STATE OF WISCONSIN : CIRCUIT COURT : MILWAUKEE COUNTY
BRANCH 8

STROH DIE CASTING COMPANY,

Plaintiff,

VOLUME XVI (p.m.)

v.

Case No. 639-887

MONSANTO COMPANY,

Defendant.

May 7, 1991

Honorable Michael J. Barron
Circuit Judge Presiding

A-P-P-E-A-R-A-N-C-E-S

RIORDAN, DRIVELLO, CARLSON, MENTKOWSKI, STEEVES by DONALD CARLSON AND JOHN PENDERGAST, appeared on behalf of the Plaintiff.

BORGELT, POWELL, PETERSON, FRAUEN by JOSEPH McDEVITT and KIRKLAND AND ELLIS by ANDREW RUNNING appeared on behalf of the Defendant.

* * *

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I N D E X

P-R-O-C-E-E-D-I-N-G-S

THE COURT: Now we'll resume the direct examination of Mr. Papageorge.

DIRECT EXAMINATION (con't)

BY MR. RUNNING:

Q Mr. Papageorge, I'm going to hand you up Defendant's Trial Exhibit 1034.

MR. McDEVITT: 94.

MR. RUNNING: 1094.

Q Mr. Papageorge, the first page of the document is just an indication of where it was filed apparently. Would you turn to the second page. Can you identify this as an April 28, 1971, memorandum from Dr. Keller to yourself?

A Yes.

MR. RUNNING: I move for the admission of this document, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

(Exhibit No. 1094, previously marked for identification, was received into evidence.)

MR. RUNNING:

Q The subject of the memorandum, Mr. Papageorge, is indicated to be Aroclor Analytic Program. What was that?

A That's the program in Monsanto's research department which was charged with the responsibility for developing analytical procedures that would determine PCBs in samples, all kinds of samples, at very low levels with accuracy.

Q Was this the program that had resulted in the taking of the 167 environmental samples that we saw?

A That was part of the program, yes.

Q The first paragraph reads, "This memo will confirm recent action we have taken to speed up Aroclor analytical projects effective April 27. Two teams will be working concurrently backed up by a third team for mass characterization work and dioxin studies."

What was the reason for this speeding up of the Aroclor analytic properties?

A We were very anxious to get answers to several questions which involved analytical procedures quickly, and this was Dr. Keller's response to my request to look into his program and see if he could do something to speed up the time tables that he had originally put out.

Q And was the result as indicated in this memo to have three teams of scientists working

simultaneously?
A That is correct.
Q Mr. Papageorge, I'm going to hand you Defendant's Trial Exhibit 1095. Can you identify this as a May 1, 1970, memorandum sent by your secretary to Mr. Sido?
A Yes.
Q Is this a Monsanto business record?
A Yes.

MR. RUNNING: I move for the admission --
THE COURT: Spell Sido.
MR. RUNNING: S-i-d-o.
MR. CARLSON: No objection.
THE COURT: So received.
(Exhibit No. 1095, previously marked for identification, was received into evidence.)
MR. RUNNING:

Q Mr. Papageorge, why did your secretary send this memorandum?
A I was in Europe at that time; and before I left I had asked her to make sure that this label wording was quickly sent over to Mr. Sido's office. And in my absence she composed this memorandum and signed her name as my secretary.
Q Did your secretary draft the label?

A No. No.
Q You were in Europe for the meeting with the other PCBs producers?
A That was one of the objectives, yes.
Q What else did you do on that trip in brief terms?
A We visited several governmental agencies, we visited Dr. Widmark in Sweden and a group in the Netherlands, another university group.
Q What was the purpose for adding the paragraph that's in the middle of this memorandum as an additional label?
A This was to inform the person who had the drum or container of products that contained PCBs that the PCBs could be an environmental contaminant and that they -- You'll notice the words, "Use extreme care to avoid this material from getting into the environment."
Q Now, Mr. Carlson has referred several times to this word and to this word in the text of the label. "Some studies have shown may be an environmental contaminant." Mr. Papageorge, was this label to be affixed to products containing Aroclor 1242 as an ingredient?
A Yes.
Q As of May 1, 1970, do you know of any published

study that had cited Aroclor 1242 as an environmental contaminant?

A There was no such study, no report.

Q Is that why you included the "may" in the label language as opposed to "has been"?

A Well, that's one of the reasons. Plus the fact that some plants that were making reports on PCBs were not certain as to their findings. So that they too were qualifying their -- in their reports what they were finding.

Q Was the first sentence on that label an accurate representation of the state of the scientific literature as of May 1, 1970?

A Yes.

Q The second sentence, "Extreme care should be taken to prevent any entry into the environment through spills, leakage, use, disposal, vaporization or otherwise." Why was that sentence included?

A That was to reemphasize the need to take care to prevent PCBs from becoming environmental pollutants.

Q Who was Mr. Sido?

A Mr. Sido at that time was Monsanto's custodian of the label files. He's the person that made certain that the files -- that the labels followed the

industry standards and that they were ordered when the need arose and so on.

Q Was he responsible for transferring this language onto an acceptable label for use with the product?

A Yes.

Q Did he do so?

A Yes.

Q Mr. Papageorge, I think we already have this up, Defendant's Trial Exhibit 1007. Is that a copy of the environmental warning sticker that was affixed to the drums?

A It is.

Q What drums was it affixed to?

A It was affixed to drums of Monsanto packaged products that contained polychlorinated biphenyls.

Q Would that include Pydraul 312?

A Yes.

MR. RUNNING: Your Honor, this is in evidence already, 1007.

Q Mr. Papageorge, I'm going to show you Defendant's Exhibit 1007.1. It's a blowup of that label. Can you identify this as a blowup of the label on the drums?

A It is.
Q What color was the label on the drums?
A Red lettering on a white background.
Q Why was that color chosen, if you know?
A We felt it was -- It would attract attention by the reader of the labels.
Q This label -- Mr. Papageorge, did you look for models, samples of similar labels by other chemical companies or other industrial chemical companies that you used as an example?
A We did look but found no precedent had been set by anyone. This represents a first attempt to associate environmental contamination with an industrial chemical.
Q Do you know of any other chemical company that had put a similar warning sticker on any of its products before May, 1970?
A I do not know of any.
Q Do you know of any other company that put a similar environmental warning sticker on any of its products before May of 1970?
A The only warnings that were -- that I had noticed were those required by regulations such as those that appear on farm chemicals, pesticides and so on. For industrial chemicals this is first.

Q Was it put on the labels voluntarily?
A Yes.
Q Mr. Papageorge, let me show you Defendant's Trial Exhibit 1098. Can you identify this as the presentation made by Mr. Mason to the corporate management committee on May 11, 1970?
A Yes. I would call this a copy of the slides Mr. Mason used in making the presentation.
Q By "slides," you mean transparencies like we are showing here?
A Yes.

MR. RUNNING: I move for admission of this document, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

(Exhibit No. 1098, previously marked for identification, was received into evidence.)

MR. RUNNING:

Q And have I highlighted the indication that this was a presentation by Mr. Mason, Mr. Papageorge?
A That is true.
Q Who was Mr. Mason?
A Mr. Mason at that time was an assistant general manager in the organic division of the Monsanto Company, and he is the man that the functional

fluids business group headed by -- headed by Mr. Burgen reported to. He's right below the vice president, second in command so to speak.

Q Was he the boss of your boss at the time?

A Yes.

Q Where were you on May 11, were you still in Europe?

A I was in Europe, yes, sir.

Q Did you have input into this presentation before you left?

A Before I left and while in Europe, I got at least -- at least two telephone calls from Mr. Mason when he was preparing his material. And he talked to me about them, and I was able to make some comments. So I was aware that this was going on.

Q Let's turn to the objective shown to the corporate management committee. It reads, "Objective: To maintain a profitable business serving the needs of functional fluids users and the carbonless duplicating paper industry whilst minimizing the escape of non-biodegradable biphenyls into the environment."

Mr. Papageorge, were those two goals, the goal before the whilst and the goal after the whilst -- were they considered to be inconsistent?

A No. In fact, they are not inconsistent at all. They can both be achieved simultaneously.

Q I have circled "non-biodegradable". What category -- I assume there's non-biodegradable and there's biodegradable, right?

A That was the two categories used at that time, yes, sir.

Q Which category was Aroclor 1242 at the time?

A They were considered to be amongst the biodegradable types.

Q Now, the slide of, "Action To Achieve Objective. (1) Market non-biodegradable chlorinated biphenyls only for closed system applications where control is possible.

"(2) Phase out of all non-controlled applications replacing with biodegradable chlorinated biphenyls or other satisfactory products."

Did you concur with these proposed actions to achieve the objective?

A I did.

Q Explain what a closed system is.

A It's a system in which the PCB liquids are contained in a -- in a tank or a steel box, and I have in mind an electric transformer as an example which is

sealed. The liquid has no chance of leaving the unit. That's just an example of the type of system we call closed systems.

Q What's the difference between a closed system and closing the loop or closed loop?

A Close the loop was a term originally used by Mr. Mason to describe the -- It's not the physical things involved. It's more the concept of keeping track of the PCBs from the moment they are manufactured, packaged, shipped, used by the consumer; and the item that was used was properly controlled until final disposal.

The whole intent here is to try to account for as much of the PCBs that are in this loop at every point. The objective being to avoid entry into the environment.

Q Would it be possible to have a closed loop system for a given product that was not used in a hermetically sealed container?

A Yes, it's possible.

Q Would hydraulic fluids be an example of that?

A Yes.

Q Explain what you mean.

A Well, the use of hydraulic fluids in equipment in every case involves a container, a storage tank, the

piping, the pump to circulate the fluid, the item in which it's used eventually, and then returned back to the central storage tank. So that is a loop in itself, a physical loop.

The PCBs themselves are not intended to be exposed to the open air even. It's not an open vat of this material exposed to the atmosphere.

They are constantly inside something whether it be a tank, a pump, or a hose or a pipe. So that kind of system if maintained properly could be considered a sealed system.

Q Mr. Papageorge, you understand the hydraulic systems leak, don't you? Doesn't that make it something other than a closed loop system the fact that they leak?

A They do leak. But there are relatively simple ways to put up with that leak, to do something about it. Even a transformer electrical service might ooze out the material. That doesn't mean you tolerate it. You do something to capture that and repair that leak.

Q For it to be a closed loop system, what would you do about the leak in the case of hydraulic fluid?

A You contain it in something.

Q What do you do after you contain it?

A Then you use the best available disposal opportunity whether it be incinerator or it's burned off properly or an approved chemical landfill. Those are the two that are available -- that were available in those days.

Q Could you explain what Monsanto was doing to close the loop regarding the production of PCBs?

A In production at the Monsanto plants, we as I said earlier improved our approach on maintenance. Not only did we repair -- repair the leaks quickly, but we provided for means of capturing the leak before it got away from us beyond our control.

When maintenance work did take place on the system, the fluid in the system that had to be drained to allow us to work on the pump or the hose or the pipe was carefully collected and put into proper containers for proper disposal.

We put in this -- the curbing --

THE COURT: This is getting a little repetitive.

MR. CARLSON: Objection.

THE WITNESS: The things I mentioned earlier, the production.

MR. RUNNING:

Q What about restriction on the range of PCB products

that were sold, was that another step that was taken, the plasticizers?

A Yes. The PCBs were not sold to the uses that were obviously open-end uses with immediate entry into the environment.

Q Regeneration and --

MR. CARLSON: Could I have the last question read back.

(Question read aloud by the Reporter.)

MR. CARLSON: Thank you.

MR. RUNNING:

Q Mr. Papageorge, referring to regeneration and recycling, would Findett, F-i-n-d-e-t-t -- I won't go over all the testimony again.

A This is a good example of that, yes.

Q Biodegradation. Would studies of how Aroclor 1242 behaves in the environment be included?

A Yes.

Q And would studies of feasibility of distilling Aroclor 1242 to remove the 7 percent of the molecules that had 5 chlorines or higher -- would that be included in that?

A That's part of that program, yes.

Q You referred to this when you were explaining the 12-point program on Thursday, but we'll touch on

this in a little more detail. Incineration. Could you explain just briefly what was involved in that aspect of closing the loop.

A We had to make studies to determine what conditions are required to take PCBs that are no longer useful or cannot be recycled or reclaimed and destroy them completely by high temperatures to harmless products. That is what we meant by incineration.

Q I'm not going to spend a lot of time on this. It's one month after the other report we looked through. But was the work on biodegradation continuing in May of 1970?

A Certainly, yes.

Q I see several references to good response, good progress, good progress. Were the reports encouraging?

A Yes.

Q Under the heading Replacement Products, paragraph 2, "Good progress on phosphate ester replacements for hydraulic fluid applications, TCP, CDP, TBP" -- and you'll have to help me out. Mr. Papageorge, pronounce the chemical?

A Nonyl phenyl/cumyl phenyl diphenyl phosphate.

Q What's that?

A That's a chemical, part of the phosphate ester group

that Monsanto's research chemists had in essence custom designed and were able to demonstrate that it had properties that were very, very favorable and improvement over the other TCP, CDPs.

Q Is TCP tricresyl phosphate?

A Yes.

Q Was that available on the market at the time?

A Yes.

Q What about CDP?

A Cresyl diphenyl phosphate.

Q Very briefly explain what that was.

A It's -- It has the same cresyl as the tricresyl group. Cresyl, c-r-e-s-y-l.

Q Was that also --

A It's -- I can't explain without sketching a chemical structure for it. But it is a part of the phosphate ester family.

Q Was that also a known chemical on the market?

A Yes.

Q What's TBP?

A Tributyl phosphate is another common phosphate ester.

Q And are those considered as replacement candidates for Aroclors?

A They were.

Q Were they rejected?
A Not totally until Monsanto's chemists came up with this last one we just described which showed even better properties. So it concentrated on the new phosphate ester.
Q Was the new phosphate ester something that say Stroh Die Casting Company could have obtained from Haughton or some other supplier?
A Not to my knowledge, no. That was not available on the marketplace.
Q Was it a discovery by Monsanto?
A I don't know how to describe discovery in the chemical field. I'm sure it was not an unknown chemical. It's just a matter of whether it was commercial or not.
Q Was Monsanto the first company to develop this chemical?
A For commercial purposes and application, yes.
Q Does it take more or less time to take a new chemical and bring it to market than to take a chemical that's already available on the marketplace?
A Oh, it takes a lot more time and resources to come up with a new chemical.
Q Then why did Monsanto develop the new chemical

instead of using some of the old chemicals?
A They were trying to match the fire resistance of the old formulation of Pydraul fluids, and this phosphate ester was the one that came the closest to it.
Q Did it quite match the PCB fluid?
A Almost. Not quite. But good enough.
Q Now, the report in April -- There had been reference to the toxicity testing. It says, "No change since last report." But then there's a mention, "Have discussed results with Dr. Burger, executive office of the president." President of what?
A That's the president of the United States. That's --
Q Richard Nixon?
A In 1970? I believe that's who it was, yes.
Q Who is Dr. Burger?
A Dr. Burger was the technical representative from the office of -- if I recall correctly, Office of Science and Technology in the executive offices of the president.
Q When did you first meet with federal officials concerning the PCBs problem?
A Early February 1970, federal officials.
Q Did Dr. Burger pressure you to take more steps than

Monsanto was taking at the time?
A No. He was supportive of everything we had done as we went along.
Q The next entry is, "We have analyzed Aroclors 1248 and 1254 for octochloro dibenzo dioxin. None found." What was that a reference to?
A The octochloro dibenzo dioxins mentioned there is the material that will we commonly hear later referred to as dioxins as associated with Agent Orange and was known to be quite toxic to some test animals.

It was a highly controversial toxic material, and our laboratory looked at PCBs to determine whether or not they contain this material dioxins. They didn't find any.
Q Next entry, "Central Institute for Nutrition and Food Research, Zeist, Holland, examined Bayer, Prodelac and Monsanto chlorinated biphenyls for dibenzo furans and none found in Monsanto material." How is this information obtained?
A That was initially brought to Monsanto's attention by the investigators in Holland, the Netherlands, reporting their findings to Monsanto representatives in Europe in Belgium. That was relayed to St. Lewis. And while in Europe we visited with

members of that research team and discussed their findings face to face.

Q And here we see a reference to Incineration. Paragraph (1) reads, "Successful trial at John Zinc Company, Tulsa. 1242, 1260, 1254 destroyed at 2,000 degrees Fahrenheit off gas HC1. Engineering work now in hand to build suitable incinerator. Estimated cost $250,000." What was John Zinc Company briefly?

A It's a company located in Tulsa that had experience with burners primarily in the petroleum and petrochemical industry.

Q And were they developing a petro-type incinerator for Monsanto?

A They eventually did, yes. This refers to the test part. Later on the development work began.

Q Why didn't you just go buy an incinerator that was already in commercial use?

A There was no such incinerator available. This is new technology.

Q Is that why you needed to have a trial?

A That's right.

Q And then there's a reference to, "Incinerator probably located in Krummrich."

A That's the Monsanto plant in Sauget, Illinois.

Q Just briefly we went through the numbers. Can you identify this chart titled Control of Plant Emmissions, an updated report to Monsanto on reducing levels in municipal sewers?

A That's what it is, yes.

Q It contains information one month more current?

A Yes.

Q The transparency is titled Hydraulic Fluids, "Recognize that control of spillage and pump leakage makes the use of non-biodegradable chlorinated biphenyls undesirable."

Was Aroclor 1242 considered to be a non-biodegradable chlorinated biphenyl?

A No.

Q Why was non-biodegradable material considered to be undesirable for hydraulic fluids?

A It goes back to our desire to minimize the opportunities for such types of PCBs getting into the environment. And since the investigators kept reporting the PCBs being found as being the type that are associated with 1254 and 1260, it was decided that as long as an acceptable alternate material could be found there is really no need to stay with the Aroclor 1254 and 1260 blendings -- blends.

Q Was that decision ultimately extended to Aroclor 1242 as well?
A Yes.
Q But not at this time?
A That is correct.
Q Mr. Papageorge, I want you to briefly identify this document, Defendant's Trial Exhibit 1103. Can you identify that as an August 21, 1970, letter you sent to Mr. Doug, last name Dube, of the State Laboratory of Hygiene in Madison?
A It is.

MR. RUNNING: I move for the admission of this exhibit, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

(Exhibit No. 1103, previously marked for identification, was received into evidence.)

MR. RUNNING:

Q Mr. Papageorge, was Monsanto still cooperating with state and local government officials as of August 1970?
A Oh, yes.
Q Did this policy ever change?
A No.
Q Mr. Papageorge, let me show you Defendant's Trial

Exhibit 1104. Can you identify this as an August 26, 1970, memorandum issued by Mr. Wolk and sent to a number of Monsanto managers including yourself?

A It is.

MR. RUNNING: I move for the admission of this exhibit, Your Honor.

MR. CARLSON: Give me a second to look at it. Let me do it this way, Your Honor. I have no objection to the document being received in evidence. I would reserve my right with regards to specific material within the document whether or not it's appropriate to show it to the jury.

I've been told he's only going to use the first page. I don't have a problem with that.

MR. RUNNING: I think the whole document is admissible. I'm going to refer to the first page. If he was an objection to the remainder, we can talk about it at the end of the day.

MR. CARLSON: That's fine.

THE COURT: So received.

(Exhibit No. 1104, previously marked for identification, was received into evidence.)

MR. RUNNING:

Q Mr. Papageorge, was approval given to begin work on

the incinerator on August 26, 1970?
A Yes.
Q This is construction of the new incinerator?
A Yes.
Q Was this the first of its kind, this incinerator?
A Yes.
Q Mr. Papageorge, let me show you Defendant's Trial Exhibit 1105. Can you identify this as an August 27, 1970, memorandum from Mr. Tom Ford to Mr. Mason and to others including yourself enclosing a letter from the Environmental Defense Fund?
A That is correct, yes.
MR. RUNNING: I move for the admission of this document, Your Honor.
MR. CARLSON: Hold on one second. I have no objection to the first page, the STR document 29379. The second page is hearsay. Lack of foundation.
MR. RUNNING:
Q Mr. Papageorge, were both pages of this document maintained in the ordinary course of business by Monsanto Company?
A Yes.
Q Is the second page of this exhibit an attachment to

the first page?
A Yes.
Q Is it referred to in the first page?
A The letter itself? Yes.
Q Was it transmitted to you in the ordinary course of business?
A Yes.
Q Did you rely on it in your work as manager of environmental control for Monsanto?
A Yes.

MR. RUNNING: I move for the admission of the entire exhibit.

MR. CARLSON: Your Honor, you're going to have to read the exhibit -- the second page of this exhibit. You're going to have to read it, and we are going to have to discuss it outside the presence of the jury.

THE COURT: Do it now?

MR. CARLSON: Yeah.

(The following proceedings were held outside the presence of the jury in chambers.)

THE COURT: All right. The record should reflect the Court is in chambers with counsel for both sides relative to the letter dated August 24th, 1970, from the Environmental Defense Fund. It's

from the executive director to the public relations department of the defendant.

MR. RUNNING: Attached to the August 27th memorandum of Mr. Ford.

THE COURT: Okay. We'll hear from Mr. Carlson first.

MR. CARLSON: First of all, Your Honor, I still maintain it's a hearsay document. Second, it contains statements of opinion specifically in the second paragraph with regards to, "We have been most impressed by Monsanto's willingness...," et cetera.

I have no information as to what information Monsanto shared with the Environmental Defense Fund. I have no way of cross examining Mr. Cameron as to his opinions. So for both of those reasons, I would object to the document.

MR. RUNNING: Your Honor, Stroh has taken the position that anything ever produced from Monsanto files is a business record because it was retained by Monsanto in the ordinary course of its business.

And the comment even came up, "Well, what if Monsanto retained a copy of Playboy Magazine, is it a business record of Monsanto?" And the answer

from Stroh was, "Yes." This is a document that was received by Monsanto. It was relied on by Monsanto's managers. It was certainly retained in the ordinary course and used in the ordinary course of business.

It's an authentic document. There's no doubt of that. It's a business record of Monsanto. It's also relevant to this case in that there's a charge being made in this case that Monsanto's conduct was outrageous, it was reckless, it was indifferent, and that it was done with conscious knowledge of those facts.

Well, if Monsanto is receiving a letter of commendation from Environmental Defense Fund, which the evidence will show was a leader in attempting to ban DDT in this country, then it certainly wasn't on notice from the environmental lobby that its actions were outrageous. That's a relevant factor.

But the point at hand is whether or not this is a business record; and under the position taken by Stroh and the rules of this Court, this clearly is a business record. It was prepared and retained in the ordinary course of business and relied on by Monsanto's managers.

And for Stroh to argue that this should be

excluded, they are clearly arguing for double standard because they have taken the diametrically opposed position when it came to documents that they thought advanced their case.

THE COURT: Okay. Any response?

MR. CARLSON: Well, a couple of things. One is that with regards to the question of whether or not documents were produced for business records, it was also perfectly understood by us that Monsanto reserved the right to object on the grounds of relevance, privilege, and any other prejudice and any other grounds that they thought they would have to assert. I think they probably have done that. Although I can't recall.

With regards to the content of the document, however, this is opinion evidence which is not an opinion which we are going to be able to cross-examine on. It's totally impossible. That's why it's objectionable at this point.

Likewise although the witness has said they relied upon it, I would invite the Court to find anything in here that Monsanto could have read and said, "Well, we relied upon this information to do anything," because it's obviously something sent to the public relations department by the

Environmental Defense Fund in return for something else that Monsanto had done. Whether or not it be giving money or anything else, I don't know what preceding --

THE COURT: I've heard enough gentlemen.

MR. CARLSON: Okay.

THE COURT: First of all, I don't think they have to rely on it. There's nothing in the code that requires Mr. Running, Mr. McDevitt, or you to rely on something.

Second, the exception includes opinions. 908.03(6) indicates, "A memorandum, et cetera, in any form of acts, events, conditions, opinions, or diagnoses, transmitted by a person with knowledge, all in the course of a regularly conducted activity, unless the source of the information indicates lack of trustworthiness." There's no question about it. It comes in.

(Exhibit No. 1105, previously marked for identification, was received into evidence.)

MR. CARLSON: The last point for the record. There's no testimony that there is a regular practice of this company in soliciting opinions from the Environmental Defense Fund.

THE COURT: I don't think it's required

that they had to solicit it. I think it would be stupid on Monsanto's part not to retain such a memo as a part of their regularly conducted activity of their company.

MR. RUNNING: Thank you, Your Honor.

(Whereupon, there was a change of reporters.)

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(Whereupon, the following proceedings were had in the presence of the jury.)

MR. RUNNING: Your Honor, I renew my offer of Defendant's Trial Exhibit 1105.

THE COURT: Received over objection.

MR. RUNNING:

Q Mr. Papageorge, let me direct your attention to the second paragraph of Mr. Ford's cover memorandum. He says, "Recently an Associated Press story about the continuing fight against DDT, being waged by the Environmental Defense Fund, wrongly said that Monsanto made DDT in Anaheim. We contacted EDF, and the attached letter resulted."

It goes on, "As you know, EDF is one of the most active and respected environmental forces in the United States. It has been the leading proponent in the battle against DDT. EDF's words of praise about our PCB program are the exact response we hope to elicit by others via the Monsanto Magazine feature." I take it Monsanto has a company magazine they send to its employees?

A They do.

Q And that's Monsanto Magazine?

A Yes.

Q Let's talk a little bit about the Environmental

Defense Fund. Was Mr. Ford correct, were they the leader in the fight against DDT?

A Yes, they were.

Q Can you tell us a little background about the Environmental Defense Fund?

A Well, they are an activist group very much interested in protecting the environment. They have many, many -- I say "many" -- several capable attorneys working for their cause. My experience with them is that they do like to work with good, sound data rather than just emotions alone, so I have a mutual respect, I hope, with them.

They worked quite well when I was in discussions with them. But at the same time they never let their objectives be diluted in any respect. They still are very interested in doing the right thing for the environment.

Q Is it accurate that the Environmental Defense Fund was -- was the leading proponent in the battle against DDT?

A Yes.

MR. CARLSON: Object as leading.

MR. RUNNING:

Q What was --

THE COURT: It's repetitive.

MR. CARLSON: I understand that I have let him lead for a long time, to keep things going.

THE COURT: It's not only leading, it's repetitive.

MR. CARLSON: Yes.

MR. RUNNING:

Q Is this the letter that was attached?

A Yes, it is.

Q Who is it signed by?

A A Mr. Roderick A. Cameron, who was the executive director of the Environmental Defense Fund at that time.

Q And the first paragraph of the letter apologized for mistakenly identifying Monsanto as having produced DDT in Anaheim, California?

A It does.

Q Had Monsanto solicited the comments in the second paragraph of the letter?

A No, sir.

Q The second paragraph reads, "At EDF we have been most impressed by Monsanto's willingness to be responsible where the environment is concerned. We have closely watched the development of information concerning the environmental impact of Monsanto's product, polychlorinated biphenyls, PCB. What impressed us

most was Monsanto's attitude and finally its action to lessen the environmental degradation caused by its product. We continue to watch your PCB clean-up program to be sure that your action is as good as your word, but in the meantime we are impressed by your sensitivity and responsibility. Indeed, in many informal conversations we have signalled" -- "singled out your company as being one capable of acting in its own long-term interest and that of society rather than its short-term economic interest. We have great respect for you."

Mr. Papageorge, did this statement from the Environmental Defense Fund have any impact on your subsequent actions as Manager of Environmental Control for Monsanto?

A Well, it certainly told us that apparently we were going in the right direction as it affects the environment, because this is certainly one group that was watching the environment very closely and was well-qualified to make some evaluation.

Q Did you receive other favorable comments on Monsanto's PCB policy during this period?

A I recall a couple more, the best my memory can help me here, yes.

Q Do you recall statements by Dr. Ian Nesbitt of the

Audubon Society?

A Yes, sir.

Q What do you recall that he said?

MR. CARLSON: Objection, hearsay.

THE COURT: Sustained.

MR. RUNNING:

Q Did anything that Dr. Ian Nesbitt of the Audobon Society said to you lead you to believe that Monsanto's conduct was outrageous, or indifferent, or negligent, in need of change?

A No, it was just the opposite.

Q Have you ever heard of the Isaac Walton League?

A Yes, I have.

Q Who are they?

A As I understand it, that's a group of ardent fishermen who are also environmentalists, interested in providing clear streams and propagation of sports fishing.

Q Did you have communications with a representative of the Isaac Walton League concerning Monsanto's PCB program?

A Yes.

Q Did anything that that representative told you lead you to believe that Monsanto's conduct was outrageous, indifferent, negligent, or for any other

reason in need of change?
A No. In fact, it was complimentary.
MR. CARLSON: Wait. Wait. Wait. Wait.
THE COURT: That last phrase is stricken as being nonresponsive.
MR. RUNNING: Leaving in the answer "no," Your Honor?
THE COURT: Correct.
MR. RUNNING: Thank you.
THE COURT: By the way, just so there is no misunderstanding, "McCormick On Evidence" indicates that that objection is only available to the questioner, but I have never followed that. And because I don't know what somebody in Mr. Carlson's position does when somebody blurts out an answer that's nonresponsive.
MR. CARLSON: I have always suffered with that problem with judges that weren't as enlightened.
MR. RUNNING:
Q Mr. Papageorge, can you identify Defendant's Trial Exhibit 1010?
A You wish me to identify it?
Q Well, let's back up. First of all, was this letter sent out using the same procedures you've identified for the February, 1970, mass mailing?

A Yes.
Q And is this letter addressed to "Office of the President, Stroh Die Casting Company"?
A Yes.
Q Is it dated August 27, 1970?
A Yes.
Q And signed by Norman Johnson, Marketing Manager, Industrial Fluids?
A Yes.
MR. RUNNING: I move for the admission of this exhibit, Your Honor.
MR. CARLSON: I have no objection.
THE COURT: So received.
MR. RUNNING:
Q Is this the mailing label that was found in Monsanto's files, Mr. Papageorge?
A It is.
Q There has been previous testimony that's the correct address for Stroh Die Casting?
A Yes.
Q Were you involved in the writing of this letter, Mr. Papageorge?
A I saw the drafts as it was being put together, and I, of course, saw the final version before the mailings.
Q Now, Mr. Carlson has asked several witnesses if they

see -- if they saw in the February, 1970, letter a statement that Pydraul had contained polychlorinated biphenyls. Do you see a statement to that effect in this letter, Mr. Papageorge?

A I do.

Q "Pydraul F-9 has been formulated with polychlorinated biphenyls." Is that the first sentence of the second paragraph of this letter?

A It is.

Q Do you see the reference in the first paragraph, "In February we advised you of the newspaper and magazine articles indicating that polychlorinated biphenyls have been discovered at some points in some marine, aquatic and wildlife environments."

Q Would a person receiving this letter have been referred back to an earlier letter?

A Certainly.

Q Why was a decision made to reformulate Pydraul F-9?

A Pydraul F-9 had in it Aroclor 1248. It wasn't as biodegradable-resistant as the Aroclor 1254 and 60, but it was not as degradable as the Aroclor 1242. And since it fell between the two, it was decided to go ahead and treat it as though it was similar to the Aroclor 1254 types of Pydrauls.

Q Was there any prioritization given to the

reformulation program? Were some chosen to be reformulated first and others later?

A Yes, those that had the higher chlorinated types of PCBs, the 1254 and the 60, were reformulated first, followed by F-9, for example, which had Aroclor 1248, and later on we picked up the 1242 types.

Q There is, "This formulation," referring to the new formulation, "is completely compatible with the old formulation and does not contain polychlorinated biphenyls." What did that mean, Mr. Papageorge?

A It means that this material can be added to the equipment without affecting the -- all the fluid in the system and creating problems with the operation of the system. It's very much like adding oil to your automobile engine, you can top it off without damaging the equipment.

Q The comment "does not contain polychlorinated biphenyls," what does that mean?

A That means that the formula now offered for F-9-A does not contain PCBs as an ingredient.

Q Is the method for making terphenyls analogous at all to the method for making biphenyls?

A The methods are virtually identical except for the starting material.

Q What are the differences in starting material?

A In making PCBs, the process starts with biphenyl. In making the chlorinated terphenyls it starts with terphenyl, which is three benzene rings as compared to two.

Q Is it possible to get a hundred point zero, zero, zero, zero percent terphenyl mixtures when you make terphenyls as your starting ingredient?

A Is it possible that -- Under research conditions it's possible, but commercial and industrial conditions, not probable.

Q Are there small amounts of biphenyls -- I am sorry -- yeah, are there small amounts of biphenyl in the triphenyl raw ingredient?

A Yes. We found that out.

Q You found that out when?

A Sometime after the date of this letter. I just don't recall when. Six months later or so.

Q We may run into it.

A Okay.

Q How much? Is it 50 percent biphenyl and 50 percent triphenyl?

A No. No. No. It's a low percent. 1 percent is the best I recall.

Q Okay. Now, what happens with that less than 1 percent of biphenyl in the triphenyl mixture when

it's chlorinated?
A It becomes a chlorinated biphenyl. And then when the analyst looks at the chlorinated terphenyl, they see this contaminant, which is a chlorinated biphenyl.
Q Were polychlorinated biphenyls an intentional ingredient in Pydraul 312A -- I am sorry, Pydraul F-9-A?
A No.
Q Referring to the next paragraph, it says, "During the next 90 days, as inventory is depleted in warehouses around the country, the new formulations will be shipped to fill your orders." I just want to be clear on the chronology. Were the letters informing of the reformulation, informing the customers of the reformulation, were they sent before or after the switch was actually made to the new product?
A They were made while the new product was being manufactured and put in drums and then distributed to the warehouses.
Q As a customer, would I receive the letter telling me about the reformulation -- here it's August 27, 1970 -- would I receive it before the inventories of the old product had been sold out?
A It depends on which area you're in and whether the warehouse that distributes the material in your area

still had some of the older inventory.
Q Let's talk about the inventories.
A Um-hum.
Q How were -- What -- How was it decided how much inventory of the old product would be kept?
A Under the normal conditions of sale and replenishment, and so on?
Q Yes.
A That is decided by the pattern that the warehouse experiences through the years. They know that they can handle ten drums a month, or some such number, and they like to have a certain number of drums in their warehouse to make sure they can meet the orders as they come in.
Q Mr. Papageorge, let's not talk about a particular regional warehouse. Using your background in manufacturing, is the size of an inventory in part a function of the economies of scale of production?
A Yes.

MR. CARLSON: I object. It's leading.

THE COURT: The answer is stricken.

MR. RUNNING:

Q Mr. Papageorge, explain the relationship between the economies of scale of production and the size of the inventory for a given product.

A The ease with which a particular product can be manufactured, the availability of the equipment in which it is manufactured are important factors in determining when a particular product will be made and how much will be made at a time, and this is further influenced by the degree of business involved. If it's an active kind of product, of course you schedule production more often, and if not, you just wait a while until the inventory reaches a low point, and then the production planner schedules additional production.

Q I am going to try to illustrate this with a simple example. Say to activate a production line, produce a widget, a product -- Let's say there is two production lines. Line 1 is Production Line A that makes Widget A, and the other is Production Line B, and it makes Widget B. And let's say Production Line A costs $10,000 every time you activate it, Production Line B costs you a thousand dollars every time you activate it. Just with those facts, if that's all you know about Widget A and Widget B, or Product A and Product B, which is likely to have the bigger inventory?

A The one that costs the $10,000.

Q And why is that?

A It just makes good economic sense. If you can avoid these high expenditures by scheduling the production less frequently, but make enough inventory, you do so. But you have to weigh the cost of the inventory against that also. So there is a balance that's eventually reached that's the optimum.

(Switch in reporters.)

Q Did Monsanto use this kind of thinking in deciding how big its inventory of products should be?

MR. CARLSON: Object, lack of foundation.

MR. RUNNING: He was involved in production, Your Honor.

MR. CARLSON: I don't think production has anything to do with marketing.

MR. RUNNING: This isn't marketing.

THE COURT: No, it's production.

MR. CARLSON: I understand that.

THE WITNESS: Yes, they did.

THE COURT: I never did rule, but I will overrule the objection.

MR. RUNNING:

Q I just assumed. Sorry. Mr. Papageorge, using the simple examples of Product A and Product B, the $10,000 cost of activating Production Line A, and the thousand dollar cost of activating Production Line B, could you describe what the production arrangements were for Pydraul products?

A The Pydraul products could be relatively easy to blend and formulate. The facility in which they were produced was a very flexible arrangement of tanks and pumps and drumming equipment and storage.

Therefore, there was no need to build a huge

inventory of any one of the particular Pydrauls, so that we were able to keep a minimum number of drums to meet the normal demand, and if the inventory got to a low point, which had been determined from experience and economics, we would schedule another blending run, and produce, say, a hundred drums of the material and put it in the warehouse.

Q If I'm a customer, say I'm Stroh Die Casting Company, and I've received this letter on or about August 27, 1970, and I see there is going to be a new product, Pydraul F-9A, and I'm thinking about ordering some new Pydraul from Monsanto, if I decide I want to wait for the new product and not order the old, would that have been accepted by Monsanto?

A Certainly.

Q I show you Defendant's Trial Exhibit 1106. Can you identify this as minutes of the meeting of the corporate management committee of September 14, 1970?

A I do.

MR. RUNNING: I move for the admission of this document, Your Honor.

MR. CARLSON: Give me a second. No objection.

THE COURT: So received.

MR. RUNNING:

Q Mr. Papageorge, we were talking this morning about Dr. Kelly's memo to you and the decision to terminate the sales of PCBs used in coatings of silos. Do you see a reference that sales of plasticizer applications have been terminated? Do you see that reference?

A I do, I see it.

Q Does that refer to the same thing we were talking about in connection with Dr. Kelly's memorandum?

A Yes.

Q Let's go to the next page. Item 4 reads, "Replace non-biodegradeable chlorinated biphenyls, hydraulic application. 40 percent phase out will be accomplished by November 1. By year end we'll reduce from 14 million pounds to 5 million pounds annually, leaving only 1242 being used for this purpose." Does that refer to Aroclor 1242?

A Yes.

Q "An additional three months will be required to remove all PCBs from Pydraul 300 to accomplish a 90 percent phase out when 1242B is available."

First of all, is that a typographical error? Is there such a thing as Pydraul 300?

A No, that should have been 312.

Q Okay, and what is this reference to 1242B?
A 1242B refers to the PCB mixture that starts out as Aroclor 1242 and which has been distilled, and the five chlorine and higher PCBs have been removed, and the B was intended to stand for biodegradeable version of Aroclor 1242.
Q This would be removing the 7 percent of 5 chlorine and higher molecules that were in 1242?
A That is correct.
Q Now, there is a reference to an additional three months will be required to remove all PCBs from Pydraul 300, meaning 312. What is the reference of three months?
A This was dependent on the installation of equipment at the manufacturing plant which was capable of distilling the Aroclor 1242 to make the Aroclor 1242B.
Q I see. "The division requests three months extension to achieve a 90 percent phase out of the use of nondegradeable PCBs and hydraulic fluid applications, when the new 1242B product will be available for substitution.

"Conclusions. The president commended the division for the excellent progress made on its program. The three months extension requested for

phasing out of products with hydraulic fluid was approved with a caution that the division continue to exert pressure to move this program as fast as possible. Further progress in the program should be reviewed with the committee in the first quarter of 1971."

Mr. Papageorge, as of the date of this meeting, September of 1970, had Monsanto changed its mind about Aroclor 1242?

A As of the date of this meeting?

Q Yes.

A No. It still considered Aroclor 1242 as one of the degradeable types of PCBs not in the same class as the Aroclor 1254 and 1260, but at the same time they decided that if an acceptable substitute was available that was more promising in terms of not having the objectionable types of PCBs, it would work on it and use it.

Q Was the distilled version of Aroclor 1242 ultimately used as a replacement for the old Aroclor 1242 and Pydraul 312?

A No, it was never used.

Q Why not?

A Because the program for developing a phosphate ester which gave good fire resistant properties was moving

faster than expected, and it was decided that since this phosphate ester was working so well in the laboratory, that that is the one we should concentrate on for introduction into the commercial fluids and get it approved for that purpose.

Q Mr. Papageorge, we spoke a moment ago about the differences between PCTs and PCBs. Do you recall that polychlorinated terphenyls were used as an interim substitute product between the new phosphate ester and the old PCB?

A True.

Q And why was the decision made to use polychlorinated terphenyl as an interim substitute product?

A It was primarily intended to help us phase out the use of PCBs, even though it was only 7 percent of the mixture was the objectionable types of PCBs, and that the PCTs offered an opportunity to produce an acceptable product, as we talked earlier this morning, with less chloride, and the intent there was to tide us over until the phosphate ester was demonstrated to be acceptable.

Q Mr. Papageorge, let me show you Defendant's Trial Exhibit 1107. Can you identify this as an October 6, '70 memorandum you prepared to Mr. Marsh and others regarding the "PCB Environmental Problem,

September status report"?

A Yes.

MR. RUNNING: Move for the admission of this exhibit, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q Did you prepare monthly reports on the activities regarding PCBs during this time period?

A I did.

Q What was the purpose of the monthly status report?

A The intent was to inform the managers of this product group, as well as the participants in the PCB task force that was helping me, to get a good review of what transpired the previous month.

Q I don't want to go through this whole report. Turn to Page 5, "Industrial Hydraulics." Let me read you the second paragraph.

"It will be desirable to make the hydraulic fluid application into a closed-loop system. We cannot expect to stop leaks, but we can expect to minimize contamination of water by; 1, minimizing runoff to sewers; 2, treating contaminated water by absorption. Anniston had no detectable PCB after passing through a limestone bed.

Three, recycling absorbents to remove Aroclor by squeezing, by extraction, or by devolatilization - destruction."

What did you mean when you were saying that it would be desirable to make the hydraulic fluid application into a closed-loop system?

A It's the same meaning we had as discussed earlier, about accounting for these fluids in such a way that we are assured they're not getting into places we don't want them to get into.

Q This is something you were advocating in 1970?

A Yes.

Q Would it be easier or harder to achieve the closed-loop system you describe here if there were no floor drains on the factory floor that led to the municipal sewer?

A Certainly it's easier.

Q Would it be easier or would it be harder to achieve the closed-loop system you refer to here if there were a trench system in place that would channel hydraulic spills to a central area for collection?

A That would make the task much easier.

Q Would it be easier or would it be harder to achieve the closed-loop system you've referred to here if there was a means of collecting the hydraulic spills

into a central containment tank?
A It would be easier.
Q Would it be easier or would it be harder to achieve the closed-loop system you've referred to here, if the cooling water system for the machinery in question was a non-contact cooling water system that had its own piping system?
A Easier.
Q I show you Defendant's Trial Exhibit 1253. Can you identify this as a January 25, '71 memorandum prepared by N.T. Johnson to several Monsanto managers regarding Pydraul reformulation letters to customers?
A Yes.
MR. RUNNING: I move for the admission of this exhibit as a business record, Your Honor.
MR. CARLSON: Do you have the attached distribution list that is referenced on here?
MR. RUNNING: It's right here.
MR. CARLSON: I have no objection to the document, Your Honor.
THE COURT: Received without objection.
MR. RUNNING:
Q Is this a cover sheet for the memorandum?
A Yes, it is.

Q Mr. Papageorge, the first paragraph of this memorandum reads, "On February 1, a letter will be sent to all Pydraul 312, 135, Pydraul 230, Pydraul 540A, and Pydraul A200 customers announcing the new formulations containing no polychlorinated biphenyls. A copy of this letter is attached." It gives the designations of the new products.

We are bringing in raw materials to the Queeny plant now and will initiate production as soon as all old raw materials are consumed. The exact change over date on each formulation will vary by product. Every effort must be made by yourself, your sales correspondent, and the current operating COP system to move the old formulations first. We will have some inventory of Pydraul F-9, Pydraul AC, and Pydraul 625 -- these must be moved in the next 60 days."

Mr. Papageorge, how much inventory was there of these products?

A I don't recall the exact amount, but it was less than 50 drums of material throughout the country.

Q Why didn't Monsanto incinerate the old product instead of selling it to customers?

A There was no need to, as long as the product was used properly as we had advised, there just wouldn't

-- it wouldn't have made any sense to destroy those 50 drums. That would not help anything.

Q If a customer disagreed with you, Mr. Papageorge, upon receiving the letter and didn't want the old product, would you have respected his wishes?

A Certainly.

Q Does Mr. Johnson say that in his memorandum there will be exceptions, but they must be minimized?

A Yes, that is the exceptions. They expected some people not to want the old.

Q If you had wanted to make sure that every customer would get the old product whether he liked it or not, could you have just delayed sending out the letter announcing the reformulation?

A Certainly.

Q Did you do that?

A No.

Q I hand you Defendant's Trial Exhibit 1011. Mr. Papageorge, was this letter, the February 1, 1971 letter, sent according to the same procedures that you previously testified to for the other mass mailings?

A It was.

MR. RUNNING: Move for the admission of this letter, Your Honor, including the mailing

label.

MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q Mr. Papageorge, is that the mailing label found in Monsanto's files?

A Yes.

Q There is testimony that is the correct address of Stroh Die Casting Company. Do you see the checkmark again?

A I do.

Q Is this the letter that was put in the envelope that was addressed to Stroh?

A It is.

Q Mr. Johnson's memorandum saying that he wanted to sell out the inventory of the old product was dated January 25 of '71, is that correct?

A That is correct.

Q This letter was sent out just 7 days later, is that right?

A That is right.

Q Is the first paragraph similar to the first paragraph in the letter that was sent to Pydraul F-9 customers, when that product was reformulated?

A Yes.

Q So your testimony would apply to that paragraph as well?
A Yes.
Q The second paragraph reads, "Pydraul 312, Pydraul 135, Pydraul 230, Pydraul 540A, and Pydraul A200 have been formulated to a polychlorinated biphenyl," is that right?
A That is correct.
Q Is that something that Monsanto is trying to hide?
A No, sir.
Q The next paragraph says, "During the next 60 days, as inventory is depleted in warehouses around the country, the new formulations will be shipped to fill your order. If we can be of further assistance or answer any questions you might have, please contact your local representative or me in St. Louis."

Mr. Papageorge, if Stroh, having received this letter, didn't want to buy any more Pydraul 312, would you have respected their wishes?
A Certainly.
Q Mr. Papageorge, let me show you Defendant's Trial Exhibit 1012. Can you identify this as an April 15, 1971 letter that was sent according to the same procedures as you've previously testified to?

A I can, yes.
Q Is the first page of this exhibit a mailing letter to Stroh Die Casting Company?
A Yes.
MR. RUNNING: I move for the admission of this exhibit, Your Honor.
MR. CARLSON: No objection.
THE COURT: So received.
MR. RUNNING:
Q Is this the mailing letter that was in Monsanto's files, Mr. Papageorge, for this letter?
A Yes.
Q And is this the letter that was put in that envelope?
A Yes.
Q The first paragraph reads, "Over the past year or so, we have written you several letters concerning polychlorinated biphenyls and have urged that care be taken to prevent the escape of hydraulic fluids containing PCBs into the environment.

Certain Pydraul hydraulic fluids did contain PCBs, taking advantage of the excellent characteristics of that material for certain industrial applications, however, in view of the questions which have been raised concerning possible

environmental effects, Monsanto launched a program to develop alternative products without using PCBs."

Is the information in that paragraph accurate, Mr. Papageorge?

A Yes, it is.

Q If a person reading this letter had for some reason misplaced or accidentally thrown out the previous letters, and they called Monsanto and asked for copies, would they have been provided?

A Oh, certainly.

Q So if a secretary had accidentally thrown out the letters thinking they were junk mail, would Monsanto have been willing to provide extra copies?

A Certainly. As many as they want.

Q Did you ever hear of any customer who complained that they hadn't received these letters?

A No.

Q Refer to the postscript, Mr. Papageorge. It reads, "Would you please circulate this letter to all departments in your operation that are concerned with hydraulic fluids and/or maintaining a clean environment." Why was that postscript added?

A We wanted to make certain that the information contained in that letter wasn't kept in a file where

it would be of no help to the people who actually used the material out in the plant.

There have been some experiences where it would go into, say, the buyer's file, and the operating people didn't get to see it, and the intent here is to make certain that those who worked with the material at least knew this much about it.

Q Mr. Papageorge, I'm going to hand you Defendant's Trial Exhibit 1113. Can you identify this as the July 16, 1971 memorandum that you prepared and sent to Mr. S. Uneno concerning the incinerator?

A Yes.

MR. RUNNING: Move for the admission of this document, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q Mr. Papageorge, this memorandum states that the scrap liquid incinerator was placed into operation in May, referring to May of '71. It gives the performance characteristics of the incinerator. Is the memo accurate?

A Yes.

Q Was the incinerator successful?

A Yes.

Q Was it successful in destroying PCBs through high temperature incineration?
A Yes.
Q Incidentally, was this the first successful operating high temperature incinerator for PCBs?
A Yes.
Q In the world?
A In the world.
Q Mr. Papageorge, let me show you Defendant's Trial Exhibit 1254. Can you identify this document?
A Yes.
Q Would you do so?
A This is a copy of comments that I made before a group of Monsanto's customers who purchased PCB products for use in electrical equipment.
Q Approximately when -- I take it this was a speech?
A I guess you'd call it a speech. I sat down at a table and others sat around a big table, and I read off my notes to them.
Q Was it like a seminar then?
A Somewhat, yes.
Q When was it given, approximately?
A This is about September, '71, as best I recall.

MR. RUNNING: I move for the admission of this document, Your Honor.

MR. CARLSON: I'm going to have to wait just a little bit on this one, Your Honor.

THE COURT: All right. It's time to take a break right now. That will give you a chance to look at it.

(Switch in Reporters.)

THE COURT: All right. We'll resume the direct examination of Mr. Papageorge.

MR. RUNNING: Mr. Carlson had been asked to review the exhibit. Do you object to it?

MR. CARLSON: I suppose I have to make up my mind, don't I. I guess, Your Honor, I am going to not object to the document as a business record. However, to the extent that -- I don't object to it.

THE COURT: Received without objection.

MR. RUNNING:

Q Mr. Papageorge, are these -- is this the notes you used in giving the seminar or speech to the electrical manufacturers?

A Yes.

Q This was about in September of 1971?

A Yes.

Q Mr. Carlson quoted from this speech in his opening argument in this case.

MR. CARLSON: Statement.

MR. RUNNING:

Q His opening statement. I want to direct your attention to the portion, although not the -- more than just the words -- Mr. Carlson -- but the portion begins, "Other major uses include the use in hydraulic fluids which are fire-resistant. Monsanto

marketed these fluids under its trademark Pydraul. I am sure some of you remember the Livonia, Michigan, fire? This was a disastrous fire in terms of property damage and was really a high mark in terms of convincing industry that there was a need for fire-resistant hydraulic fluids."

This is the part that Mr. Carlson read. "But the application is not the type that is maintained to a degree where everything is leakproof. Many of these connections leak, hoses burst, and the tendency is to keep producing by adding more fluid. So it is conceivable that many of these hydraulic fluids ended up in the sewer. I do not intend to criticize the customers of our products. From the knowledge that we had at that time of the material, the practice was considered acceptable." Did you make those remarks in September 1971?

A I did.

Q Were they true?

A Yes, as I understood them.

Q Do you stand by those words today?

A Yes.

Q Mr. Papageorge, when you say, "It is conceivable that many of these hydraulic fluids ended up in the sewer," what are you referring to?

A I guess the best way to describe that is by describing a typical situation where a leak occurs in a system and no attempt is made to repair it quickly, there would be expected to be an accumulation of the liquid underneath that leaking point.

Now, I don't want to give the impression that all of that is a river of fluid flowing down the sewer into the environment. What I'm referring to is that after a proper cleanup of that fluid, with a squeegee, or sawdust, or whatever ways to take up the free fluid, there is still an amount of fluid, almost like a big stain on the floor, like I have under my car in my garage, and the idea is to -- what was happening then is that on occasion that floor would be washed down, sometimes using detergent, sometimes just hot water and whatever it took, and that's the amount of material containing PCBs that I visualize going down the sewer.

Q You said, "I do not intend to criticize the customers of our products." In 1971 would you have criticized customers who were dumping Pydraul hydraulic fluid out on their backyard?

A In '71, certainly.

Q Would you have criticized them for that practice in 1965?

A Backyard, certainly, yes.
Q Now, if the factory floor in question didn't have drains that led to the municipal sewer, but instead had trenches that led to a central collection system, would this problem arise?
A I don't see how it could, no. It doesn't allow entry into the sewer.
Q Mr. Papageorge, let me show you Defendant's Exhibit 1115. Can you identify this as an October 28, 1971, memorandum from Dr. Keller to Dr. Richard concerning alleged dioxins and benzofurans and PCBs, inputs for report?
A I do.
Q Is this a Monsanto business record?
A Yes.
MR. RUNNING: I move for its admission, Your Honor.
MR. CARLSON: No objection.
THE COURT: So received.
MR. RUNNING:
Q Dr. Keller was the head of the Analytical Program?
A Yes, he was.
Q And Dr. Richard was the head of the Functional Fluids Research Program?
A Yes, he was.

Q Reading the second paragraph, "Overall we should be able to meet predicted regulatory agency maximum permissible levels of chlorodibenzofurans in our PCB/PCT products. Data in hand show that Aroclor 1242, 1254, 1260 and MCS 1016 contain no detectable, less than two parts per million, furans or chlorodibenzo-p-dioxins. Aroclor 5442 contains no detectable, less than five parts per million, furans." Was this the finding of the research group at the time?

A Yes.

Q Was it the best information Monsanto had available about the content of its PCB and PCT products?

A As it relates to these contaminants, yes.

Q Mr. Papageorge, do you have a copy of Plaintiff's Exhibit 40 in front of you? It should be right over there.

A I have it.

Q Okay. This is a November 17, 1971, memorandum from Mr. Bradford and Mr. Johnson to Mr. Gossage.

MR. RUNNING: It's in evidence, Your Honor, as Plaintiff's Exhibit 40.

MR. RUNNING:

Q Mr. Papageorge, I want to direct your attention to a paragraph in this document that's been read several

times by Mr. Carlson. Would you turn to Page 3 of the memorandum and read the paragraph to yourself. I want to go back to it, but I want to refer to a couple things first. If you could just read the paragraph so that you can be in a position to answer my question.

A I have read it.

Q Okay. Now, you were not here for Mr. Carlson's opening statement, but I want to direct your attention to his comments about the paragraph I have just referred you to. Do you see in the box that I have highlighted in green Mr. Carlson quoted verbatim from the paragraph from the Bradford memorandum?

A I do.

Q And then he said, "In the area" --

MR. CARLSON: Wait. Wait. What is this?

MR. RUNNING: This is the transcript of your opening statement.

MR. CARLSON: Your Honor, that's not proper direct examination of this witness.

MR. RUNNING: Your Honor, I'm entitled to direct the witness's attention to the comments counsel has made about this document and then ask him to respond.

MR. CARLSON: It's not in evidence.

THE COURT: He can make -- I don't think there is any question that he can ask questions about comments made by a lawyer in opening statement.

MR. CARLSON: I don't have any problem with that. It's the subject matter.

MR. RUNNING: I want to refer him to his very words so the witness can respond.

THE COURT: No question about it.

MR. CARLSON: About using a --

THE COURT: Opening statement comments, sure.

MR. CARLSON: Okay.

MR. RUNNING:

Q After reading verbatim from the memo, Mr. Carlson said, "And Monsanto did embark on a course to find out how to put their fluids on top of the PCBs so that the PCBs could be lost to the environment, knowing what it was causing." Now, do you have that in mind, Mr. Papageorge?

A I do, yes.

Q I want to show you something else Mr. Carlson and another witness said about this paragraph. This is from the direct examination of Dr. Richard Peterson. You see in the box that I have highlighted in green that Dr. Peterson read this paragraph to the Court

and to the jury. Do you see the green box?

A I do.

Q That's verbatim, the box that I highlighted from the memorandum. And do you see at the bottom in the part I have highlighted in blue --

A I see it.

Q -- Mr. Carlson asked on Line 21 the question:

"And do you have an opinion as to the suitability of that advice?

A I thought that was outrageous advice.

Q Thank you. Why?

A Because of the fact that this paragraph is acknowledging the fact that by doing that, by topping off, as they referred to it, the PCBs in these machines that use hydraulic fluids with PCTs, that would mean that the old PCBs that were there would still be gradually lost to the environment, and for that reason I thought this was outrageous advice."

Do you have Dr. Peterson's testimony on this subject and Mr. Carlson's opening statement on this paragraph in mind, Mr. Papageorge? You have just -- have had -- now had a chance to review those two --

A I believe I have, yes.
Q -- pieces of evidence in the trial? I direct your attention to the statement that Mr. Carlson has been reading several times in this trial.

"This of course would mean gradual loss to the environment of all PCTs and PCBs in our current customer systems," and there is a reference to "20 million pounds."

Mr. Papageorge, was that the basis for any decision that you made while at Monsanto concerning the reformulation of polychlorinated biphenyl or polychlorinated-terphenyl-containing products?
A Absolutely not. That's -- That statement makes no sense.
Q Why doesn't it make any sense, Mr. Papageorge?
A Well, the 20 million pounds ending up into the environment is hard to imagine. It's a bit like -- I am going to use an exaggerated example to make my point with you. It's a bit like a tornado hitting each and every site where hydraulic fluids are used and scattering that PCB-containing material all over the environment, on the ground, in the area, down the creeks and into the rivers. That just doesn't fit the real world. There was better control of those

systems than that.
Q Well, wait a minute, Mr. Papageorge. You'll acknowledge, won't you, that hydraulic lines sometimes leak?
A Oh, they do leak. That doesn't mean that they're out of control.
Q Why not? If they leak, doesn't that mean the fluid will get into the environment?
A Not necessarily.
Q Why not?
A Unless it's carelessly handled. There is always a bucket you can put it in, or a pan, or sawdust to soak it up, and so on.
Q Did you ever hear any Monsanto manager say in any meeting when this subject was addressed that the consequence of Monsanto's decision would be that all of the PCT or all the PCB hydraulic fluid would eventually be lost to the environment?
A That was never a topic of consideration.
Q You didn't consider that?
A That all 20 million pounds would end in the environment?
Q What about 19 million pounds?
A Even that. It was hard to imagine how that could realistically happen. It would have to be sheer

carelessness on the part of thousands of users, neglecting to pay attention to any of the information we shared with them. We just could not ever imagine that happening.

Q What were you expecting your customers to do with this fluid?

A To collect any material that got out of their system, to -- We encouraged the use of our incinerator for the liquid itself, and if there were other materials that contained it, like the sawdust I have mentioned several times, they could be taken -- they should be taken to a properly authorized chemical landfill. Not a garbage-type landfill. There are differences. Those were the two acceptable disposal practices at that point in time.

Q Don't you think you were asking a little bit much of your customers to contain the hydraulic fluid in their plants?

A No, I find -- I cannot say yes to that. My experience with manufacturing and liquids and piping systems, over 20 years of it, I know that it's possible to control liquids of this type.

Q Does that mean you have to prevent leaks from hydraulic lines?

A Prevent leaks? I don't know that you can prevent

them, but you can manage them once they occur.
Q How?
A You try to buy the best hoses you can get, and buy the best flanges, and the best gaskets, and the best pumps, and then you maintain those as best you can.
Q Well, what if some leakage occurs? Weren't you asking too much?
A Then I would trap it, catch it, don't let it get away from me.
Q And how would you do that?
A As I've described several times, with the necessary containment tanks, trenches, drip pans, that kind of collection system.
Q When were these kind of containment and collection systems first available?
A That's so common in industry. I would suggest in the 1900s. That's old technology. It's not space age technology.
Q Mr. Papageorge, do you have any explanation for this sentence? If it doesn't mean that all the old PCB fluid would eventually get into the air, land and water, what could it mean?
A In the absence of well-designed incinerators, enough of them to handle what could possibly be generated in the way of waste liquids, the only other acceptable

disposal practice was the use of landfills. Now, it's very likely, and many of us also think this -- A landfill is still part of the environment. Although the material is contained, it's monitored, it's in the right geological conditions, it's still part of the environment. Now, that could well explain how the 20 million pounds eventually might be in the environment. That doesn't mean they're out of control in the environment.

Q If Monsanto had required that its customers drain out all of the PCB fluid from their machines in 1971, would there have been adequate incineration capacity in 1971 to handle that fluid?

A No.

Q So where would the fluid have had to have gone?

A It would have to go in storage facilities, whether they be tanks, or stacks of drums out in open lots, and those systems, of course, would be subject to wear and tear and leaks in themselves, and they would have to be monitored. There just was no other good way to dispose of all of that material that quickly.

Q This material still have a useful life in it?

A Very much so, yes.

Q Did Monsanto subsequently make an incineration service available?

A Yes, they did.
Q And as the useful life of the fluid was over, did the customer have the option of using this incineration service?
A They did.
Q As time went on, was there more or less incineration capacity in the United States?
A Oh, as time went on, there were companies that went into the business of incinerating PCBs. I recall the Rollins-Pearl (phonetic) unit that was installed just outside Philadelphia. That was about 1972. And about six months or so later there was another unit up near Niagara, New York. Then there was another one just south of Chicago in northern Illinois. There were commercial units being installed that could handle the PCBs.
Q Now, you have testified that Monsanto pioneered the development of PCB incineration facilities; is that correct?
A That is correct.
Q Did Monsanto try to patent that technology or prevent others from using it?
A No, we did not.
Q Mr. Papageorge, let's do a simple calculation. I direct your attention to -- Dr. Peterson referred

several times to an estimate by the U.S. Environmental Protection Agency. Dr. Peterson relied on a statement from the U.S. Environmental Protection Agency to the effect that, quote, "From hydraulic systems an annual amount of about one ton of PCBs may be released according to the EPA." He goes on, "So every year about one ton of PCBs is released into the environment from hydraulic systems." And then he testified the significance of that statement to him was that "these hydraulic fluids cannot be contained for the particular use that they have in industry, and if they contain PCBs, which I feel to be -- to be dangerous chemicals, that they will be released into the environment."

This was in his cross-examination. He said, "It was not difficult for me to form the opinion -- that opinion" -- Let me read the question. My question to him was, "It was difficult for you to form opinions about the risk of releases of hydraulic fluid into the environment because you had never visited a die casting plant before your deposition in this case; isn't that true?" Answer, "It was not difficult for me to form that opinion after reading the literature, no. It stated about one ton on an annual basis of hydraulic fluid is released. It was

shown on one of my overheads. One ton per year."

I said, "That's in the entire country; isn't it?" He says, "That's estimated by the U.S. Environmental Protection Agency for Pydraul or hydraulic fluids." Question, "In the entire United States?" Answer, "Yes. Apparently. I'm not sure."

And the Court asks, "One ton of fluid or one ton of PCBs?" The witness says, "One ton of hydraulic fluid containing PCBs."

And then we agreed that one ton is equal to 2,000 pounds. And I used the assumption that a gallon of hydraulic fluid weighs about ten pounds. I just want to go through a quick calculation, Mr. Papageorge. How much does a gallon of Pydraul weigh, about?

A It's about ten pounds to the gallon.

Q Okay. And this -- this one paragraph that has been referred to by Mr. Carlson and Dr. Peterson refers to an amount of fluid involved being 20 million pounds; is that correct?

A That is correct.

(Switch in reporters.)

Q So we have according to this paragraph, we have 20 million pounds, Mr. Papageorge?
A Yes, sir.
Q And we have according to the EPA and Dr. Peterson, we have a ton a year loss or 2,000-pound loss in the entire country? You saw that testimony?
A I saw that, but I'm a little confused whether that was referring to PCBs or total fluid.
Q Okay. Well, let's -- Dr. Peterson's response to the Court's question said total fluids, so let's act on that, all right? This is using Dr. Peterson's number. If you divide 20 million pounds by 2,000 pounds a year, what do you get, Mr. Papageorge?
A 10,000. 10,000 years.
Q 10,000 years. In other words, if the interpretation that Mr. Carlson gave to the paragraph were true, how long would this so-called gradual loss take before it equaled 20 million pounds?
A The 10,000 years that you calculated.
Q What is the useful life of Pydraul hydraulic fluid, Mr. Papageorge?
A The life will vary on the condition of use, but normal proper use of the fluid, it should last five to ten years in the system.
Q The useful life of hydraulic fluid is not 10,000

years, is it?

A Oh, no.

MR. RUNNING: Your Honor, I'm going to mark this as Defendant's Exhibit 1257. I move for its admission as a summary of Mr. Papageorge's testimony.

MR. CARLSON: I have no objection.

THE COURT: So received. What was it, 10 what?

MR. RUNNING: 1257.

MR. RUNNING:

Q Mr. Papageorge, let me show you Defendant's Trial Exhibit 1119. Can you identify this as a progress report from the Organic Chemicals Division dated January 13, 1972?

A I do.

Q And were you a copied recipient of this report?

A Yes.

MR. RUNNING: I move for the admission of this report, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q Mr. Papageorge, why are research reports marked confidential sometimes?

A They're marked confidential by the authors when they perceive that there is some information in that report that might be of value to Monsanto and harmful, if the competition is aware of it and gets its hands on it.

Q Is it something that is done almost as a matter of routine?

A Yes. You will note the form already contains a reference to confidential information. The form is already preprinted that way, and this is just an additional entry.

Q The date of this is January 13, '72. I've put an arrow where the date is. Mr. Papageorge, were biodegradation tests performed on polychlorinated terphenyl that was used in Pydraul 312A?

A Yes.

Q And what were the findings of this research report on the ultimate conclusion of those studies?

A I'll have to read it to refresh my memory.

Q Why don't I just to speed things up, I'll read you what I've highlighted. Under summary, "Aroclor 5432 would be classified as resistant with respect to biodegradeability."

A Yes, that's correct.

Q Was that the bottom line finding?

A Yes.
Q Aroclor 5432 is what?
A It's a chlorinated terphenyl which has 32 percent by weight of chlorine.
Q Is that the terphenyl that was used in Pydraul 312A?
A It was.
Q Now, is resistant the worst classification that a product can get under this scheme?
A That is a sort of a non-scientific word. Another word that has been used is refractory, which I think is the worst case. This is maybe the second worst.
Q Okay. This was not a good report?
A That's correct. Well, I don't know what you mean by good report. It's a good scientific report. The information was unfortunately disappointing.
Q It could have been worse, but it was still disappointing?
A In a way, yes.
Q Did Monsanto do something about this?
A Certainly.
Q I show you Defendant's Trial Exhibit 1016. Can you identify this as a letter that was sent using the same procedures as the other letters to Monsanto's customers?
A Yes.

Q And this letter was sent on January 31, 1972?
A Yes.
Q And the mailing label is to director of purchasers, Stroh Die Casting Company?
A Yes.

MR. RUNNING: I move for the admission of this exhibit, Your Honor, 1016.

MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q This one is not as legible as the others, but the label says director of purchasing, Stroh Die Casting Company.

Mr. Papageorge, first of all, let's compare the dates. Do you see I've got the two arrows, I put the two documents on top of each other. Do you see the research report date?
A Yes.
Q January 13, 1972?
A Yes.
Q What is the date of this letter?
A January 31st, '72.
Q Same month?
A Yes.
Q Had a decision been reached about polychlorinated

terphenyls in Pydraul fluids between the date of the research report and January 31 of 1972?

A Yes.

Q What was the decision?

A The decision was that since these materials were not as biodegradeable as we would like them to be, let's reformulate and remove them from the product.

Q Now, I take it you didn't develop this new product in two weeks?

A Oh, no. It was being reviewed back in the laboratory for several months.

Q What was the new product?

A It's this long-named phosphate ester we talked about earlier. Nenophenyl, comophenyl. I forgot all of the words.

Q The new phosphate ester that Monsanto had developed?

A That's true.

Q Does the second sentence of this letter inform the customer that polychlorinated terphenyls had been a component of Monsanto's fluids?

A Yes, it did.

Q And the next sentence says, "Our new fluids will contain no chlorinated components," correct?

A It does.

Q Does that include both biphenyls and terphenyls?

A Yes.
Q They're both chlorinated components?
A Yes.
Q The next paragraph reads, "In order to make a smooth transition to the new Pydraul fluids, we'll continue to manufacture fluids with the current formulation until early in the second quarter of 1972. At that time we'll begin phasing in the new formulations and phasing out the old. We expect to complete this transition well before June 30, 1972."

Mr. Papageorge, if I'm Stroh Die Casting Company, and I don't want the old fluid, and I want the new fluid that doesn't contain any chlorinated components, could I have specified that in my next order?

A Certainly, you could.
Q Was there any plan to deceive customers into buying the old PCT-based product until the new was available?
A Did you say deceive?
Q Deceive?
A No, there was no such thought.
Q If you had that thought, would you have sent the letter before you changed the fluids?
A Certainly not.

Q Would you have given the customer six-months notice that you were going to change the fluids?
A Not if you want to be deceptive.
Q The last sentence says, "We would like to work out with you the details of this transition so that it best satisfies your needs."
If I'm at Stroh Die Casting Company, and I have questions about this transition, would there have been somebody to answer them?
A Certainly.
Q Is this the only letter you sent about the conversion in 1972?
A No. There were others.
Q I show you Defendant's Exhibit 1017. Can you identify this as a February 28, 1972 letter sent according to the same procedures you previously testified to?
A It was.
Q And is the cover page of this document a mailing label to director of purchases, Stroh Die Casting Company, Incorporated?
A Yes.
MR. RUNNING: I move for the admission of this exhibit, Your Honor.
MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q Then the mailing label. Now, Mr. Papageorge, I want you to assume that this is the only letter that Stroh Die Casting Company was able to find in its files, the only letter from Monsanto in this time period.

If you are reading the first sentence of this letter, would you have any questions about whether prior letters have been sent? The question is -- the first sentence says, "In early February, we notified you that the Pydraul fluids were being reformulated to remove all chlorinated components." Does that sentence refer to a prior letter?

A It certainly does.

Q Did you get any communications from customers telling you that they were curious about the first sentence of this letter, because they hadn't received the prior letter?

A I didn't receive any.

Q There wasn't some mix up, and the first letters never went out?

A Not that I'm aware of, no.

Q The second paragraph reads, "The new Pydraul product will be compatible with the present formulations,

and no draining, cleaning, or changing of seals in your systems is necessary. You need only to add the new products as makeup to your present systems."

Was that an accurate statement of the compatability of the new product?

A It was.

Q Why was that paragraph included in the letter?

A This is to assure the customer that continued use of the existing liquid in the system, as long as it was properly controlled, was appropriate, and that this new material, when added to the system, would not damage the system in any way.

Q Now, Mr. Papageorge, if I knew that my factory was designed so poorly or my workers were so poorly trained or my equipment was so bad or whatever the reason might be, unique to my own plant, that I couldn't contain the hydraulic fluids in my plant, would Monsanto have assisted me in draining and flushing the fluid?

A Certainly. We would help as much as we could, depending on how much we knew of the system.

Q Does that mean Monsanto would have paid for it?

A That I don't know. That depends on the sales contract negotiated between the buyer and the seller.

Q If I had a new factory that had been built in the 1960s with trenches, a collection system with no municipal sewer connections on the floor, would that have been appropriate, the second paragraph?
A Very much so, yes.
Q Why?
A Well, the system you describe is such that controlled entering into the environment is relatively easy, so why change out a fluid that is performing in an excellent way, superior to any product, including the replacement product that Monsanto designed, and as long as it was doing the job well and not harming the environment, there is absolutely no need to drain the system.
Q Will you have to drain it some day?
A Some day when the fluid is -- let me call it exhausted. It no longer has the properties required to do a good job. Then you change it out. Just like you change the oil in your automobile.
Q And your estimate is that would be five to ten years in the typical case?
A Something like that, yes.
Q But until the useful life is over, what is your opinion about the safety of the fluid, the PCB or PCT-based fluid?

A When it's properly controlled, it's perfectly safe.
Q What do I do with the fluid then when its useful life is over, when the five to ten years have passed by?
A Incineration is the answer.
Q I show you Defendant's Trial Exhibit 1018. Can you identify this as a March 15, 1972 letter sent according to the same procedures as you've previously testified to?
A I see two letters here. Okay. It's the same letter on a different typewriter, I'm sorry. Yes, this letter was sent out following the procedure followed in previous letters.

MR. RUNNING: Your Honor, just for the record, this letter, the version that had the Stroh mailing label -- let me first move for its admission into evidence. Then I'll explain it. I move for the admission of this document into evidence.

MR. CARLSON: I object, lack of foundation.

MR. RUNNING:

Q Mr. Papageorge, was this mailed in the same procedure as you previously testified to?

MR. CARLSON: Object, lack of foundation. There is no testimony he was involved with this

mailing at all.

MR. RUNNING:

Q Were you involved with this mailing Mr. Papageorge?

A Yes.

MR. RUNNING: Move for the admission of this exhibit.

MR. CARLSON: I'd like to have a description of his involvement, Your Honor.

THE COURT: All right. Qualify the gentleman.

MR. RUNNING:

Q What was your involvement on this mailing, Mr. Papageorge?

A I saw a draft of the letter proposed by Mr. Bergen, who was my superior, my boss. I was able to comment. I was involved with the draft, and I knew, I actually saw the secretaries perform the final drafts and the mailing procedure that we had described earlier.

Q Was this another mass mailing?

A No, this was -- remember, this was only to the Pydraul customers, so the volume was not as great as that mass mailing I described with the very first letter.

Q Were you involved in a supervisory capacity in the

mailing of this letter? I realize you didn't lick the envelopes.

A I know that. I don't know that I would correctly call it supervising. The supervisors of the secretary were there. I monitored the activities to make certain that things were being done and that the records were properly assembled.

MR. RUNNING: I move for the admission of this exhibit.

MR. CARLSON: Could I just ask one question, Your Honor?

THE COURT: Sure.

MR. CARLSON:

Q Did that occur in your office where you were working?

A In an area about as big as this courtroom, right outside my office.

MR. CARLSON: Okay. No objection.

MR. RUNNING: Your Honor, the clarification I wanted to make was this -- first --

THE COURT: Let me receive Exhibit 1018 without objection.

MR. RUNNING: Just for the record, I want this to be clear. The letter refers to an attachment. The version that we had in the files

that had the Stroh mailing label did not have the attachment with it.

We had another copy of the letter elsewhere in Monsanto's files, which was also produced to Stroh, which did have the attachment, so what we've done for this exhibit is just staple the two together and Mr. Papageorge was commenting on the fact that there were two identical letters in the exhibit. That is the reason why. I make that representation.

MR. RUNNING:

Q Mr. Papageorge, is this the mailing label that was used for this letter?

A Yes.

Q This is the third letter that was now sent on the PCT reformulation in 1972? One was sent in January, one was sent in February, and now one was sent in March?

A Correct.

Q And the time for the reformulation is getting closer, I take it?

A Yes.

Q Now referencing 30 to 60 days as opposed to the end of June?

A That is correct.

Q So if I was Stroh Die Casting Company, this is the

third notice I would have received that there would be a reformulation of my products in the coming months?

A Yes.

Q And the first sentence says, "Confirming our previous letters." If this was the first letter that happened to reach my desk, could I have called Monsanto and obtained copies of the prior letters?

A Certainly.

Q If my secretary had thrown them out as junk mail, could I have done that?

A Yes.

Q Is this the attachment to the letter, Mr. Papageorge?

A It is.

Q Does this identify which products are being converted?

A It does.

Q Pydraul F-9A is included on the list?

A Yes.

Q And Pydraul 312A is included on the list?

A It is.

Q Mr. Papageorge, I believe you have the original up here. It's Plaintiff's Exhibit 37?

A I do.

Q This exhibit is in evidence, "Industrial Hydraulic Fluids Transition Plan." Let me refer you to a page that Mr. Carlson is having some of his witnesses read and was referred to in the opening statement. "Policy on returned fluids. All customers should be discouraged from draining present fluids from their machines. It is very costly to refill machines, and returned fluids will add to our already overwhelming inventory of fluids for incineration."

Is it true there was a large inventory of fluids for incineration in 1972?

A Yes.

Q Why was that?

A The incinerator at Monsanto began operating in about the middle of 1971. Prior to that, Monsanto had accumulated a large inventory of unusable PCB liquid from many sources, including the industrial fluid, the Pydraul systems, as well as the electrical systems and heat transfer systems and so on, so while the unit was attempting to catch up with this inventory, additional material was being delivered to the plant, so we were reaching a peak in our backlog.

Q Were other companies building incinerators for commercial use?

A Yes. In 1972, as I mentioned, the Rollins-Pearl unit was starting up in --

Q We don't have to go through all of the details. I just wanted to establish the timeframe. Notwithstanding the fact that the incineration facility was still being constructed throughout the country, what is shown under procedure?

A The procedure addresses the steps to be taken when a customer wishes to return to Monsanto unusable liquid fluids for incineration disposal.

Q Let's go through the scenario. Let's assume that Stroh Die Casting Company has made the decision that they want to drain their machine of the PCB fluids and have it incinerated by Monsanto, all of it.

What reasons would the Monsanto salesmen have been instructed to give to try to discourage them or convince them not to do that? What reasons could have been offered not to do that?

A Well, the reasons include such things as you've got a good product that has performed well in your system. It continues to perform well in your system. You have the facilities that provide for good control, so the material doesn't get into the environment or affect your employees. There just is no logical reason to drain the system, and as long

as you continue these good practices and the fluid hasn't been spent and can do the job well, it doesn't make sense to drain the system at this time.

Q Would it have to be drained some day?

A Some day, yes.

Q Was it likely that there would be more or less incineration capacity in the future than there was in 1972?

A Oh, there is more likely to be more incinerator capacity.

Q I want you to assume that the useful life, the economic life of Stroh's fluids went from the date of this policy up until 1980, when they decided that it was no longer economical to continue to use the fluids. Was there more or less incineration capacity in 1980 than there was in 1972?

A More. Much more.

Q With proper controls in the die casting plant, do you have an opinion as to whether or not the fluids could have been used safely from 1972 to 1980?

A I do have an opinion.

Q What is your opinion?

A I think it can be used safely.

Q Was that a factor in your decisions at Monsanto in 1972?

A It was.
Q But notwithstanding whatever reasons Monsanto's representative could have offered, if I at Stroh Die Casting insist that I want that fluids returned by Monsanto for incineration, was there a procedure in place for the Monsanto field representative to accomplish that task?
A There was.
Q Is that procedure outlined on this page?
A It is.
Q Mr. Papageorge, let me show you Defendant's Exhibit 1020. Can you identify this as an August 3rd, 1973 letter sent by Monsanto to Pydraul customers using the providers you've previously testified to?
A I do.
Q Were you personally involved in this mailing?
A Yes. As in the others.
Q Is the first page of this document the mailing label addressed to the director of purchases, hydraulic fluids, Stroh Die Casting Company?
A It is.

(Switch in Reporters.)

Q And is this a business record of Monsanto Company?
A It is.
MR. RUNNING: I move for the admission of Exhibit 1020, Your Honor.
MR. CARLSON: No objection.
THE COURT: So received.
MR. RUNNING:
Q Again the mailing label to Stroh. Is this it, Mr. Papageorge?
A Yes.
Q And is this the letter that was included in the envelope with the mailing label?
A Yeah, that's the first page of the letter, yes.
Q Does this letter have anything of relevance to a die caster?
A Well, there are -- there is some information -- You are speaking only of the letter or the attachments with it?
Q Letter and the attachments.
A There is some information in the attachments that would be of relevance.
Q Well, let's -- What about the last paragraph of the first page? If I am a die caster, should I be concerned about that information?
A Certainly.

Q When you wrote this letter, did you expect die casters to throw it out because there was a reference to the Food & Drug Administration?
A Well, I would hope not. Since there is other information in there that is useful.
Q Let's refer to the last paragraph on the first page. "Proper disposal of chlorinated materials requires high temperature incineration. Monsanto has installed a facility at its Sauget, Illinois, plant and has made this service available to its customers. Information relating to this service is attached to help you should you decide to dispose of such materials in this manner." Was that of relevance to a die casting company like Stroh?
A It certainly is.
Q And the last paragraph of the letter says, "I hope this information is useful to you. If I can be of further service, please let me know. Cumming Paton, Product Manager, Fluids." If I had a question about this letter, whether it was applicable to me, and I called Monsanto, would there have been somebody to answer the question?
A Yes.
Q Is this an attachment to the letter? Referring to the page titled, "Pydraul Fluids Which Contain

Chlorinated Ingredients."

A It is.

Q Now, the letter said that fluids containing chlorinated ingredients should be incinerated; is that right?

A That is correct.

Q And this is the list of the products that should be incinerated when their useful life was over; is that correct?

A Those that contain the chlorinated ingredients?

Q Yes.

A Yes.

Q So when I was ready to dispose of this material, when its useful life was over, I could consult this list to see if it should be incinerated or not; is that right?

A That is correct.

Q Is Pydraul F-9 on that list?

A Yes.

Q Is Pydraul F-9-A on that list?

A Yes.

Q Is Pydraul 312 on that list?

A Yes.

Q Is Pydraul 312A on that list?

A Yes.

Q Was this also an attachment to the letter?
A It is.
Q It's titled "Incineration Service For Pydraul Fluids." Does it give the procedures for returning drums of waste Pydraul to Monsanto for incineration?
A It does.
Q Now, it says in the line I have highlighted, "Incineration charges for Pydraul fluids are five cents per pound." Was this service for free, Mr. Papageorge?
A No, it was not.
Q Was Monsanto making a killing on this service?
A No, Monsanto lost money on this service.
Q How could Monsanto lose money on this service?
A We found out that the charges of -- for example, five cents per pound, were not enough to pay for the increasing energy costs that were occurring at that period of of time as well as the -- it did not pay for the deterioration of the unit because of the high temperatures involved.
Q Explain very briefly how an incinerator operates. Just a minute or so, if you can.
A Well, the unit is brought up to high temperature using either natural gas or oil. The fluid containing PCBs is introduced into the burner right

where the gas or oil flame is, with a stream of steam to give it pressure. If the temperature of the oil or natural gas is high enough, the PCBs themselves will start burning, and they in turn will create higher temperatures to the point where the approved level is reached, which is over 1,600 degrees Fahrenheit. So the units were usually run at 2,000 or 2,400, just to make sure that the temperatures were high enough.

Q And the energy costs you're referring to are the natural gas costs of running the incinerator?

A That is right.

Q Was this program designed to make a profit from the outset?

A It was never intended to make a profit.

Q This is the last page of the attachment. It says, "Solids such as sawdust, rags or dust, and aqueous fluids cannot be handled in our incinerator." Why couldn't aqueous fluids be handled in the incinerator?

A Aqueous, of course, refers to water.

Q Yes.

A Excuse me. Introducing water into that system tends to put out the flame. It's just -- You can't keep the temperature up where it should. It snuffs out

the flame, so it gives difficult operating problems.
Q Does that mean -- If I mix a lot of water in with my waste Pydraul fluid, does that mean I can't incinerate it?
A Well, it depends on the amount.
Q Let me ask you this question, Mr. Papageorge. Were there means available in 1972 or '73 to separate out oil from water?
A Oh, certainly.
Q How long had that technology been available?
A God, for generations. It's a case of two layers forming, and with PCB-type oils, they're the heavier layer, they will be at the bottom of a tank or a drum, and the water can be removed and disposed of separately from the oil. The oil can't burn, even with some moisture in it.
Q Did Monsanto's technical bulletins contain information on separating oil from water, Pydraul oil?
A Yes. Yes.
Q Mr. Papageorge, can you identify Defendant's Exhibit 1124?
A I believe I can.
Q Okay. Just to speed things up, is this an inventory of the customers availing themselves of Monsanto's

incineration service?
A It is.
Q Is this a Monsanto business record?
A Yes.
Q Was it prepared and retained in the ordinary course of business by Monsanto?
A Yes.

MR. RUNNING: I move for the admission of this exhibit, Your Honor.

MR. CARLSON: No objection.

THE COURT: So received.

MR. RUNNING:

Q Mr. Papageorge, did many customers avail themselves of Monsanto's incineration service?
A Yes, they did.
Q Did some Pydraul customers avail themselves of Monsanto's incineration service, take advantage of it?
A Yes.
Q Have you looked through this exhibit to see if you could find Stroh Die Casting Company anywhere on it?
A I have looked through, and I do not find Stroh Die Casting Company listed.
Q So Stroh Die Casting Company never took advantage of this offer?

That's what the record would indicate.
Mr. Papageorge, let me show you Defendant's Trial Exhibit 1131.

MR. RUNNING: I believe this is already in evidence, Your Honor, as a plaintiff's exhibit, but I would ask that it be received separately as a Defendant's exhibit as well. It's a sales summary.

MR. CARLSON: I have no objection.

THE COURT: So received.

MR. RUNNING:

Mr. Papageorge, what's the last year that Monsanto -- that Monsanto sold any hydraulic fluid to Stroh Die Casting Company according to this summary?
1976.
And that year it sold 2,340 pounds?
Yes.
That would be about 234 gallons?
About four drums.
Four drums of fluid?
Um-hum.
200 and some odd gallons?
Yes.
Then that was not a PCB-based fluid, obviously. Was that a phosphate ester fluid?
Yes.

Q When did Monsanto stop selling PCT or PCB-based hydraulic fluids?
A 1972.
Q After 1972 did Monsanto continue to manufacture PCBs and sell them for other purposes?
A Yes.
Q Now, at the start of your testimony we briefly addressed dielectric fluids. Do you recall that testimony?
A I do.
Q I don't want to go into, again, all the purposes of dielectric fluids. What was the primary applications for which PCBs continued to be sold after 1972? Without a long description, if you could just identify the primary business?
A The primary application -- I hesitate because -- I would say as a dielectric fluid, but that could be further broken down as capacitors and transformers.
Q Okay. Without doing that, why did Monsanto continue to sell PCB-based dielectric fluids after 1972?
A Because there was no known substitute material that was fire-resistant and also an insulator for electrical purposes.
Q In the ensuing years were substitutes developed?
A Yes.

Q When were they developed?
A About 19 -- 1977, as best I recall.
Q Could you describe, for example, the substitute that was developed for transformer fluids, very briefly?
A The substitute that was developed that was fire-resistant was a silicone-based fluid.
Q Was that silicone based fluid available in 1972 on the market?
A It was, but it was not tested for transformer use until later.
Q The use -- Its usefulness for transformer purposes hadn't been discovered yet?
A It was not established until 1976.
Q Okay. When did Monsanto stop producing PCBs for any purpose?
A Producing them? July, 1977. I am sorry -- Yes, July, 1977.
Q Almost 14 years ago?
A Yes.
Q And has it been 19 years since Monsanto stopped selling PCT or PCB-based hydraulic fluid?
A Yes.

MR. RUNNING: I have no further questions, Mr. Papageorge. Thank you.

THE COURT: Well, it would be kind of

ridiculous to start cross-examination at three minutes to 5:00.

MR. CARLSON: Can I ask one question?

THE COURT: Sure.

MR. CARLSON: Okay.

CROSS-EXAMINATION

MR. CARLSON:

Q Mr. Papageorge, all the material that we went through when you talked about deception -- Do you remember that as a subject? Mr. Running asked you whether or not you intended to deceive anybody. Would you point me to one document in which you told your customers that 312 Pydraul hydraulic fluid had the five-chlorinated PCB that was damaging the environment? Just one document that you sent to your customers that told them that?

MR. RUNNING: Had the what? Highest?

MR. CARLSON:

Q That had the five-chlorinated PCB that was damaging the environment. Can you point out one document that you sent to your customers that told them that information?

A There is no such document.

MR. CARLSON: Thank you. We'll start tomorrow.

THE COURT: Okay. 8:45.

MR. RUNNING: Just -- Well -- We need to start tomorrow morning with Dr. Harbison because he's only available tomorrow.

THE COURT: Yeah, I understand that. He's going to be on. Okay. See you tomorrow.

(At 4:58 p.m. the proceedings were adjourned.)