MR. FEATHERSTONE: What's the question now?

MS. OLIVER: Were those same toxicity tests, same types of tests done for the other products that I mentioned which contained aroclors?

A. That was not my understanding of the question you were asking.

Q. Well, that's my question. If you can answer it, I'd appreciate it.

A. I have testified that there was work done on specific aroclors and the data generated in those studies would apply to other uses of those same aroclors, other than the functional fluids.

Q. To your knowledge, were the products involving aroclors in adhesives and paint tested any differently or more extensively than the pydraul F-9 and A-200 products?

MR. FEATHERSTONE: The problem, Ms. Oliver, in



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addition to the fact that it's irrelevant to the lawsuit, is that we did not manufacture those products. We manufactured the aroclors that went into them. He has testified that the aroclors were tested. That ends it.

Q. Let me try it another way. Were the aroclors that were tested that were to be used in adhesives or paint tested any differently than the F-9, A 200 products?

A. I've testified and described to the best of my knowledge and ability the tests that were done on aroclors. And I can only repeat that, from the standpoint of occupational health and industrial hygiene, the data would apply to uses other than in the functional fluids. Does that answer your question?

Q. Yes, it does. Thank you. In the period up to 1968, Mr. Wheeler, did you consider PCB fluids to be related to pesticides?

MR. FEATHERSTONE: Oh, come on. How?

A. No way.

MR. FEATHERSTONE: Is your answer no way?

A. No way.

Q. No way. Okay. In the period after 1968, when you were discussing or you were asked about the toxicological effects of PCBs as Monsanto knew them to be, you compared the toxicological effects of PCBs to DDT. Do you recall?



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A. I believe I did for purposes of identifying to a layman the degree of toxicity, DDT being a very non-toxic material.

Q. Was that the only purpose of comparing it to DDT? That it was a layman-- It could help a layman understand the subject matter?

A. Yes.

Q. Other pesticides-- Strike that. Pesticides did contain chlorinated hydrocarbons. Is that right?

A. That was my knowledge from the literature.

Q. So to the extent that PCBs were chlorinated hydrocarbons and pesticides were chlorinated hydrocarbons, they were similar?

MR. FEATHERSTONE: Move on to a different topic. If you want to make an argument to the jury on that point, you can.

MS. OLIVER: We're getting testy.

MR. FEATHERSTONE: He's already answered the question whether there's similarity between PCBs--

MS. OLIVER: We're getting testy.

MR. FEATHERSTONE: Yeah, since we were told it was going to be another hour and we ran through lunch on this thing. You've got your record on his answer to your question. Now move on to a different topic.

Q. Mr. Wheeler, you testified earlier that



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Bio-Test did some chronic tests in the late '60s and early '70s and, in some of those tests, sent tissue samples to Dr. Richard's group for analysis. Do you know who correlated Dr. Richard's results of his analyses with the tests done by Bio-Test?

MR. FEATHERSTONE: If anybody.

A. I don't know.

Q. Do you know if they were correlated at all?

A. I believe they were.

Q. But you don't know who did it?

MR. FEATHERSTONE: He's already answered that.

A. Dr. Richard's group, I believe.

Q. Did you ever have any communication with Johnson Motors?

A. Not to my recollection.

Q. Do you know if Dr. Kelly ever did?

A. Not to my recollection.

Q. Did you ever have any discussions with anyone within Monsanto regarding Johnson Motors?

A. Not to my recollection.

Q. Were you ever present in a meeting which discussed Johnson Motors?

A. Not to my recollection.

Q. I think I'm done. Mr. Wheeler, have you been asked to testify in the trial of this case by Monsanto?



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MR. FEATHERSTONE: To the extent that the question asks for communication between counsel and you, Mr. Wheeler, don't respond to the question.

MS. OLIVER: My understanding is Mr. Wheeler is not an employee of Monsanto. Maybe that's wrong.

Q Are you employed by Monsanto in any--

MR. FEATHERSTONE: He's retired, as he testified.

A No.

Q Well, my question then is, have you been asked to testify as a witness?

A My only association with the case has been through Mr. Featherstone.

Q Is the answer then that it hasn't come up?

MR. FEATHERSTONE: The answer is what he said.

Q Mr. Wheeler, then let me ask you this. Would you be willing to come to Chicago and testify on behalf of Johnson Motors?

MR. FEATHERSTONE: Well, not until he talks to his lawyer. Mr. Wheeler, I would advise you not to answer that question until you have consulted with whomever it is you wish to consult. Are you through playing around now, Ms. Oliver?

MS. OLIVER: Am I going to get an answer?

MR. FEATHERSTONE: You got your answer.

MS. OLIVER: I guess I'm done.



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QUESTIONS BY MR. FEATHERSTONE:

Q Mr. Wheeler, it was Dr. Kelly and not yourself who was responsible for the chronic testing of Monsanto chemicals and products. Is that correct?

A That's correct.

Q And that was true in the 1950s and to the 1960s. Is that right?

A It was true during my tenure with Monsanto.

Q I take it it was Dr. Kelly's responsibility to decide what products would be chronically tested?

A That's right.

Q And what protocols would be used, after consultation with the outside experts. Is that correct?

A That's right.

Q If additional information became available to the medical department that might suggest exposure to humans, other than what was anticipated when a product was first marketed, would that information go to Dr. Kelly?

A Yes.

Q And was it Dr. Kelly's responsibility to decide what additional or new chronic tests should be run?

A That's right.

Q And was it Dr. Kelly's responsibility, in consultation with the outside laboratories, to decide what



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tests should be run?

A. Yes.

Q. I take it that will be true of any information that was made available to the medical department about PCBs getting into the food chain?

A. That's right.

Q. I believe you testified that, although not a toxicologist, you had some involvement in administering the chronic tests done for Monsanto after the protocols had been set up by Dr. Kelly. Is it fair to say that there were changes in the state of the art with respect to chronic testing in the 1950s and 1960s?

A. Definitely.

Q. Is it fair to say that the chronic tests done in the state of the art in the late 1960s were different than the state of the art chronic tests done in the 1950s?

A. Yes.

Q. In the 1950s did Monsanto perform or have performed chronic tests on materials that were intended to be in the food chain or might get into the food chain?

A. Yes.

Q. And did it do that in connection with pesticides?

A. Yes.

Q. And certain plasticizers?

A. Yes.



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Q To your knowledge, were these tests done as required by protocols set down by the FDA or some other government agency?

A It is my understanding.

Q To your knowledge, did those government protocols for the chronic tests change during the years 1950 and 1960?

A Yes.

Q Since I said years, did they change during the decades of the 1950s and 1960s?

A Yes.

Q The government protocols?

A Yes.

Q Did they change more than once?

A I would characterize them as being in a constant state of change.

Q You testified earlier about a change in a label that applied to aroclor trademarked products. As a point of clarification, Sir, did that change in the aroclor trademark product label occur at about the time that pydraul and therminols were reformulated?

A I believe so.

Q You were asked several times during the last two days questions about Monsanto activities in the area of water and sediment sampling for aroclors. I take it any



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Q. Is it true that some of the reports of alleged PCB identification that you saw were not reports in the scientific literature?

MS. OLIVER: I'm just going to make a continuing objection on the basis of leading questions.

MR. FEATHERSTONE: You can make any kind of objection you want. I'm not going to give you a continuing objection.

MS. OLIVER: Okay.

Q. Answer the question.

A. I don't--

MS. OLIVER: My objection is for the record.

Q. Mr. Wheeler--

A. Your question, Sir?

MR. FEATHERSTONE: Would the court reporter please reread the question?

COURT REPORTER READS BACK.

Q. And the period of time, Sir, is late 1960s.

A. That's right.

Q. To the extent you saw reports not in scientific literature, where were those reports?

A. Trade journals, newspapers. Those are the ones that come to mind.

Q. In connection with the biodegradation tests run by Monsanto Company on aroclors, did you have any direct



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activity along this line was not done by the medical department?

A. That's correct.

Q. What department would have done that?

A. In the case of our plants, by plant personnel. The sampling. And initially the analyses, I believe, were done by Dr. Richard's group. In Wales the laboratory there established their own expertise and analyses, as did subsequently, I believe, our plant in southern Illinois.

Q. You were asked by Mr. Hynes, for the government, questions about your knowledge of reports of PCBs in the environment. Sir, is it true that, in the late 1960s and early 1970s, scientific literature showed confusion, if you will, among analytical chemists as to whether PCBs were, in fact, being identified by certain techniques?

A. That's right.

Q. And is it also fair to say there was a dispute, if you will, in the scientific community about the proper techniques for the analysis of PCBs?

MS. OLIVER: I'm going to object, assert an objection here on the basis that the witness has already testified to the subject matter extensively and that you're leading the wintess.

Q. Answer the question, Sir.

A. There was disagreement.



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involvement in those tests?

A. No.

Q. Did you have any involvement in setting up the procedures for those tests?

A. Beg pardon?

Q. Did you have any involvement in establishing the procedures for those tests?

A. No.

Q. Did you have any involvement in the interpretation of the results of those tests?

A. No.

MR. FEATHERSTONE: No more questions.

MR. HYNES: I don't have any.

* * * * * *

MS. OLIVER: Do you understand, Mr. Wheeler, that you'll have the opportunity to read the transcript of your testimony?

A. I didn't know that.

MR. FEATHERSTONE: Well, if he didn't know it, he would have known it shortly.

MS. OLIVER: Mr. Featherstone will provide you with a copy of the transcript and you will have an opportunity to read it and make sure the court reporter has taken down the questions that were asked and the answers that you gave in an accurate manner.



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A I'm happy to hear that.

MS. OLIVER: Thank you.

MR. FEATHERSTONE: Thank you very much.

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DEPOSITION CONCLUDED.



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