GLENN BROWN, et al. v. MONSANTO CO.

DEPOSITION OF DR. R. EMMET KELLY
TAKEN JUNE 15, 1990
VOL. V

IN THE CIRCUIT COURT OF THE CITY OF ST. LOUIS

STATE OF MISSOURI

GLENN BROWN, et al.,	)	
	)	
Plaintiffs,	)	
-vs-	)	
	)	# 862-00694
	)	
MONSANTO COMPANY,	)	
	)	
Defendant.	)	

VOLUME V
DEPOSITION OF DR. R. EMMET KELLY
On the part of the Defendant
June 15, 1990

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STATE OF MISSOURI

GLENN BROWN, et al.,)
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Plaintiffs,)
-vs-) Cause # 862-00694
)
)
MONSANTO COMPANY,)
)
Defendant.)

DEPOSITION OF WITNESS, produced, sworn and examined on June 15, 1990, between 8:00 a.m. and 6:00 p.m. of that day, at the offices of Communitronics Corporation, 1907 South Kingshighway, St. Louis, Missouri, before Sheila C. Irvin, a Notary Public within and for the State of Missouri, in a certain cause now pending in the Circuit Court of the City of St. Louis, State of Missouri, wherein GLENN BROWN, et al. are the Plaintiffs, and MONSANTO COMPANY is the Defendant; on behalf of the Defendant.

A P P E A R A N C E S

The Plaintiffs were represented by Mr. David S. McCrea of the law firm of McCrea & McCrea, 119 South Walnut Street, Bloomington, Indiana 47402.

The Defendant was represented by Mr. Thomas M. Carney of the law firm of Husch, Eppenberger Donohue, Cornfeld & Jenkins, 100 North Broadway, St. Louis, Missouri 63102.

CONTINUED CROSS EXAMINATION

QUESTIONS BY MR. McCREA:

Q. Dr. Kelly, good morning.

A. Good morning, Mr. McCrea. Mr. McCrea, before we start, could I clarify something?

Q. Yes, sir.

A. Last Wednesday I said I would be very surprised if the Judy Zack article were not published. Well, I'm very surprised because it has not been published. I had the computer search on her and she did not publish that article. I had seen it so often I was certain that it had been published, but it has not.

Q. All right, sir.

MR. CARNEY: Let me just -- You asked me, Mr. McCrea, if I would check to see if there was a list at Monsanto of the cases that Dr. Kelly's testified in, and I checked with the in-house counsel at Monsanto and he indicated there was no such list. So I have checked that out and determined that, so I think the best evidence as far as I can tell from my questioning that Dr. Kelly has given you his best memory as to those cases.

Q. (By Mr. McCrea) Dr. Kelly, do you have page 21 of Plaintiff's Exhibit Six in front of you?

A. Yes, I do.

Q. Are you familiar with the report to Monsanto

Chemical Company by Cecil K. Drinker, M.D., September 15, 1938?

A. Yes, sir.

Q. Who requested that Dr. Drinker provide this data?

A. Monsanto did.

Q. Was -- Were you in on the decision to request this toxicological information?

A. Well, in fact I presumably made the decision myself.

Q. Do you recall having received this information at Monsanto?

A. Yes, sir.

Q. Would you turn to page 38 of the Drinker report?

A. Yes, sir.

Q. On page 38 there is a diagram called figure two, and it makes reference to a chlorinated diphenyl. Is chlorinated diphenyl the same as PCB?

A. It is a PCB, yes, sir.

Q. So in this article when there is reference to chlorinated diphenyl, that would be the same as PCB?

A. That's what he's referring to. I'll have to look at the article and see whether the compound he used was actually chlorinated diphenyl, but he ought to be able

to say that in here someplace.

Q. All right, sir. On page --

A. I was going to look up to be sure, to be able to tell you whether he's, whether he, this particular chlorinated diphenyl was, that he called chlorinated diphenyl was PCB.

Q. You might want to turn to page 26, Doctor. At the top there is a heading, "Chlorinated Diphenyl - Compound 1268." Would that be a PCB with chlorine composing 68 percent of the weight?

A. Yes, sir, but also if you see on page 27, he refers to chlorinated diphenyl 4465.

Q. Yes, sir, and that's in the second full paragraph on page 27?

A. Yes, yes, and 4465 is not a chlorinated diphenyl. It's a mixture of chlorinated diphenyl and chlorinated terphenyls. That's where they get the 4465. It's not the 1200 series.

Q. All right, sir. Can you briefly describe the difference between a PCB and a polychlorinated terphenyl?

A. Yes. It has one more benzene ring on it. It may have more than one ring.

Q. And does the ter, does that mean three?

A. Three.

Q. All right.

A. In those days they also had what they called chlorinated high boiler. That was a still bottoms after the chlorinated diphenyl was distilled off the still bottoms. The still is a distilling column. So they chlorinated that and that went into 4465, 5460 and some other materials that were not chlorinated diphenyl, but were still called Aroclors.

Q. All right. On page 26 under the caption "Chlorinated Diphenyl - Compound 1268", can you briefly explain the purpose of this testing by Dr. Drinker? Why did Monsanto want the testing?

A. Well, it was because he had tested a chlorinated diphenyl with 62 or 64 percent chlorine in it, and he found some toxicity. We don't believe that that's the, you're testing the right material, so we sent him this 1268.

Q. In this second paragraph on page 26, Dr. Drinker states or makes reference to an article titled "The Problem of Possible Systemic Effects From Certain Chlorinated Hydrocarbons."

A. Which page are we on?

Q. Page 26. Do you have that?

A. Yes, I have, but I --

Q. And it's the second full paragraph under "Experiments." Do you see that, Doctor?

A. I really don't.

Q. Maybe we don't have the same page. Does that have at the top of it three, "Chlorinated Diphenyl"?

A. Yes. And what paragraph are we on?

Q. The second paragraph on the page.

A. Well, I start off on that, "The compound 1268 was administered by inhalation."

Q. Right, right.

A. Described. Okay. All right.

Q. Is that the report to which you are referring?

A. Yes, sir.

Q. And in the second -- In the third paragraph is he describing experiments with chlorinated diphenyl compound 1268 where he says group one?

A. Yes, sir.

Q. That paragraph is making reference to the 1938 experiment, not the 1937 article?

A. Yes, sir.

Q. In that paragraph which is paragraph three on page 26, Dr. Drinker states, "The experiment was continued for 119 days, animals being sacrificed at intervals for pathological examination and for carbon tetrachloride and alcohol test." What is the carbon tetrachloride test and what is the alcohol test and why is that administered?

MR. CARNEY: Well, I'm going to object to the

form of the question.

A. Well, it was administered because Dr. Drinker gave the -- After he treated these animals, he gave them a mixture of carbon tetrachloride and alcohol to see if these animals could handle it.

Q. (By Mr. McCrea) Why would he do that?

A. Well, he didn't find -- He said the rabbits were very healthy throughout the period. There was an almost uniform gain in weight.

Q. Where are you reading, sir?

A. The, the third, the bottom paragraph.

Q. All right.

A. So then he gave this -- So he said, "Though liver damage was apparently slight, some degree of harm had been done to the organ." Well, I don't -- That's a test that he thought up. Maybe it was good at that time. I don't believe it's been used much lately in the last 30 years.

Q. Can you explain how it is that the liver damage was apparently slight, but yet when the carbon tetrachloride alcohol test was administered, it was positive indicating some degree of harm had been done to the organ?

A. I can't explain it.

Q. Do you agree with that conclusion that the

carbon tetrachloride and alcohol administration proved there had been harm to the organ even though the, there was apparently, there was apparently slight damage?

A. Well, I don't agree with it because I don't believe that test has been used by anybody since Drinker did it, so I really don't think that test has been subject to any scientific scrutiny.

Q. Did you discuss the fact that the administration of carbon tetrachloride and alcohol to the animals established harm with Dr. Drinker?

A. I don't recall that I did.

Q. Would that conclusion then essentially stand unrefuted?

MR. CARNEY: What -- I'm not sure what you're talking about, the slight degree of --

MR. McCREA: Where it says --

MR. CARNEY: -- of harm after they were given alcohol and carbon tetrachloride?

MR. McCREA: No. It says, "Which indicates that although -- that though liver damage was apparently slight, some degree of harm had been done to the organ."

MR. CARNEY: After the animals were fed the alcohol and the carbon tetrachloride?

Q. (By Mr. McCrea) No, I presume that that means there was harm done to the liver after the administration

of chlorinated diphenyl compound 1268 which the administration of carbon tetrachloride and alcohol established. Is that what that says, Doctor?

MR. CARNEY: Well, I'm going to object. The words speak for themselves, and you're trying to make assumptions about what those words mean. Dr. Drinker -- I think this might call for speculation as to what Dr. Drinker meant in those words.

Q. (By Mr. McCrea) Dr. Kelly, does that statement indicate to you that Dr. Drinker determined that there had been harm done to the organ which was established by the administration of the carbon tetrachloride alcohol test?

A. That presumably is what he said, yes, sir.

Q. Did anyone within Monsanto dispute that?

A. Well, no, but let me tell you that as I said before, nobody's used that test since. There have been no scientific articles on this. So I wasn't going to argue with Drinker over his test, but the fact that nobody else used it in the 30 years, I've seen no reports of this being used in toxicological experiments. So it was his idea, but obviously nobody else's.

Q. Dr. Kelly, if I would bring to your attention an experiment done within the last 30 years where PCB was administered in a test condition, where there was no PCB

administered in a test condition and carbon tetrachloride was then administered and there was no adverse effect, and in the second test PCB was administered and carbon tetrachloride was then added and there was an adverse effect, are you not familiar with that basic result?

MR. CARNEY: I'm going to object to the question. It's ambiguous. I don't know. I don't understand the question, but if you understand it, Doctor.

A. But you said -- If you bring me that test, fine, bring it to me. I'll be happy to look at it.

Q. (By Mr. McCrea) Let me ask you this. Is there a synergistic effect between carbon tetrachloride and PCB?

A. There may be.

Q. And can you explain what synergism is in medical science?

A. Yes. It means that if you have two compounds that act similarly if they're used together, that the result is more than the sum of the individual compound's toxicity.

Q. Would you agree that PCBs can have a synergistic effect with carbon tetrachloride?

A. I'd have to have more details of that.

Q. Would you agree that PCBs can have a synergistic effect with alcohol?

A. Again I'd -- It may and it may not. I don't know. It all depends how much alcohol, how much PCBs.

Q. Would you agree that PCBs can have a synergistic effect with certain medications?

MR. CARNEY: Let me object to the question. I think it's overbroad, certain medications.

A. Like what ones?

Q. (By Mr. McCrea) Certain -- I'm asking you.

A. Well, I can't state that PCBs would have a synergistic effect with a medication that I don't know what the medication is.

Q. Are you familiar with any medications which if administered to an individual who had been exposed to PCBs would cause adverse effects not otherwise expected in an individual without the PCB burden?

A. I don't recall any.

Q. You know what harm had been done to the organ as described by Dr. Drinker at the bottom of page 26 where he says, "Some degree of harm had been done to the organ"? Can you describe that to the jury?

MR. CARNEY: Well, I'm going to correct you. I think it says, "Apparently slight, some degree of harm."

MR. McCREA: No, you're not reading that sentence correctly. It says, "The carbon tetrachloride alcohol test was positive after 52 days which indicates

that though liver damage was apparently slight, some degree of harm had been done the organ."

MR. CARNEY: I agree. You read it correctly.

Q. (By Mr. McCrea) Can you describe to the jury the harm which had been done to the liver organ as described by Dr. Drinker at the bottom of page 26?

A. Yes. He said that in the first sentence, "The conditions described above cause swelling and increase of granularity in the liver cells." Then in this next paragraph he says, "When sacrificed 72 and 101 days after removal from exposure, it was observed that the swelling had decreased -- had disappeared rather, but the granular material remained."

Q. Where are you reading that, sir?

A. On page 27, paragraph one.

Q. And does it say the granular and hyaline material remained in the liver cells and had apparently become permanent?

A. Yes, sir, but that isn't hurting the liver cells.

Q. What?

A. That is not hurting the liver cells because he said there's absolutely no progression of damage after removal from exposure.

Q. But he's already determined there was harm to

the liver by the administration of the alcohol, the carbon tetrachloride alcohol test; correct?

A. The -- That's what he stated. He said it indicates that some degree of harm had been done. Yes, he states -- That's what he states.

Q. Would you go to page 27, the third full paragraph which has the heading group two? Are you with me on that, Doctor?

A. Yes, I am.

Q. In this instance there again is reference to PCB 1268; correct?

A. Yes, sir.

Q. And he describes the results in this as slightly poisonous?

A. Yes, sir.

Q. Then down at the bottom of that page he states, "Under these extreme conditions, the animals again remained in perfect health." Is that correct?

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

Q. And then he adds the sentence, "The carbon tetrachloride and alcohol test was positive, but there was absolutely no other indication of liver damage and no evidence of disturbance to other organs." Is that correct?

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

Q. What is the significance of that statement in

your opinion?

A. Well, that statement shows that when he had to use something like 12 times the amount of material that he used in his previous experiment, over six milligrams per cubic meter of air, he got some positive results from the carbon tetrachloride. I don't think anybody will deny that if you heat 1268 up enough, get enough of it in the air and keep an animal in there for 119 days or how many, that you may get some liver damage, certainly.

Q. All right.

A. It's not supposed to be breathed at elevated temperatures for 119 days.

Q. In your opinion, is there a synergistic effect between exposure to PCB and a separate exposure to benzene?

A. I don't know of any. Benzene acts in the blood forming organs primarily and PCB does not, so I don't know.

Q. Did Monsanto Company manufacture and sell the product listed on page 29 under heading four, "Mixture of Chlorinated Diphenyl and Chlorinated Diphenyl Benzene - Compound 5460"?

A. Yes, sir.

Q. Would you read the last paragraph of that section on page 30? It says, "In view of the fact that 5460 in such low concentrations proved so definitely toxic,

no higher concentrations were tested. It seems imperative that whenever this compound is used in industry, great care be taken to keep concentrations in the air at extremely low level. No liberties can be taken with it, as with 1268." Do you recall what warnings you issued to the purchasers of the compound 5460?

MR. CARNEY: Let me object to your reading a statement out of context, one paragraph out of a long report and then asking an unrelated question about it. I don't know. I object to that way of asking a question, to read some statement out of context and then ask a question that's unrelated.

Q. (By Mr. McCrea) Dr. Kelly, do you agree with Dr. Drinker's statement that 5460 is definitely toxic?

A. It's toxic if you get high enough concentrations, yes, but remember 5460 isn't even close to a PCB. We're not talking about -- It's not used in electrical industry at all.

Q. Dr. Kelly, do you agree with his statement that whenever this compound is used in industry, great care should be taken to keep concentrations in the air at extremely low levels?

MR. CARNEY: Well, I'll object. You're talking about a compound that's not involved in this lawsuit.

Q. (By Mr. McCrea) Do you agree with that statement?

A. Well, I'd have to know what he means by extremely low level.

Q. Well, this report came to you from Dr. Drinker and was paid for by Monsanto.

A. That's correct.

Q. Is that correct?

A. Yes.

Q. Did you ask him what he meant?

A. I might very well have. This was 1938. I might very well have.

Q. Do you recall what warnings you issued for 1268 or for 12, 5460?

A. I surely said -- this is solid, of course. I surely said do not breathe the fumes that are involved at elevated temperatures.

Q. All right, sir. Would you go to page 43? The caption on that is "Results of Inhalation Experiments." Is that correct?

A. Wait, I haven't got there yet.

Q. All right, sir.

MR. CARNEY: Same report?

MR. McCREA: Same report, I believe. Page 43.

A. Okay. I'm ready.

MR. CARNEY: Do you have two copies of the same report in this exhibit?

MR. McCREA: I don't think so.

MR. CARNEY: I've got pages 21 through 34. That's a report dated September 15, 1936, 1938, I assume. Yeah, by Drinker, and then starting at page 35 --

MR. McCREA: This is a different --

MR. CARNEY: Section of the same report?

Q. (By Mr. McCrea) Well, it's -- This has to do with the report which begins on page 35. Dr. Kelly, could you first go to page 35 of the exhibit?

A. Page 35?

Q. Yes, sir.

A. Yes, sir.

Q. And there seems to be some confusion as to whether this caption sheet and the one on 21 are the same. They appear to be the same, but the page following 35 begins with the caption "Report on 4465, Inhalation Experiments."

A. Yes, sir.

Q. Is 4465 a PCB or another chemical?

A. It's another chemical completely.

Q. On page 38 there is reference to the chlorinated diphenyl in the figure. Is that correct?

A. Yes, sir.

Q. And on page 42 is there a discussion of under experiments of exposure to chlorinated diphenyl?

A. Yes, sir.

Q. And does that discussion concern only chlorinated diphenyl or PCB?

A. Frankly I don't know. I mean, this -- As you said, there's some confusion in this report. You can see it's reporting there an experiment July the 1st, 1936 to November the 18th, 1936, and the date of this report in your exhibit is September the 15th, 1938.

Q. That's correct.

A. That's a two year lapse. I think he's reporting his previous experiments where he had mislabeled the chlorinated diphenyl.

Q. At the bottom of page 42 he has listed under table one, "Conditions Maintained in Inhalation Experiment from July 1 to November 18, Material, Chlorinated Diphenyl." Is that correct?

A. That's what he stated, yes. I'm not sure whether that was chlorinated diphenyl as I've said repeatedly.

Q. Do you have any independent recollection of this report at this date as to whether or not that's chlorinated diphenyl or something else?

A. Yes, I think it's something else. I think

it's chlorinated diphenyl benzene because I'll repeat, this is experiments that he did in July of 1937, and that's what was reported on the supposement (symposium) in December of '37 or sometime in '37.

Q. But this report date is September 15, '38 if that's the appropriate caption page; correct?

A. That's correct.

Q. You cannot state if that caption page matches -- You can't state if the caption page at page number 35 is associated with the following pages?

A. Wait a minute. Page 35? 21 was my, another caption page.

Q. There was -- Well, yes.

MR. CARNEY: That's why --

Q. (By Mr. McCrea) Mr. Carney has brought to our attention there are two caption pages, one at 21 and one at 35.

A. Yeah, but they're both the same thing.

Q. Exactly.

MR. CARNEY: What I'm concerned about is that somebody got an extra caption page in here in the copying. I don't know that for a fact, but that's what it looks like.

Q. (By Mr. McCrea) Well, I can't straighten that out at this point in time. Would you turn to page 43?

A. Yes, sir.

Q. The caption of page 43 is "Results of Inhalation Experiments."

A. That's correct.

Q. Would you read -- Let me read to you the first two sentences of the third paragraph on page 43. "In considering the entire matter, it seemed to us that the chlorinated hydrocarbons, if inhaled in sufficient concentration, might cause a slight degree of damage to the liver. This damage is resisted efficiently and causes no depreciation of health, but if the individual in question happens to suffer some ordinary disease of the liver, the condition is superimposed upon a substratum of injury." Can you explain that to the jury?

MR. CARNEY: Well, let me object to this. First of all it, we're talking about chlorinated hydrocarbons as a generic term, not PCBs, and second, this may call for the witness to speculate inside the mind of Dr. Drinker.

Q. (By Mr. McCrea) Can you explain what that means to the jury?

A. Well, I don't believe I can get inside Dr. Drinker's head, but what he seems to be, what he is saying is if you inhale chlorinated hydrocarbons, whatever they are, whichever they are, and you inhale enough of it, you

might get a slight degree of damage to the liver. The liver is always repairing itself. As I said earlier, if you get three drinks of alcohol a night you'll kill some liver cells. The next morning these liver cells start regenerating. So that's, I guess, what he means by is resisted efficiently and no real depreciation of health, but then if you put some more insult on it you may get problems.

Q. The next sentence on page 43 in paragraph three states, "In accordance with this hypothesis, we determine that a dose of 0.75 cc of carbon tetrachloride plus 0.75 cc of ethyl alcohol per kilogram of rat was entirely non-toxic to normal animals." Is that correct?

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

Q. And then the next sentence states, "When, however, this dose was given to animals which had inhaled chlorinated diphenyl as had been described in this experiment, the result was acute yellow atrophy of the liver." Can you explain that to the jury?

A. Explain what?

Q. Explain the fact that the doses given to a rat were non-toxic, but when that rat had been exposed to chlorinated diphenyl or PCB and was then given the same dose, there was yellow atrophy of the liver.

MR. CARNEY: I'm going to object. You've

mischaracterized what was said in these two sentences. You haven't made clear anyway that, what the dose is that you were talking about.

Q. (By Mr. McCrea) Well, let's read it again. Dr. Kelly, the first sentence states, "In accordance with this" --

MR. CARNEY: Well, let me, you know, I don't, you know, I'm going to object to your just reading -- You're reading a report of Dr. Drinker that was made back in 1937 or '38, and then you're asking this witness to explain what these words mean, you know. I object to that. I don't think that moves this case along. We can all read them. I heard you read it and you did read it accurately the first time you read it. I don't know that we need to reread these sentences into the record. If you have a question, though, I think maybe you ought to ask the question.

Q. (By Mr. McCrea) Dr. Kelly, why did the chlorinated diphenyl cause yellow atrophy of the liver when carbon tetrachloride and ethyl alcohol were added?

A. Well, if in this particular experiment he is quoting, he is using chlorinated diphenyl, actually chlorinated diphenyl, that's one thing. If he is using -- If he's talking about the stuff that he used in 1936 which was not chlorinated diphenyl, it seems then that you've got

an addition of alcohol, carbon tetrachloride and either chlorinated diphenyl benzene or chlorinated diphenyl. I don't know which he did. When he had this cocktail, these three mixed together, they were worse than the chlorinated diphenyl by itself.

Q. How does that happen? Explain to the jury why the animal which had been exposed to the inhalation of PCB and is then administered carbon tetrachloride and ethyl alcohol experienced yellow atrophy of the liver when the animal that had no PCB suffered no problems?

MR. CARNEY: I'm going to object. You've mischaracterized the witness' testimony. He's already said that he doesn't even know that it was a PCB that we're talking about. We have established and the doctor has said about five times on the record that Dr. Drinker admitted later making a mistake and thought he had PCBs when, in fact, he didn't have PCBs, and this may be a reference to the old test and not the new one, and so I think you've got to clarify that to be fair with the witness and not just make the assumption when he's already said he doesn't know if it was a PCB.

MR. McCREA: Would the court reporter please read my question and then I'd like an answer.

(Thereupon, the reporter propounded the pending question.)

A. Well, if the material, the first material that Drinker used, whatever it was, whether it was chlorinated diphenyl or chlorinated diphenyl benzene was used, then after it was unable to handle a mixture of carbon tetrachloride and alcohol, both of which are poisons to the liver.

Q. (By Mr. McCrea) But they were not poisonous to the liver in the rat which had not been administered the chlorinated diphenyl in this experiment; correct?

A. Presumably, yes. I don't see the details of that particular experiment here.

Q. Now, what I'm asking you is to explain to the jury how that process takes place, that there can be yellow atrophy of the liver in the animal which was exposed to the chlorinated diphenyl or PCB and then is administered the carbon tetrachloride and alcohol?

A. Drinker didn't explain that, either, did he? I didn't see it in here.

Q. Can you explain it?

A. No, I can't explain it.

Q. In 1938 did you know that Dr. Drinker reached this conclusion?

A. Yes.

Q. In 1938 did Monsanto know that Dr. Drinker reached this conclusion?

A. If I knew, Monsanto knew.

Q. In 1938 did Monsanto issue warnings to purchasers of chlorinated diphenyl that individuals exposed to chlorinated diphenyl and then carbon tetrachloride and alcohol could suffer yellow atrophy of the liver?

A. No, sir, they did not. Carbon tetrachloride is a poison and I think everybody -- We do not manufacture carbon tetrachloride. Anybody who has manufactured carbon tetrachloride states do not inhale the fumes, do not take internally, and it's not intended to be taken internally.

Q. I understand that, but you also knew that in this study there was no compromise of the animals who were administered carbon tetrachloride who had not previously been exposed to PCB. You knew that based on this study; correct?

A. Based on Drinker's statement, I did not -- I knew what Drinker said in this experiment. I do not know how much, what the details of the experiment were, but we knew that if the people followed our recommendations, they would not get injury from the PCBs.

Q. You knew that these results indicated that carbon tetrachloride and alcohol could cause yellow atrophy of the liver in an animal previously exposed to PCB and that it had no effect in the animal which had not been given PCB?

A. Yes, sir, but we're -- I knew that, yes, but we're talking about animal experimentations. There have been no yellow atrophy of the liver cases in workers who worked with PCBs for 50 years. There haven't been any.

Q. And Dr. Kelly, that statement presumes that the people in the plant, the doctors in the plant and the doctors who treated the workers were able to associate PCBs with yellow atrophy of the liver?

A. Plus the health department because these cases are always reported to the health departments, the labor departments.

Q. And if a worker didn't know he was exposed to PCB and developed yellow atrophy of the liver, how in the world could a doctor make an association?

A. Well, if he didn't know it, you're making the assumption that I cannot make a statement about. If the worker didn't know it, there could be no association by him.

Q. Correct. Are you stating that all workers in industry, General Electric, McGraw Edison, Allis-Chalmers, Westinghouse, Saginaw, Niagara and all of your customers knew that they were working with PCBs from 1936 till 1977?

A. Well, all the companies knew it.

Q. Are you stating that the workers knew it?

A. I don't know whether they did or not. I have

never been in a GE plant, a Saginaw Electric plant, a Packard manufacturing plant or any of them, so I cannot answer that question.

Q. Isn't it a fact, Dr. Kelly, that as you sit here today in this deposition, you do not know what workers knew or what percentage of workers knew they were exposed to PCBs?

A. I think that's correct, but I've told you that I have never been in the plants. How would I know it?

MR. CARNEY: This is just an obvious tactic. You've established that -- We've established Dr. Kelly wasn't in these plants. You're talking about work -- He's supposed to speculate inside the mind of what these workers knew? The fact was Dr. Kelly has repeatedly said he gave the warnings to the people that he had contact with. He had no right to go in the plants and start talking to these workers without permission of Westinghouse or General Electric.

MR. McCREA: That's exactly my point. It's pure speculation on the part of this witness to state there were no reported cases of yellow atrophy of the liver. That's pure speculation.

MR. CARNEY: No.

A. It is not.

MR. McCREA: Just a second. Because he cannot

establish that the treating doctors of these workers knew that there was an exposure to PCB and thus the causal relationship, and without that knowledge, yellow atrophy of the liver as being caused by PCB would be undiagnosed, and for him to state there were no reports is, as you state, pure speculation.

MR. CARNEY: It's not speculation at all. Let me just make a statement and I'll let you make a statement, too. Let me just correct you. It is not a speculation. It's a fact that there were only less than a handful of reports in 50 years. Now, that's a fact.

MR. McCREA: Well, how could --

MR. CARNEY: That's not speculation whatsoever.

MR. McCREA: That's a fact?

MR. CARNEY: Yes.

MR. McCREA: But it's also a fact --

MR. CARNEY: You agree with that?

MR. McCREA: I don't agree with that, but it's also a fact that none of these workers knew they were exposed to PCB.

MR. CARNEY: How did you -- Did you go and interview all the General Electric -- How many General Electric workers have you interviewed?

MR. McCREA: I've talked to the supervisor of

the Pyranol division of General Electric where they made transformers, and his testimony is that he didn't know there was PCB.

MR. CARNEY: I'm going to --

MR. McCREA: Just a second. You asked me. He didn't know there was PCB in the plant, and he couldn't conduct operations because he spent so much time going to funerals.

MR. CARNEY: Well, that's an outrageous statement. You know it's going to be stricken from the record. You're trying to testify.

MR. McCREA: You asked me how I knew.

MR. CARNEY: You are making misstatements on the record and I'm trying to correct you. You have not talked to all the workers in the electrical plants or all the workers in any plant.

MR. McCREA: Well, you took the deposition of Dr. Laland; correct?

MR. CARNEY: You have solicited a bunch of workers to join in the lawsuit. I know that you've done that, but --

MR. McCREA: Mr. Carney, would you care to apologize for that statement?

MR. CARNEY: No, I'm not going to because it's a fact and I have proof of it.

MR. McCREA: All right. Name --

MR. CARNEY: I have proof of it.

MR. McCREA: All right, Mr. Carney. That particular statement is going to be taken to your disciplinary commission. I promise you.

MR. CARNEY: I welcome it. I welcome it. I really do. I hope you do.

MR. McCREA: All right. Well, I promise you I will.

MR. CARNEY: Why don't we go on with the deposition.

MR. McCREA: I promise you that will happen.

MR. CARNEY: I really --

MR. McCREA: As will your interview of all our clients' doctors without our permission.

MR. CARNEY: Okay. You're --

MR. McCREA: And that's an ex parte conduct, contact which will also go to the disciplinary commission.

MR. CARNEY: And I'm challenging you right now to do it. Don't just talk about it. Do it. You've threatened to do it and you haven't done it, so I want you to do it, Mr. McCrea.

MR. McCREA: I'll be happy to.

MR. CARNEY: I don't think you will and you know you won't. Go ahead.

THE WITNESS: Can we get on with my deposition?

MR. McCREA: I'd like to if your counsel will stay on track.

THE WITNESS: Well, you're asking the questions.

Q. (By Mr. McCrea) Dr. Kelly, give me the name of one individual working for any corporation in the United States that knew he was exposed to PCBs before 1977?

MR. CARNEY: You including Monsanto?

A. Well, that is -- Do you think I keep a record of the names of people who are exposed to every chemical that we manufacture?

Q. (By Mr. McCrea) What evidence do you have that these workers knew they were exposed to PCB?

A. I don't have any evidence.

MR. CARNEY: Let me object to the question. It's obviously one that would call for speculation as to what somebody else knew. He'd have to get inside the mind of some unnamed worker or, you know, I think in this case thousands and thousands of workers, get inside their mind and figure out what they knew in 1977. If you, you know, it's a ludicrous question, and it's obvious that you've run out of questions and you're just grasping at straws.

MR. McCREA: Would the court reporter please

read the question back so that I can get an answer.

(Thereupon, the reporter propounded the pending question.)

MR. CARNEY: I'm going to object to that. These workers, you haven't given a name. You haven't, you're -- You haven't identified it. It's hopelessly vague.

Q. (By Mr. McCrea) Dr. Kelly, what evidence do you have that any of the plaintiffs in this case knew they were exposed to PCB before 1977?

MR. CARNEY: Objection, you know.

A. I have no evidence that they knew or didn't know.

Q. (By Mr. McCrea) What evidence do you have that a single worker employed by Westinghouse knew he was exposed to PCB before 1977?

MR. CARNEY: Talking about individually knew or evidence with regard to what the warnings were that Monsanto made to their supervisors? I mean, you know, the question is vague as to what you mean. If you mean what -- If you include in that the warnings that Monsanto gave, we've covered that. I don't think that's what you're asking for, but I think you ought to be clear about it.

MR. McCREA: Would the court reporter read the question back so that I may again get an answer?

(Thereupon, the reporter propounded the pending question.)

A. I have never talked to a worker with Westinghouse at the Bloomington plant before or after 1977, so I have no evidence. I don't know if he was knowledgeable or not knowledgeable.

Q. (By Mr. McCrea) What evidence do you have that a single worker employed by General Electric knew that he was exposed to PCB before 1977?

MR. CARNEY: Are you excluding -- I'm going to object to the question. It's vague. Are you excluding from that the evidence that Monsanto gave, the warnings to the General Electric supervisors and plant foremen?

MR. McCREA: If he considers that evidence, he may.

MR. CARNEY: Well, I don't know what you -- I think it's vague. If that's included, if you're asking about that, then I think the doctor has knowledge.

MR. McCREA: Well, you want to answer for him?

MR. CARNEY: No. I think that the doctor's already testified that he gave the warnings to the Westinghouse supervisors and the General Electric people. The warnings were sent, and he's already described those warnings. Are you excluding that from your question? Otherwise, I think it's an unfair question and it's vague.

MR. McCREA: Would the court reporter again read the question back so that we may get an answer?

(Thereupon, the reporter propounded the pending question.)

MR. CARNEY: Further, are you excluding from the question the fact that the doctor's already testified that General Electric and Westinghouse knew more about PCBs than Monsanto did? You know, I think if you exclude those things, then I think you talk about the ambiguity.

MR. McCREA: Would you answer the question? First of all, I'd like to have the question reread again so that you may answer it, and if you have any further objections, we can reread it again. We're going to get an answer.

(Thereupon, the reporter propounded the previous question.)

A. I do not have evidence on the knowledge of the individual worker at the General Electric, but I have definite knowledge that the people at General Electric were informed about the composition of the material and the safe handling factors to be carried out. I also have information that the transformer company I've been to, not General Electric or not Westinghouse, the workers I talked with there did know it was PCBs they were working with in the transformers.

Q. (By Mr. McCrea) Dr. Kelly, on page 43 Dr. Drinker states that, "If the individual in question happens to suffer some ordinary disease of the liver, the condition is superimposed upon a substratum of injury." That means exposure to chlorinated hydrocarbons can injure an individual who had an ordinary disease of the liver, does it not?

A. Say that over. I'm reading this.

(Thereupon, the reporter propounded the pending question.)

A. Well, you neglected to mention that Dr. Drinker said in accordance with this hypothesis. He is speculating. I think a hypothesis is a speculation.

Q. Well, that in accordance with the hypothesis, he confirmed that the --

A. It's still a hypothesis there.

Q. All right.

A. Because when you are --

Q. All right.

A. May I finish my explanation?

Q. I would appreciate it if you'd answer my question.

MR. CARNEY: Well, let him finish.

A. Well, ask a question. I'll be happy to ask it.

MR. McCREA: Could you reread the question?

(Thereupon, the reporter propounded the previous question.)

MR. CARNEY: Well, let me object to this. You're taking -- You're talking about a person now? This is a rat experiment.

MR. McCREA: Does he say rat? He says if the individual.

MR. CARNEY: But -- Well, that's what I'm saying. There's a switch there from rat experiment to an individual.

MR. McCREA: Did I misquote that, Mr. Carney?

MR. CARNEY: No. What I'm saying is I think you ought to make it clear we're not talking about the Dr. Drinker studies, we're not on persons. Is that fair to say? They're on rats.

MR. McCREA: And would you go up to the previous paragraph and read that, please? "One is forced to conclude from the experiments that an average concentration of 0.57 mg. per cubic meter inhaled 16 hours daily produces definite slight exchanges in the liver and in this organ alone. These changes are resisted efficiently by the animals and cause no depreciation of health. The situation is not unlike that seen in factories where yellow, where acute yellow atrophy of the liver has

occurred. In the case of such instances, the patients have been singled out in some way or other from large groups or fellow workmen who have been perfectly healthy." Now, is he talking about rats, Mr. Carney?

MR. CARNEY: I think he says, "In accordance with this hypothesis, we determine that a dose of 0.75 of carbon tetrachloride plus 0.75 cc of ethyl alcohol per kilogram of rat was entirely non-toxic to normal animals."

MR. McCREA: That's correct. Now read the next sentence. Now read the next sentence to the jury.

MR. CARNEY: Well --

MR. McCREA: Read the next sentence.

MR. CARNEY: I'll read the next sentence. What I -- Well, no, I'm not going to read any more of this document. Why don't you ask a question instead of just reading out of a document. We've got Dr. Kelly here. Do you have a question for Dr. Kelly?

MR. McCREA: I've had several.

MR. CARNEY: Okay. Why don't you ask some questions or conclude your deposition? This has gone on for three days. You promised that a day and a half ago that you would be done in a day and now you're into your, I think it's your third day of or third day of cross examination, you know. Do you have any more questions?

MR. McCREA: I have the last one which hasn't

been answered. Would the court reporter read the question which is probably back about four pages?

(Thereupon, the reporter propounded the pending question.)

A. Yes, that's what he says.

Q. (By Mr. McCrea) Dr. Kelly, did Monsanto ever warn the purchasers of its chlorinated hydrocarbons that individuals with an ordinary disease of the liver could be injured by exposure to PCBs?

A. No, it didn't, but that -- Are we talking about what he said? He didn't say that. He said if you have an injured liver already, you shouldn't take carbon tetrachloride or alcohol. If the people followed the warning statements, they wouldn't get any injury to their liver.

MR. McCREA: We're not talking about that, Doctor. Would you reread the question?

THE WITNESS: Well, I answered the question. I thought.

MR. McCREA: No, you didn't.

THE WITNESS: All right.

MR. CARNEY: I disagree. He answered it. You just didn't like his answer.

MR. McCREA: No, Mr. Carney.

MR. CARNEY: It was an answer to your

question.

MR. McCREA: Ordinary disease of the liver means is separate, entirely separate from exposure to PCBs and carbon tetrachloride and alcohol. It is entirely separate. What this paper says is if a worker has an ordinary disease of the liver, he can have superimposed on that an additional injury by exposure to PCB. Secondly, if a worker is exposed to PCB and then exposed to carbon tetrachloride and alcohol --

MR. CARNEY: Mr. McCrea, are you asking a question?

MR. McCREA: No, I'm explaining it to you.

MR. CARNEY: You're explaining it to me? You don't need to explain to it me. I don't need your explanations. I heard your question. I understood it. I heard Dr. Kelly's answer and understood it and it was responsive to your question. Now, if you have another question, go ahead and ask it.

MR. McCREA: Well, it was not responsive. That sentence makes no reference -- Will you please --

MR. CARNEY: All you're doing -- do you want to give the jury -- Why don't you ask the questions and then give the jury the answers that you want. Is that what you prefer?

MR. McCREA: No, Mr. Carney.

MR. CARNEY: That may be the way to do it because you seem to want to explain how the answer should have been answered.

MR. McCREA: No.

MR. CARNEY: Unfortunately Dr. Kelly is the one under oath, not you, and I think you ought to get some testimony from Dr. Kelly.

MR. McCREA: Break.

(Thereupon, a short recess was taken.)

MR. McCREA: Dr. Kelly, again I would like the court reporter to reread the question so that we may get an answer.

(Thereupon, the reporter propounded the previous question.)

A. No, sir, we did not because we did not believe that the individuals who followed our safe handling procedures would be injured by PCBs.

Q. Wouldn't one of the safe handling procedures be to advise Westinghouse that it should conduct pre-employment physicals to determine if there was any liver disease in the prospective workers in accordance with the 1938 information from Dr. Drinker which determined that exposure to PCBs can superimpose injury on a substratum?

A. I want to find the question. What was the question now that I'm to answer? Would you read the

question, please?

(Thereupon, the reporter propounded the pending question.)

A. No, because Westinghouse had the same information we had. They had the same opportunity to have that information. They had a sophisticated medical organization. They had carried out toxicological conditions, toxicological experiments on their own on their product, so they knew as much as we did about it.

Q. Dr. Kelly, would you acknowledge to this jury that it would be an unsafe work practice not to have a pre-employment physical of a prospective worker to determine if that worker had liver disease before he was to be exposed to PCBs?

A. I would have to know the exposure, Mr. McCrea. I can't make a statement without knowing the type of exposure of which he might have.

Q. The exposure could range from anything from very slight exposure to perhaps very substantial exposure. Under those circumstances, will you please answer the question?

MR. CARNEY: Objection to the form of the question, vague.

A. The question is, as I understand it --

MR. McCREA: Let's let the court reporter

reread the question.

(Thereupon, the reporter propounded the pending question.)

A. And my answer to it was that would depend entirely upon the exposure to which the man was, what he was exposed to in the workplace, and without knowing the Westinghouse workplace, I'm not in a position to answer that question.

Q. (By Mr. McCrea) Dr. Kelly, would you consider it an unsafe work practice for the workers at Anniston, Alabama to not have pre-employment physicals to determine if they had pre-existing liver disease before they worked with PCBs in the Monsanto Anniston, Alabama plant?

A. It depends when they came to work. If they came to work in 1960, we wouldn't be concerned about it because we knew that none of these workers had any problems during the past 20 years, so we would take somebody who had liver disease.

Q. And expose them to PCBs?

A. The exposure was not sufficient to cause any problems.

Q. How do you know you had people with liver disease?

A. Well, I didn't know we had them. You asked -- That wasn't the question you asked me. Would you repeat

the question so we know what we're talking about?

(Thereupon, the reporter propounded the previous question.)

A. And my answer was no, it would not be, although we did do examinations for everybody that came to work at the place, but the reason I would not consider it unsafe because we had no liver injury during the course of the manufacturing of PCBs since I've been with Monsanto.

Q. How did you communicate with your workers at Anniston, Alabama that they were working with PCBs?

A. In safety meetings they told them what the products were.

Q. Who told them?

A. The foreman, the area supervisor.

Q. Do you have one piece of documented -- Do you have one document which establishes that these workers were told they were working with PCBs?

A. I don't have a document, but I know what Monsanto's procedure was, were in all the departments they had. They had regular safety meetings. They had regular manufacturing meetings with the workers, and they told them what the products were and they told them how to avoid problems.

Q. Did you, Dr. Kelly, ever stand in front of a group of workers in Anniston, Alabama and explain the risk

associated with exposure to PCBs to the workers?

A. Well, first of all, at our plants we didn't have any risks, so the answer to your question is no.

Q. Did you ever stand before the workers at Sauget, Illinois or East St. Louis and explain the risk of exposure to PCBs?

A. Yes, I explained that to the people I examined. I explained why we were examining them and I was explaining to them what our experience had been in the past and that's, and I wanted to examine them to find out if my belief was correct. So the answer to your question is yes. I didn't stand before them. I sat down before, with each one.

Q. What risks did you explain to them were associated with exposure to PCB?

A. If you get too much on your skin for prolonged periods of time, if you inhale material at elevated temperatures, you are liable to get chloracne. We have not had any chloracne, but that is the hallmark of PCB, adverse effects.

Q. You never --

A. I also said if you get too much you are liable, there's a possibility you may get a chemical hepatitis.

Q. Did you have chloracne at Nitro, West

Virginia?

A. Yes, sir.

Q. And what risks did you explain to the workers at Nitro, West Virginia before they got the chloracne?

MR. CARNEY: Is this -- You agree this is not a PCB plant, isn't it?

MR. McCREA: Chlorinated hydrocarbon.

MR. CARNEY: But no PCBs were ever made at Nitro.

Q. (By Mr. McCrea) Stipulated. What risks did you explain to the workers at Nitro, West Virginia before they got chloracne?

MR. CARNEY: Objection on the grounds of relevance.

A. Now, let us explain. What risk did I explain to the workers who were working with an agricultural chemical not even close to PCB, not remotely connected?

Q. (By Mr. McCrea) Much more hazardous; correct?

A. It depends. There are all varieties. Yes, this is an agriculture chemical which is a weed killer.

Q. Explain what risks you explained to those workers. Explain the risks that you communicated with those workers.

A. I said to those workers, "There have been chloracne cases in this plant. You must exercise complete,

complete and thorough housekeeping. You must" --

Q. That's not my question, Dr. Kelly. My question is: What risks did you explain to them before they got chloracne, not after?

A. We didn't know they were going to get chloracne until chloracne showed up.

Q. All right. What other problems showed up with those workers in Nitro, West Virginia who were exposed to the chlorinated hydrocarbon?

A. Well, there again, Mr. McCrea --

MR. CARNEY: Again stipulating that this is not a PCB?

MR. McCREA: Stipulated.

A. And you are saying -- We had problems at Nitro, West Virginia from an explosion that caused the formation of dioxins, and I didn't tell these people, "Look, if we have an explosion, here are the risks you're going to have."

Q. (By Mr. McCrea) What other problems did those workers have? Just a second.

A. Well, those --

Q. In addition to chloracne in Nitro, West Virginia?

A. The problems that the people had at Nitro, West Virginia in addition to chloracne were those that

resulted from the uncontrolled reaction which you could call an explosion which blew the contents of the material out of the, out of the vessel on to the roof. The people developed chloracne. They developed peripheral neuritis.

Q. What else?

A. I'll have to go back. I don't -- Those are the two prominent ones that I remember.

Q. Well, Doctor, that situation doesn't slip your mind, does it?

A. Well, it doesn't slip my mind, no, but we had a number of people with different symptoms. I've told you the two prominent ones, peripheral neuritis and chloracne.

Q. Did they have fatigue?

A. Well, that's not a condition. That's a symptom.

Q. Well, did they have fatigue as a symptom?

A. Some did, some didn't.

Q. Did they have vertigo as a symptom?

A. It was not prominent in my recollection.

Q. Did they have loss of libido?

A. Some did, some didn't.

Q. The same as the black worker reported in 1933?

MR. CARNEY: Well, let me object to the form of that question.

A. I cannot answer that because I don't know how

much loss the black worker had, and I don't know how much loss these workers had, whether it was five percent, ten percent or a hundred percent loss.

Q. (By Mr. McCrea) The black worker reported loss of libido; correct?

A. Yes. How much loss? Five percent? Ten percent? Hundred percent? I don't know. He had some loss of libido. That's what he reported.

Q. And the workers in Nitro, West Virginia reported loss of libido; correct?

A. Yes, some did.

Q. Did they also report painful joints?

A. It was not a prominent symptom.

Q. Did they report it?

A. I don't know whether they reported it. If they had peripheral neuritis, maybe they did have pains around their joints.

Q. What else did they report?

A. If you will show me the medical reports I will be happy to give you the symptoms they reported, but. . .

Q. And that was a result of exposure to dioxin; correct?

A. Presumably. They were unable to find out what the products of combustion were at the explosion.

Q. Well, now, Dr. Kelly, you know that was

dioxin; correct?

A. No, I don't know it was dioxin because this guck that came out and was burned to a crisp was analyzed and they couldn't analyze for dioxin at that time. The supposition is that it was dioxin, but when you say do I know it was dioxin, I don't know it.

Q. Do you know what quantity of chemical they were exposed to? Do you know the dose response?

A. Let's have two, that divided into two sentences, two questions, please.

Q. Yes. Do you know the dose response?

A. Of what?

Q. The chemical to which they were exposed which caused chloracne, loss of libido, dizziness, peripheral neuropathy. Let me go through this list. Fatigue, vertigo, loss of libido, pain in the joints, peripheral neuropathy and chloracne.

A. The dose response was not able to be calculated because we had men who were cleaning the galvanized roofing and scraping off this black carbonaceous tar. How much they got absorbed through their clothes I do not know, but there was quite a lot.

Q. They were up on the roof?

A. They were up on the roof and they were up below the roof.

Q. How do you explain that these individuals experienced pain in their joints as a result of exposure to the agricultural chemical?

A. They received -- They developed the pains in the joints in response to the combustion products of the uncontrolled reaction. It was not the agricultural chemical at that time, so --

Q. Could --

A. If they had peripheral neuritis, they would get pains in the extremities. The joints presumably that they complained about were in the extremities.

Q. So you are tying in the mechanism by which they experienced pain in their joints with the peripheral neuropathy which is the demyelinization of the coating of the nerves in the extremities?

A. That is one of the causes, yes.

Q. And how does this chemical cause the coating to demyelinize?

A. I don't know.

Q. Was there any investigation of that with neurologists or specialists in the field of medicine?

A. In our workers?

Q. As a result of the workers in Nitro, West Virginia experiencing pain in their joints and peripheral neuropathy?

A. We sent four of them to the Kettering Institute where they had biopsies on nerves taken in two of them. They were completely examined and checked for these things.

Q. What did the biopsy of the nerves indicate?

A. It showed demyelination of the nerves.

Q. And did the doctors at Kettering Institute explain to you how this chemical from the combustion could demyelinize the nerves in the peripheral area?

A. I don't believe they knew.

Q. Demyelinization means that the nerve cells became necrotic?

A. No, it doesn't. It means that the covering of the nerve loses its, the coating of the nerve loses it, its -- Well, the coating gets destroyed.

Q. So Monsanto was never able to determine the chemical which caused those number of problems?

A. That is not correct. I said the ones, the severe ones who had the peripheral neuritis, who had severe chloracne were the ones who had worked at the time of the explosion. We did have chloracne from the general manufacturing run of the material, and to the best of my recollection, those were not accompanied by those dire complaints that you mentioned.

Q. Were there also long-lasting problems

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affecting the brain?

A. No, not --

MR. CARNEY: Again just for the record, we're not talking about PCBs here?

MR. McCREA: Chlorinated hydrocarbons, presumably dioxin which is a contaminant of certain PCB compounds as he earlier testified.

MR. CARNEY: No, I think you've mischaracterized the record, but I just think the record ought to be clear that you're spending a lot of time now talking about an entirely different chemical, an agriculture chemical, not a PCB.

Q. (By Mr. McCrea) Dr. Kelly, was dioxin which is a PCB with two oxygen atoms added, was it implicated in the cause of the illness of the workers in Nitro, West Virginia?

A. Now, we're dealing with two conditions when you talk about illness. There was an explosion which started the situation. We had that. We did not -- We were unable to analyze the material for dioxin because as I said, it was completely charred much like a, oh, coagulated hunk of ashes, and they were unable to find out whether there was dioxin in it, and I don't know if the mechanism, if the analytical method for running dioxin was available at that time. We were able to find that dioxin was present

in the agricultural chemical at Nitro, West Virginia and sometime after the explosion in the regular manufacturing run.

Q. Was it implicated as a causative agent of the health symptoms and problems suffered by those workers?

A. Well, now again, what health symptoms and what problems?

Q. Chloracne?

A. Chloracne, yes.

Q. Peripheral neuropathy?

A. No, that was not present in the workers who were not exposed at the explosion.

Q. No, I'm talking about the ones who were exposed to the explosion.

A. Well, I am trying, Mr. McCrea, to clarify two situations which you are throwing in the same bundle. I said we had an explosion during a reaction of the making the agricultural chemical. As a result of the cleanup, we developed several, a number of people developed very serious conditions. Those are the ones that had peripheral neuritis and severe chloracne. Those are the ones that we did biopsies on the nerves. Then we had chloracne in varying degrees in a number of individuals in the regular work force. Dioxin was suspected in those cases.

Q. Which cases, the --

A. Well, it was definite in the other cases.
Q. The explosion?
A. We suspected. We were never able to prove it.
Q. So dioxin was suspected, but never proven as the causative agent in the workers subjected to the explosion?
A. I don't know when it was suspected. I mean, I'm not exactly sure. The date of the explosion is something, in 1959 or something like that.
Q. '49?
A. Was it '49? '49. Well, I don't believe there was methods of checking for dioxin at that particular time. I'm not sure.
Q. All right. You may have answered the question, but I don't think I understand it. Was dioxin implicated in the serious conditions of the workers who were subjected to the explosion?
A. Well, if by implicate you mean was it proven, it wasn't proven.
Q. No, no, no, suspected.
A. Well, that's a different word.
Q. Well, let's change the word to suspected.
A. It was suspected post hoc, after the situation. It was not suspected at the time of the explosion.

Q. All right.

A. It was not suspected when the first people broke out with the chloracne.

Q. Do you feel it was the probable cause of the workers who experienced chloracne, fatigue, vertigo, loss of libido, pain in their joints and peripheral neuropathy?

MR. CARNEY: Objection to the form.

THE WITNESS: Would you repeat that question?

(Thereupon, the reporter propounded the pending question.)

A. It might have been.

Q. (By Mr. McCrea) You can't say it's probable?

A. Because we didn't find it. We were unable to look for it.

Q. So all you can say is it might have been the cause?

A. That's correct.

Q. Do you feel that dioxin was the probable cause of the chloracne in the regular work force who were not exposed to the explosion?

A. That and whatever other impurities might have been present in the 245T.

Q. Did you talk with a doctor from Germany about a similar episode at BASF, Dr. von Oettel?

A. I talked with him once, and I don't know what

his episode was.

Q. Can you describe for us the health problems experienced by the workers at BASF in Germany as a result of a similar type explosion in the manufacture of the agricultural chemical?

A. No, sir, and I don't even know if Dr. Oettel, O-e --

Q. I have it von Oettel, v-o-n capital O-e-t-t-e-l?

A. Well, he didn't use the von when I was talking to him.

Q. All right, sir. Can you describe their symptoms?

A. No, I can't at this date. I don't know if he read an article on it or not.

Q. But he did come to St. Louis, Missouri to talk to you?

A. Not because of that. He came for other reasons. I don't know what he came -- He was over here at some particular meeting. He did not come over to talk about the BASF explosion because I don't know if they had it at that time or maybe it was before. I don't know, but it wasn't -- I don't recall it was written up.

Q. Did you desire information about the situation at BASF in that your workers at Nitro, West Virginia had

experienced these problems as a result of an explosion of this agricultural chemical?

A. Well, I don't know. I don't remember when I talked to him. I don't remember if I talked to him before our explosion or after our explosion. I don't know.

Q. That's not the question.

A. Well, what was the question?

MR. McCREA: Could you read the question back?

(Thereupon, the reporter propounded the previous question.)

A. Well, I said I don't remember whether it was before our explosion or after our explosion, so I can't answer the situation. If it was before our explosion, I couldn't very well have talked to him about an explosion that was going to happen in the next six months.

Q. (By Mr. Mccrea) Did you change the workplace practices at Nitro, West Virginia as a result of the chloracne?

A. Yes.

Q. With regard to the work done by Dr. Drinker which we have discussed, did you sit down with him and review his reports in detail?

A. I may have called him on the phone. I do not believe I went up to Cambridge.

Q. Did you ever write Dr. Drinker and challenge

any of his findings?

A. You mean ever in my life?

Q. Yes, sir.

A. No, I did not write him, but I challenged them on the phone.

Q. Which findings did you challenge on the phone?

A. I challenged him on the phone that he reported findings on chlorinated diphenyl, and I did not believe it was a chlorinated diphenyl.

Q. Did you challenge him as to any other findings in any of the reports which he provided to Monsanto under contract?

A. First of all, I don't believe I would use the word challenged to talk to a scientist. I wouldn't say challenge. It seems to me that you say, "Look, I think you're completely off base on this." I may have discussed parts of the report and I may not have. I have no recollection of what happened 50 years ago.

Q. If a worker from the Bloomington Westinghouse plant called you in 1958 and informed you that he had liver disease, hepatitis and asked you if he could work in PCBs, what would you have told him?

A. I would say, "Look, I cannot diagnose you from Missouri. Go and see your family doctor. See a good specialist if you have one. See your family doctor," and

then I would call the plant manager at Bloomington and say, "I understand you have a man who is alleging exposure to PCBs and says he has liver problems. I think this should be investigated."

Q. All right, sir. If a worker called you from Bloomington, Indiana in 1958 and informed you that he was going to work in a department which had PCBs and carbon tetrachloride, what would you tell him?

A. Again I would tell him, "I cannot make any decisions as far as your workplace is concerned." There is a supposition that you were giving me. I would certainly say, "The carbon tetrachloride is, you should not be exposed to that whether you have liver disease or not." They don't even let secretaries clean off their typewriters with carbon tetrachloride. It's a bad actor. I would say, "This is a question you'd have to ask your supervisors. I'll be happy to talk to any of your supervisors, but I don't know anything about your workplace."

Q. If he called you in 1958 and asked you if there were any special risk in exposure to carbon tetrachloride if he had a contemporaneous exposure to PCBs, what would you tell him?

A. Again I would say, "It depends on how much exposure you have to carbon tetrachloride. It depends on how much exposure you have with PCBs. I can't quantify

those. This is a situation that you have to talk over with your own plant medical department," and I would call the Westinghouse people and say this is what this man said and I would talk to the doctor and give him my thoughts.

Q. If he asked you if there were special risks irrespective of exposure, what would your answer be?

MR. CARNEY: Well, I'm going to object to the form of the question.

A. That is a question if there were no, regardless of exposure?

Q. (By Mr. McCrea) Right.

A. If there's no exposure, there's no risk. Is that what you're saying?

Q. Right. What if there's slight exposure to PCB?

A. Well, it depends how much there is and how much exposure there is to carbon tetrachloride.

Q. You can't answer the question?

A. Yes, I can answer the question. Give it back to me.

MR. McCREA: All right. Read it back.

MR. CARNEY: Well, just for the record before it's read back, I certainly heard an answer. Maybe I'm hearing things today, but I heard a question and I heard an answer to the question, and I don't think, Doctor, just

because he asks that the question be read back you're obligated to give him a different answer or expand upon it. You can if you want to, though. Read the question and the answer.

(Thereupon, the reporter propounded the previous question and answer.)

Q. (By Mr. McCrea) I said slight exposure. Doctor, let me clarify the question. What if the worker called you and said, "I have a slight exposure to PCB and a slight exposure to tetrachloride"? Is there any special risk with that combined exposure?

MR. CARNEY: Objection to the form of the question. It's vague.

A. Well, yes, I would answer this way. I would say to him, "I do not know what you mean by slight exposure to these two chemicals. This is a situation for your own manufacturing and medical organizations. I'll be happy to talk with any of them and give them any information that I have." And I might say in answer to all these questions, I never received a telephone call from any Westinghouse worker at Bloomington. I mean, I just, all these questions, there is an if in there, if somebody did this, but just for the mind of the jury, I never received any questions or telephone calls or letters from any worker in the Bloomington, Indiana Westinghouse plant.

Q. (By Mr. McCrea) I think we're prepared to stipulate to that fact.

A. Well, yes, but I want to be clear, Mr. McCrea, because you've mentioned all these things and it's easy for somebody on the jury to get the impression that there was a hot line between Bloomington and myself.

Q. Well, I appreciate your clarifying that for the jury and we will stipulate that no worker ever called you or had your phone number.

A. Thank you.

Q. If he called you and said, "I'm exposed to .5 milligrams per cubic meter of PCB and .5 milligrams of carbon tetrachloride per cubic meter," what would your answer be as to whether or not those exposures presented any special risk?

MR. CARNEY: Well, I'm going to object. You just mentioned some numbers without saying how. Was it fumes? You know, what confined space? Was there ventilation system? Was he putting his head in it? Was he putting his feet in it? I don't know what the exposure is, so it's vague.

A. Well, I have to say to him, "Monsanto does not manufacture carbon tetrachloride. I am not familiar with the maximum allowable concentration or the TLV if there was one in 1958, but I will be happy to look it up and talk to

your people about it, but this is really a question for your own organization, not Monsanto. I'll be happy to discuss it with your manufacturing group or your medical group." I do not believe that I would have, would discuss it with the worker.

Q. (By Mr. McCrea) Did you ask Dr. Drinker what he felt would be a safe level of PCB and carbon tetrachloride with regard to worker exposure when he provided you with this information on page 43 and 44?

A. No, sir.

Q. Of Plaintiff's Exhibit Six?

A. No, sir, I did not, but remember, the kind of exposure he gave those rats, that's completely different from the kind of exposure you get in industry. Carbon tetrachloride exposure is gradual by inhalation. Here they gave these rats a good size slug of the material by mouth all in one insult. So I would not expect that condition to obtain in industry.

Q. Would you go to page 43 and read the caption on that page and tell me if we're talking about giving rats a slug through the mouth? What is the caption on the top of page 43?

A. "Results of Inhalation Experiments," but --

Q. Dr. Kelly, does this document talk about --

MR. CARNEY: Wait a minute. You just, you

interrupted him. I think he -- Let him finish his answer and then you can ask another question.

A. Yes. Look what he says in the last paragraph. "In accordance with this hypothesis, we determined that a dose of .75 cc's of carbon tetrachloride plus 7.5 ethyl chloride per kilogram to rat was entirely non-toxic. However, when this dose was given to animals" -- a dose. He's not taking about inhaling this stuff. He's giving them this in a cocktail, a slug of this stuff by mouth.

Q. Was the chlorinated hydrocarbon given to the rat by cocktail form? Was the PCB given to the rat by cocktail form?

A. Tetrachloride is also a chlorinated hydrocarbon.

Q. Was the PCB given to the rat by cocktail form?

A. No, it was not.

Q. As described by Dr. Drinker on page 43?

A. No, sir.

Q. On Plaintiff's Exhibit Six?

A. No, sir, but you were asking me previously, you were including the doses of carbon tetrachloride and alcohol under results of inhalation experiments, and that wasn't correct. That's why I corrected you on it.

Q. All right. It was inhalation of PCB?

A. That's correct.

Q. And it was an injection?
A. No, it was by mouth, a dose of the stuff.
Q. But there's no question that the PCB was inhaled?
A. No, of course not. There's no question about it.
Q. So if the worker called you in 1958 and informed you that they had measured the ambient levels of PCB in the air which he breathes and the ambient levels of carbon tetrachloride in the air which he breathes and that both results were .5 milligrams per cubic meter and if there were any special risks, what would you tell him?
A. I'll repeat what I said before. We -- Monsanto did not make carbon tetrachloride. I do not know what the safe level of carbon, the maximum concentration, allowable concentration of carbon tetrachloride was in 1957. I don't know where you got the figure of .5 milligrams per cubic meter. That may be correct, it may not, but I would have to tell them, "Look, you were talking about working conditions in the Westinghouse plant. I don't know whether, what these levels, that accuracy -- not the accuracy of determining it, but whether these are peak levels, whether these occur all the time. This is a question for your manufacturing people and your, and your medical people. You should not -- That's the people who

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should answer that question. I'll be happy to talk to them."

Q. Dr. Kelly, if a worker called you in 1958 and asked you if it was safe for him to drink four to six cans of beer a day if he worked an eight hour shift exposed to PCBs, what would you tell him?

A. I'd say, "What is the exposure?"

Q. .5 milligrams per cubic meter plus dermal exposure.

A. How much dermal?

Q. Hands, forearms, legs.

MR. CARNEY: Yeah, but you haven't said, is this constant?

MR. McCREA: Constant.

MR. CARNEY: The legs?

MR. McCREA: Right.

MR. CARNEY: So he's constantly got PCBs on his legs and his arms, and he's breathing it constantly for how long a period of time?

MR. McCREA: Eight hours a day.

MR. CARNEY: For how many years?

Q. (By Mr. McCrea) That wasn't incorporated into the question. What would your answer be?

THE WITNESS: Let me have the question.

(Thereupon, the reporter propounded the pending

question.)

A. I would say to him one, I think eight cans a beer are not good for anybody.

Q. Four to six.

A. Oh, four to six? Well, maybe I wouldn't say that then. I would also say, "You should not have your arms, legs, clothes contaminated for eight hours a day with PCBs." I would say then the answer, first of all, that should not be done whether you take one can a beer or no cans of beer. That should not be done.

I would say to him then, "It depends on your physical condition, what, what are, what examination, what would an examination of you show? I don't know how I can advise you on this, but I will advise you that that type of contamination is wrong, should not be done. We warn against it."

Q. Did you ever warn against the consumption of alcohol with regard to workers exposed to PCBs in the history of Monsanto from 1936 through 1990?

A. Not that I can recall, no, sir.

Q. And you would have given this worker no such warning of the combined effect. You would have said, "Drinking can be bad for you, PCBs can be bad for you," but you would not give him a warning that the combined exposure to PCBs and consumption of four to six cans of beer a day

could have adverse effects?

A. I would have said, "You have got to avoid this type of exposure to PCBs so that you could drink four to six cans, if that's what you wanted to do."

Q. You would have said nothing about the combined effect?

A. I would have said, "You do not, you should not have this type of exposure, period."

Q. Dr. Kelly, in a yes or no answer, would you have given him a warning as to the health consequences of the combined effect of the exposure to PCB and the consumption of alcohol?

MR. CARNEY: And he's got to give a yes or a no answer?

MR. McCREA: Correct.

MR. CARNEY: I object to that and I instruct you not to answer that because that's an improper question. I don't think you're entitled to say that the doctor has to answer in only two answers, yes or no, and because of that I'm not going to allow the answer. I don't think you can instruct a witness how to answer your own question. I know you'd like to, but it's not proper. I think it's very improper. I think you know it's improper and you know a court will not allow you to say that you can only answer that yes or no and give no other answer. I've never heard

of that being done and I think you know that's improper.

MR. McCREA: I'll accept the validity of your objection. Would the court reporter please read the question, and then you may answer it in any manner which you desire without a yes or no answer. I have not received an answer to this question.

MR. CARNEY: Well, I disagree. You've asked it three or four times now, at least, and you've gotten an answer three or four times.

MR. McCREA: Not as to the combined effect.

MR. CARNEY: You've asked the question, that question three or four times, I believe.

MR. McCREA: I'd say four or five or six times.

MR. CARNEY: Okay. I'll go along with four to six, and if I can, I don't think you're entitled to just continue to ask the question because you don't like the answer. You've been doing that for some reason today and I don't understand it, but at any rate, I think you've got to ask new questions. I don't like to instruct a witness not to answer, but when it gets so repetitive, I'm really getting at my, to my limit here of tolerance for the repetition that's going on.

MR. McCREA: Tom, there's nothing about the answer I don't like. What I don't like is he hasn't

answered the question.

MR. CARNEY: That's your opinion. I disagree with you and I think probably Dr. Kelly thinks he's answered it, but let's not debate that. I don't think we'll ever agree on that. I'm not going to dispute that. You believe that he didn't answer. I believe he did, and I think Dr. Kelly believes he did answer it.

MR. McCREA: Then I'll certify that question to the Court for a ruling. So that we understand the question, would the court reporter please read it back with the understanding that your objection is valid, that he may answer it without simply a yes or no. Would the court reporter please read the question back as to the combined effect and then I want to listen to that question one more time.

MR. CARNEY: Okay. Before we listen to the question one more time, I'm going to allow the doctor to answer it one more time. I think he's answered it, and if he wants to answer it, my answer stands. That's perfectly acceptable, but I'm, in order to avoid instructions, I will allow the question to be read back and if the doctor thinks he needs to elaborate or change his answer or add something to it or stand on it or whatever, he's free to answer it in any way he can.

(Thereupon, the reporter propounded the previous

question.)

A. Is that the question?

Q. (By Mr. McCrea) Yes, sir.

A. I might and I might not. I would ask him, "What exposure do you have? How long have you been -- Is this a common practice for you to have four to six cans of beer a day? Do you have any illnesses? Have you" -- I would go in to some medical history with him and then I would say, "I believe this is a question for somebody who knows more about your exposure than I do." I would not be able to give him a frank yes or no.

Q. (By Mr. McCrea) Dr. Kelly, if he asks you if there was any special risk in consuming alcohol if he were exposed to PCB in the workplace, what would you tell him?

A. I'd say, "How much exposure do you have?"

Q. All right.

A. If you have, that's -- well --

Q. We've been through --

A. We've been through this, but that's the key point.

Q. What exposure would you consider -- What is the exposure, Dr. Kelly, that you would consider sufficient to then warn against the consumption of alcohol? You explain it to me.

MR. CARNEY: Objection to the form. I don't

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think you've given him enough facts to answer the question.

A. I would say the exposure is if an individual has, wears contaminated clothing during his work shift, if he's exposed to regular atmospheric concentrations three or four times the maximum allowable concentration, I would believe that if that continues he should not -- I would also believe that if he has any changes in his liver enzymes, then he should not drink alcohol.

Q. Thank you, Doctor. Would you turn to page 46, please?

A. Yes, sir.

Q. Can you identify that document?

A. It's a "Process for the Production of Aroclors, Pyranols, Etc. at the Anniston and at the Krummrich Plant", Krummrich plant being Sauget, also being East St. Louis.

Q. Would you turn to page 49?

MR. CARNEY: When you ask -- Just so the record is clear, are you, have you asked the doctor if he's familiar with the document?

Q. (By Mr. McCrea) I don't believe I did. Are you familiar with this document, Dr. Kelly?

A. Well, I think I've seen it a little earlier in this deposition. I've thumbed through it.

Q. All right, sir.

A. This was -- I don't see my name on any of the card, the distribution list. This is pretty much in all English, our English plant.

Q. This is a process for the production of Aroclors, Pyranols, etc. at the Monsanto Anniston, Alabama plant and the William G. Krummrich plant in East St. Louis or Sauget, Illinois?

A. That's correct, but it's written by a man who was from our English company, and as you see it, London, Newport, Newport. Newport is in the United Kingdom. Newport, Ruabon, that's in Wales, so. . .

Q. Have you read this document as part of your duties as medical director for Monsanto Company?

A. I don't know if I ever saw it. I may or I may not. I don't know. I didn't get a copy of it.

Q. Would you turn to page 49, please?

A. I have.

Q. In paragraph three under Roman numeral nine, "Hazards", subheading "Toxicity", states: "From the start of Aroclor manufacture at the Krummrich plant, the operators have been supplied a clean change of clothes every day, and time has been allowed at the end of the shift for bathing. Operators are advised to wash hands and face before eating. The Anniston operators do not have the same issue of clean clothes." My question to you is: Why

did you have one procedure in place in East St. Louis and not in place in Anniston?

A. Because the change of clothes every day and the time allowed for bathing was negotiated by the union at Krummrich plant for almost all the workers. It was not done for medical reasons. It was negotiated by the union. They were very happy to have 15 minutes off whether they took the shower or not. Anniston it was not a part of the union contract.

Q. Do you know --

A. I repeat, it was not done for medical reasons.

Q. Do you consider taking clothes home which have been contaminated with PCB as an unsafe practice?

A. Again you'll have to tell me what they, how much they were contaminated, what they did with it, do they do this every day. I mean, if you define those, I'll be happy to answer it.

Q. Five ounces of PCB spread uniformly over the clothing, would you consider that as unsafe practice?

A. What do they do with it when they get it home?

Q. They wear it, put it in the family wash.

A. Wash it? No, I don't think that's unsafe.

Q. Do you think it's unsafe for the worker to wear that clothing without laundering it?

MR. CARNEY: For one day or one hour?

MR. McCREA: For a week.

A. It might. It might. We advise against it in our labels.

Q. (By Mr. McCrea) And you did something against it in East St. Louis, but not at your plant in Anniston, and you've explained that. The union insisted on that?

A. I've explained that and I said we did not -- First of all, we did not have five ounces of PCBs on our workers' clothing at the East St. Louis plant. We didn't have that, and I also said we did not have that change of clothing routine put in for medical reasons. That was -- They're two entirely different plants. They have two entirely different unions. They have two entirely different set of fringes, and this is what they considered a fringe. It was any number, probably 70 percent of the workers. I think by the time I left 100 percent of the workers got clothing changes.

Q. Where?

A. It may very well have been at both.

Q. Did they get changes at Bloomington, Indiana?

A. I haven't the slightest idea.

Q. Did you ever warn that they should have a change of clothes at Bloomington, Indiana?

A. No, sir, because I did not know -- First of all, I did not think it was my business. Secondly, if they

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followed the directions, they didn't need to get a change of clothes.

Q. Would you turn to page 50?

A. Yes, sir.

Q. Are you familiar with that document?

A. I've seen it. I don't know when I saw it.

Q. Do you know the gentlemen on the upper right-hand corner, Hamer, Ritchie, Newman, Kulifay, Weddell and Marshall?

A. I know Newman. He was our physician at our London plant.

Q. Do you know any of the other gentlemen?

A. The last two names, Wedell and Marshall ring a bell, but I don't know what they were doing in 1951 or I don't really know what their connection was.

Q. Would you turn -- did you read -- Have you read this before?

A. I must have. I don't know when.

Q. Would you turn to page 51?

A. Yes, sir.

Q. And do you identify this document?

A. Well, this is part of the same document, it appears to me.

Q. Yes, sir. And the top the caption is Roman numeral 11 - "Hazards, continued"; correct?

A. Yes.

Q. Have you read this document while working for Monsanto Company?

A. Well, I really don't know. Hazards, continued. Where do the hazards start? Where's number ten? Oh, there's 11 there. I mean, Mr. McCrea, we start off with page number 46.

Q. Where do you see that?

A. On page 46. Well, let's go back to 46 in this thing, "Process for the Production of Aroclors, Pyranols, Etc."

Q. All right, sir.

A. Okay. We go 46. We've got the process on 47. On 48 we've got the process. Then we jump up to 11 hazards. I presume it's all in the same document.

Q. Correct.

A. I presume.

MR. CARNEY: Well, again I would -- Since you've indicated that you don't know whether you saw this or not while you worked at Monsanto, are you representing this is a complete self-contained document, Mr. McCrea?

MR. McCREA: No, I'm not.

MR. CARNEY: Okay. I don't think it is.

MR. McCREA: I cannot make that representation. It appears that the document at page 51

has a caption and is the commencement of a separate article. I cannot explain the captions. We got this from your company. We got this from Monsanto.

MR. CARNEY: Well, you got this document as well as lots of documents from Monsanto and, you know, I haven't committed to memory all of them, and unless we can get the witness to identify that he's familiar with this document, I don't know much more that we can do with it.

Q. (By Mr. McCrea) Dr. Kelly, I think we have two minutes here remaining before the break. Will you please turn to page 51?

A. Yes, I have.

Q. And at the top of the page below the line across the top there's a reference to "The Chemist Analyst, Volume 36, Number 2, Page 33, J. T. Baker Chemical Company, Phillipsburg, New Jersey, September 1947." Then below that, "On the Toxicity of Arochlors", and then below that, "Robert M. Brown, Chief Industrial Hygiene Section, Division of Health, Department of Public Welfare, City of St. Louis, Missouri." Do you recall if when you were medical director for Monsanto, if you read this sheet of paper that is in front of you now?

A. I don't recall ever having read it.

Q. Do you know Robert M. Brown?

A. I knew he worked someplace in the industrial

hygiene section of the city. I would not recognize him as an authority on toxicity. I thought he was doing industrial hygiene work.

Q. All right, sir. Will you read the second paragraph?

A. Yes, sir. Now, Mr. McCrea, I'll be happy to read this, but just picking out this, first of all, when he is talking about a melting point bath liquid, he is talking about putting a beaker or a container of open material.

MR. McCREA: We need to break.

(Thereupon, a short recess was taken.)

Q. (By Mr. McCrea) Dr. Kelly, again we left off and you were describing the document on page 51.

A. Yes, sir.

Q. Do you recall where we were?

A. Yes, I think so.

Q. Would you please continue with that answer?

A. Yes. I forget what the question was.

Q. To tell you the truth, I forget the question and forget what you were saying. I was hoping you would remember.

A. Maybe the court reporter could --

MR. McCREA: That would be helpful.

(Thereupon, the reporter propounded the previous answer.)

A. Yes. In other words, this is an analytical laboratory that they're talking about. They were using sulfuric acid which is battery acid and they were heating that up as the heat transfer unit. Of course, from sulfuric acid you get off S02 and you get off some pretty bad stuff. So they were going to use Aroclor.

So Mr. Brown says whether you are subjected to a possible acute exposure depends on the size of the melting pot bath. That's how big it is, what the surface area is and caution with which it's used and the temperature which is heated. I agree with all those things. With careless handling of the material and the resulting contamination of the skin, etc., etc., the way is left open for the producing of dermatitis.

Well, then he says, "Scrupulous cleanliness must be insisted upon wherever this material is handled." I believe that Mr. Brown is a little overconservative on that. We're not really dealing with a radioactive material.

Now, to get back to -- I'm sorry. I should have read the second paragraph. That's what you wanted me to read, wasn't it?

Q. Yes, beginning, "There is a need."

A. "Therefore, to give warning. For the toxicity of these compounds has been repeatedly demonstrated, both

from the standpoint of absorption from the inspired air as well as from their effects in producing a serious and disfiguring dermatitis when allowed to remain in contact with the skin." That, of course, is an oversimplification. That isn't what he says.

It says, "Since these effects have been repeatedly observed, industrial hygienists have taken care to see that the proper controls have been established wherever these products are used. For example, the maximum allowable concentration of chlorinated diphenyl for an eight-hour working day is one milligram per cubic meter of air." There's nothing new in all that.

Q. All right. Would you agree that that would constitute safe practice, what has been stated in paragraph two, as far as it goes?

A. Well, he says -- I don't see the practice that he says.

Q. Eight-hour working day is one milligram per cubic meter of air.

A. Well, that's a safe practice, yes.

Q. Would a deviation from that be unsafe?

A. It depends how much a deviant and how long you've deviated from it.

Q. Describe for us what would be unsafe based on how much you deviate and how long you deviate.

A. Well, I don't believe I can quantify that because it depends on whether you inhale the material at five minutes, ten minutes, half hour. It depends on whether it's done according to one milligram per cubic meter, you go five milligrams, ten milligrams, hundred milligrams. Certainly a hundred milligrams would be unsafe for eight hours. Whether it would be unsafe for five minutes, I wouldn't believe so.

Q. Dr. Kelly, when the author of this article, and I assume he wrote it, states in paragraph three, the last sentence, "Scrupulous cleanliness must be insisted upon wherever this material is handled," do you agree with that?

A. No, I don't. I don't know what he means by scrupulous. In the first place, this is not an article. This is very probably a letter to the editor of the, of the, of this particular journal because he's quoting the article and he is -- As I said, it all depends what he means by scrupulous cleanliness.

I think if it's handled like any industrial chemical and you clean up the spills and you don't get it on yourself and you don't breathe it at elevated temperatures, I think if this, when he talks about the material being contamination of the work table surfaces, it doesn't volatilize at room temperatures, so that's not the problem.

The problem is if you contaminate your skin and clothing or if you breathe the material at elevated temperatures.

Q. Would you agree that there should be scrupulous cleanliness with respect to the skin?

MR. CARNEY: Well, you've just asked the question, so you've repeated yourself and you're, you know, you're talking about -- You've got a question that has undefined terms.

Q. (By Mr. McCrea) When he talks about scrupulous cleanliness, do you interpret that as referring to the workplace or to the skin of the worker?

MR. CARNEY: Well, let me object here. You're asking Dr. Kelly to speculate inside the mind of someone as to what he means.

MR. McCREA: I'm asking him for his interpretation and if he doesn't --

A. I find it hard to interpret what he means. As I said, he talked about contamination of work table surfaces, etc. Does he mean by that that should be scrupulously clean, surgically clean like we're dealing with a radioactive material? I don't believe it's anything like that.

"Scrupulous cleanliness is insisted upon wherever the material is handled." Does that mean if you get something on the skin you should immediately wash it off?

It isn't that toxic. No, you don't have to wash it off right away. So I don't know what he means by scrupulous, and I don't believe he's an authority on it in the first place. Just because this man wrote it, that doesn't make him an authority.

Q. (By Mr. McCrea) Can you you go to page 52?

A. Yes, sir.

Q. Do you see the caption, "Health and Safety"?

A. Yes, sir.

Q. And under "Health and Safety" are there paragraphs with quotations?

A. Yes, sir.

Q. Do those paragraphs relate to Monsanto material?

A. They relate to what Mr. Pennington of Newport reported on his American tour. He went to Anniston, so it refers to Anniston, yes, sir, and it refers to Plant B which is the Krummrich plant or the Sauget plant or the East St. Louis plant depending on what year you're talking about.

Q. Are paragraphs one, two, three, four, five and six descriptive of the conditions at the Anniston Monsanto plant and the East St. Louis plant?

MR. CARNEY: On December 29, 1950?

MR. McCREA: On December 29, 1950.

A. Well, starting right off, I don't believe we had tins of cold cream around, ointment around there. We, as our general policy, we were against using protective ointments. We rather would prevent the material from getting on the skin by other means rather than try out protective ointment which never works.

I agree when he said that operators were sufficiently trained in the need for personal cleanliness. I think, yes, it represents the procedures at Monsanto and East St. Louis and Anniston. I think the word toxic department has a connotation that really means something different to everyone else. At East St. Louis -- At the East St. Louis plant they called everything toxic so they could get under the umbrella of the daily showers and the 15 minutes off and the change of clothes.

Q. Were the men expected to take a bath in their own time at the end of the shift in Anniston, Alabama?

A. I can't answer that.

Q. That statement is attributed to the plant at Anniston, is it not?

A. Yes, that's true. I suppose they were expected to.

Q. Would you consider it unsafe if they did not?

A. At Anniston?

Q. Yes, sir.

A. No, sir, it was not unsafe because we never had any problem with any illness at Anniston in the PCB department that could be attributed to PCBs.

Q. Would you consider it an unsafe practice not to have emergency showers?

A. Yes. I think emergency -- I would consider it unsafe. I think emergency showers should be in all chemical plants.

Q. Would you consider it unsafe practice for workers to eat food in the area of PCB manufacture?

A. Well, we considered it inadvisable. Whether it was safe or not, I can't answer that because, first of all, if there was enough material on the individual's hands and they were getting it, it was getting on the food, that was unsafe. If there was enough material in the air so that when they're sitting down for a half hour lunch break, they were inhaling material above the maximum allowable concentration, that was unsafe.

Q. Would you consider it unsafe not to provide an annual medical examination for workers exposed to PCBs?

A. It depends again on the exposure. It depends on the history of the plant. If the people had problems in the PC department, PCB department, they should be examined at intervals. Whether a year or longer is --

Q. What was the average duration that a worker

was employed in the PCB department at East St. Louis, Illinois?

A. Oh, I can't answer that.

Q. How many years do you think was the average for a person to work in the PCB department? I believe it's number 246 at East St. Louis, Illinois.

A. My guess would be pure speculation, would be around five years. Don't hold me to that. I don't know.

Q. Would you consider it an unsafe practice not to give employees an annual lung x-ray or -- excuse me -- a lung x-ray every three years as stated in the last paragraph?

A. Would I consider it un --

Q. An unsafe work practice to not give employees exposed to PCBs a lung x-ray every three years?

A. No, I do not consider that unsafe because I think exposure to PCBs does not cause any problem with the lungs.

Q. Then why -- This article states that Monsanto gave its employees a lung x-ray every three years.

A. We gave it to all the people.

Q. Why did you give it to all the people?

A. Because when you examine a person, you are looking for not only occupational conditions, but non-occupational conditions. You also have people who

rotate through various departments, so it was a policy that we gave x-rays where we had an x-ray machine at one, two or three years depending on the age of the person. You're looking for the size of his heart. You're looking to see whether he has emphysema. You're looking for a lot of things rather than if you're looking for any changes in PCBs or sulfuric acid or whatever the man worked with.

Q. Your testimony here today is that the lung x-ray given to the workers every three years was unrelated to potential consequences from exposure to PCB?

A. That's correct.

Q. Will you turn, please, to page 53 and address paragraph three which begins, "Mr. Ellenburg"? Do you know Mr. Ellenburg?

A. Yes. I thought he was an analytical chemist. I'm not --

Q. Do you know H. B. Richard, Jr. of Monsanto Chemical Company?

A. We had a Dr. Richard, Ph.D. Richard who was in the research department of MCC. I don't know if that's the same man or not.

Q. Are you familiar with the results of the safe limits of Aroclor vapor concentration in air which said test was carried out by Kettering Laboratories in Cincinnati?

A. Yes, that's been gone on repeatedly here. That's the Treon work.

Q. All right. And what were the safe levels for PCB?

A. Well, he came out with some, but I think it was finally established that .5 or 1242 milligrams per cubic meter -- I mean, .5 for 54, 1254 and one milligram per cubic meter for 42.

Q. Can you explain to a jury how much that is?

A. Well, cubic meter of air is sort of pretty close to a yard by a yard by a yard. I mean, a yard is 36 inches. A meter is 39 inches. A cubic is this way. That's cubic meter of air, and a milligram is -- let's see -- it's a thousandth of a gram. It's a pretty small amount.

Q. How would you describe that to the jury so that they could have some frame of reference?

A. Well, I think it's hard to explain that to the jury. A milligram is -- I'd have to transpose milligrams to a gram. That's a thousandth of a gram and there are four grams in a teaspoonful. So you vaporize 1/4,000 of a teaspoonful and have it present in a small area. That's one milligram per cubic meter.

Q. All right, sir. Do you agree with the statement in the second to the last paragraph on page 53

which states, "The vapours of hot Arochlors are distinctly irritating to eyes and nose above a concentration of three milligrams per cbm in air"?

A. I don't really know what cbm is. I mean, that's an English term that I don't know, but there's no question hot vapors are irritating to the eyes and nose above, certainly above .5 milligrams.

Q. Did you ever warn that if workers experience irritation to their eyes, they are exposing themselves to excessive levels of PCB?

A. No, but I don't believe if the people, the workers have irritation of their eyes and nose they will stay around in the atmosphere. They'll get out.

Q. But you did not so warn?

A. Well, I can't say that I did or didn't, but I think that I'd give the workers credit for common sense. If working in an irritating atmosphere, they get out or correct what's happening. This will occur usually in leaks or something like that.

Q. Did you ever warn the workers that they could become poisoned if they experienced irritation to their eyes in that that could be an indication of PCB levels above the safe level?

A. Well, there again you are being too simplistic. Here they are exposed to this for one, two,

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three, four minutes as a leak, so out comes this hot air PCB, and their eyes and nose are irritated. They're not going to get poisoned from that exposure. They'll get irritation of their eyes and nose. They stop the leak and everything is fine. So no, I didn't warn them.

Q. Will you turn to page 54? I will address your attention to the heading "Safety Equipment" which is approximately in the middle of the page. Is that an accurate statement as to the operations at the East St. Louis Monsanto plant called Krummrich?

MR. CARNEY: Which paragraph are you --

MR. McCREA: Under "Safety Equipment."

MR. CARNEY: Okay.

A. I can't answer that because the safety equipment comes under the responsibility of the safety department, and I can't answer of my own knowledge whether these things really were there or not.

Q. (By Mr. McCrea) Will you consider a deviation from that practice as stated on page 54 under the heading "Safety Equipment" an unsafe practice?

MR. CARNEY: Objection to the form.

A. Unsafe practice where, the Krummrich plant?

Q. (By Mr. McCrea) Yes, sir.

A. Well, suppose a pair, spare suit of clothes was in the locker room. That would be unsafe to have it in

the locker room rather than encased in an apartment. The first aid cabinets, we were doing our best to get rid of first aid cabinets because the only thing you need for first aid is lots of water and a shower at the chemical plants. So I think having, not having a first aid cabinet, that is not unsafe. Gas mask you certainly wanted. Fire extinguishers you certainly wanted. Stretcher in the department? I don't know if that was important. I don't think we had stretchers in all our departments, so I wouldn't consider it unsafe if we didn't have a stretcher in the department.

Q. Would you consider it unsafe not to have a fume respirator?

MR. CARNEY: Objection to the form. You talking about in Krummrich?

A. In the Krummrich?

Q. (By Mr. McCrea) At Krummrich.

A. Oh, yes, because there they're working with chlorine. Remember your chlorinated diphenyl, and if you get a leak from chlorine, you need a fume respirator.

Q. Would you consider it an unsafe practice not to have a fume respirator for exposure to ambient levels of PCB under certain conditions?

MR. CARNEY: Objection to the form.

A. How high is the ambient level?

Q. (By Mr. McCrea) Three parts, three milligrams per cubic meter.

A. You mean we've got a leak and there it is?

Q. Right.

A. Still talking about the Krummrich plant?

Q. Yes, sir.

A. If we had a leak in three parts per, of three milligrams per cubic meter, we would not consider that unsafe for the time that it would take the workers to fix up the leak.

Q. At what level would you require workers to wear a fume respirator or under what conditions?

MR. CARNEY: Again at Krummrich?

MR. McCREA: At Krummrich.

MR. CARNEY: Which again for the jury's benefit is East St. Louis.

MR. McCREA: Correct.

A. Well, in the first place, remember we've put this fume respirator in there for the chlorine. That was a serious thing. And to answer your question of what level, if we had a big spill of hot PCBs, I believe that we would use the respirator and the goggles to avoid nose and throat irritation, and we would get the people out of there until the condition were corrected, and we would go in there with a gas mask or an airline helmet. I can't give you figures

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as to what level we'd say, "Put the respirator on."

Q. (By Mr. McCrea) Did you ever warn the workers at the Krummrich plant that if they experienced nose and throat irritation, they could also be absorbing that chemical into their body in that it permeates the nasal membranes and the lungs?

A. No, sir, I did not because that would be a very unusual -- The situation of irritation of the nose and eyes and throat would be very unusual. It would be temporary, would not be considered standard operating procedure and would not be repeated.

Q. Did you ever warn the companies to which you sold PCBs that irritation of the nose could also lead to systemic poisoning?

A. We warned the people that they should avoid breathing the fumes at elevated temperatures. We did not warn them specifically about irritation of the nose and throat saying that could lead to systemic intoxication, but if they avoided breathing the fumes, if they followed our directions, they wouldn't get irritation of the nose and throat and they wouldn't get systemic adverse effects.

Q. Would you turn to page 55?

A. Yes, sir.

Q. I direct your attention to the third paragraph beginning with the words, "Mr. Benignus." Did I pronounce

that correctly?

A. Benignus, yes, sir.

Q. Benignus. The sentence states, "Mr. Benignus of St. Louis, September 1953, discussed the dangers of using Aroclors in indoor paints." Do you recall what the dangers were that he discussed in September 1953 with regard to Aroclors in indoor paints?

A. No, sir, I do not. I do not, but first of all, I don't believe there was a very large amount of Aroclors used in indoor paints, but if it were used and you were using it on a closet or in a confined space, you would be breathing the fumes. That may be elevated temperatures, it may be hot in this closet, but I don't know.

I do not -- To answer your question, I do not know what the dangers of using Aroclors in indoor paints was. I have seen no reports in the company literature about or even talking to anybody about whether there had been any danger of using Aroclors in indoor paints.

Q. Did Mr. Benignus ever discuss with you the dangers he felt existed with using PCBs in indoor paints?

A. No, sir.

Q. Did you ever discuss with him the dangers you felt existed in using PCBs in indoor paints?

A. No, sir, I don't ever remember having even heard that there was a danger of using Aroclors in indoor

paints.

Q. Will you turn to page 57?

A. Yes, sir.

Q. Can you identify the document which appears at page 57?

A. I'll have to identify it by using page 58, also.

Q. All right, sir.

A. It's a letter from me to Dr. Barrett in London who was a Ph.D. in London with a -- dated September 20th, 1955 on a previous memorandum of his which I don't have. There's a copy to Dr. Hardy, a chemist, and Dr. Newman, our physician in London.

Q. Did you author this document?

A. I dictated it, yes.

Q. Did you do the research to prepare the information incorporated in this document?

A. I don't know what you mean by research. You mean to say did I --

Q. Did you rely on others rather than information which you independently developed to write this letter?

A. Well, then again which I independently developed, you mean did I do the laboratory work or did I go and look at the Treon work, talk to the Kettering people? Certainly I did that. I didn't ask anybody at

Monsanto for advice in dictating this. This was my own knowledge.

Q. At the top of the letter in capital letters are the words "Aroclor Toxicity." What is Aroclor?

A. Aroclor is a generic name of Monsanto products for both chlorinated diphenyl, chlorinated diphenyl benzene, chlorinated terphenyl.

Q. What is toxicity?

A. Toxicity is the ability of a material to produce unwanted effects on the animal organism or on plants or on fish or on birds.

Q. Will you refer to paragraph one? "Howard Nason has given me your memo of September 8." You do not recall the content of that memo as you testify here today?

A. No, sir, I do not.

Q. Will you refer to paragraph two? What is Aroclor 1254?

A. We've been over this one. That's chlorinated diphenyl chlorinated to 54 percent. Aroclor 1242 is chlorinated diphenyl chlorinated to an average of 42 percent.

Q. Working on down in the paragraph there is a reference ten lines down to 1268 -- Strike that. There's a reference on line nine to 1254. What is 1254?

A. A chlorinated diphenyl chlorinated to 54

percent chlorine.

Q. In the next line which is line ten there's 1268. What is 1268?

A. Chlorinated diphenyl chlorinated to 68 percent chlorine.

Q. So in that paragraph you're making reference to 1242, 1254 and 1268. Is that correct?

A. That's correct.

Q. You make reference to any compounds which include benzene in that paragraph?

A. I don't know what you mean by including benzene. There are benzene rings in there that are joined together and chlorinated, but that doesn't mean -- The answer is no, I do not make any reference to benzene in that.

Q. Are all the references in paragraph two to PCB?

A. Yes.

Q. Are there any references in this letter to anything other than PCB? If so, where are those references?

A. No, there aren't.

Q. So when we have Aroclor described at the top, we're talking about PCB?

A. That's correct.

Q. Do you agree with the sentence, the second sentence of paragraph two as you testify here today? "This is not particularly surprising because in earlier work it was found that toxicity increased with chlorination."

A. That's correct.

Q. Do you agree with the sentence, fourth sentence in paragraph two? "Frankly, there was not too great a difference between the two compounds, however."

A. That's correct.

Q. What do you mean by that, not too great a difference?

A. Well, I take it that it wasn't a great difference. There wasn't a quantitative difference of a large amount. I can't be any more descriptive than that.

Q. Are we talking about the manner in which they are ingested, the toxicity or what? What does differences relate to?

A. I would think in this context we're talking concerning inhalation.

Q. Next sentence you state, "As you know, the maximum allowable concentrate is 0.1 ml per cubic meter in the case of 1254 and as high as 10.0 mgm in the case of 1268." What is the source of that information?

A. I can't give you that information. I believe it may have been Treon's thinking. I do not know if they

had maximum allowable concentrations. There's a typographical error. It should be .1 milligrams of cubic meter 1254 instead of milliliter. I don't know if they, if these were ones that Treon was thinking about, but I can tell you that it was a range established by the conference of the Government Industrial Hygienists was .5 milligrams of 1254 and 1.0 milligrams of 1242. I don't know the year in which that was established. It was sometime after Treon's work in 1954.

Q. What does the term maximum allowable concentrate mean?

A. That means that amount of material, the recommended limit that the material should be in the air for an eight-hour working day for a worker's lifetime.

Q. You state in paragraph two, second or the last sentence, "In this country they don't use the MACs very routinely." Will you explain that to the jury?

A. Well, they did not go out and calculate a bunch of negative testing. In other words, if they tested a department every six months and found it was under the MAC, they didn't do it and they may have skipped a year or so. They just didn't do it routinely after -- That's 1955 we're talking about. After the OSHA acts came in where it was deemed important to do it routinely, then they did it. In '55 they didn't do it routinely.

Q. Then you state, "But certainly in England I think it would be all right to consider 0.2 mgm/cubic meter as perfectly safe." Is that correct?

A. I mean, are you reading it correct or is the statement correct?

Q. Yes. Did I read it correctly?

A. Yes, you read it correctly.

Q. What does the 0.2 milligrams per cubic meter apply to, what chemicals?

A. I don't know whether it applies, whether it applied to 1254 or 1242. This is in English. If I had this previous letter I'd be able to tell you, but I thought I told him then that whether it was 1242, 1254, .2 milligrams per cubic meter is perfectly safe and it was perfectly safe because when it came out with the Government Industrial Hygienists level, it was .5 for 54 and 1.0 for 42. So this 0.2 is perfectly safe.

Q. Did you ever communicate to Westinghouse the same information that you communicated to Dr. Barrett, that you thought 0.2 milligrams per cubic meter would be perfectly safe?

A. No, I never did because remember, this is an English plant, and presumably people over there were talking about using .2 milligrams. I don't know if Westinghouse had any English plants, but if they did, they

would certainly have the same opportunity to find out what the level of MAC in England was just the same as we did with our plants in England.

Q. In the next paragraph, paragraph three, you state in your letter, "I don't know how you would get any particular advantage in doing more work." Are you telling Dr. Barrett that there doesn't need to be any additional work with respect to determining what?

A. Well, I don't know what work he was asking for, but if he was asking for more work to determine safe levels, we didn't need to do any more because we had those. We had done, had work done by the Kettering Laboratory that was accepted by the government people, so we didn't need any more.

Q. Then you state, "What is it that you want to prove?" What do you mean by that?

A. Exactly that. I don't know what he wanted to prove by whatever work he was talking about.

Q. Was he referring to toxicity testing of animals?

A. No, he was referring to -- Well, he may have been. He may have been wanting to find out different levels of air levels that you would consider safe. I don't really know what he wanted to prove on this because that's why I asked him. When I had the letter I didn't know what

he meant, so I can't answer it now without knowing what, without even seeing the letter, but I had told him we've got the levels that are safe. What else do you want?

Q. You state, "I believe your work should be directed towards finding out what the concentrations are of Aroclor during the different operations, whether it is industrial or painting." Do you know of any data that was ever obtained by Monsanto at the Krummrich plant which was recorded to show the industrial levels at the plant?

A. Yes, sir. I know it has been done, but where those records are 13 years after we stopped making the material, 35 years after this letter, I don't know. They were certainly recorded. I've seen the results. They were under the safe maximum allowable concentration. They weren't done routinely.

Q. Did you ever report to anyone the levels which you found at Krummrich?

A. Sure. I reported them to the plant doctor. I reported them to the plant manager.

Q. Did you ever report it to anyone else within the Monsanto organization in writing?

A. I may have and I may have not.

Q. But you acknowledge that the testing was done on a random basis before the OSHA regulations?

A. Well, it was done in a sufficient number. I

satisfied myself that these workers had a safe working environment and it was true. They never had any problems.

Q. Did you ever determine the levels of Aroclor exposure during the process of painting?

A. Painting what? Anything?

Q. What do you mean when you state "or painting" in paragraph three?

A. I don't know because it all depends what he asked about in his letter.

Q. You state, Dr. Kelly, and you wrote this, "I believe your work should be directed towards finding out what the concentrations are of Aroclor during the different operations, whether it is industrial or painting." You wrote that?

A. Certainly, I wrote it.

Q. What did you mean?

MR. CARNEY: Just for the record, he wrote it 35 years ago. You'll agree to that, and you're acting like you're outraged that he can't remember what one word meant when he wrote it 35 years ago. I think he's doing a pretty darn good job of remembering what he did, but I can't fault him if he can't remember every I and T.

Q. (By Mr. McCrea) Doctor, you've reviewed this document many times since you've wrote it, haven't you, in other depositions?

A. Not many times.

Q. You've been questioned about this document by other attorneys?

A. I don't believe I have.

Q. You don't?

A. I may or I may not. It hasn't been too prominent. Maybe I have. I don't know. I've been questioned about a lot of things by a lot of attorneys. This may be one of them. I don't know.

Q. Doctor, do you know today what you meant when you referred to the word painting?

A. I do not, Mr. McCrea, but you'll have to remember that Dr. Barrett was a research man or a development man in our English operation. He wrote me a letter. He may have described to me what he meant by what the painting or the industrial use he was referring to, so I wrote him back and said, "I think the thing to do is to find out what exposure you've got in these particular operations." So I don't know, to answer your question, what was meant by that statement.

Q. You make reference in paragraph three to Kettering Laboratory reports which cost 15 to $20,000.

A. Yes, sir.

Q. In paragraph four you state, "MCC's position can be summarized in this fashion." What does MCC stand

for?

A. Monsanto Chemical Company.

Q. "We know Aroclors are toxic, but the actual limit has not been precisely defined." When you refer to Aroclors in that paragraph, are you referring to Aroclor 1242, 1254 and 1268 which you reference in paragraph two?

MR. CARNEY: I'm going to object here that again you're asking the witness to try to put himself and his mind back 35 years ago and you're acting like he did it yesterday. If you can answer, Doctor.

A. What is the question? I've lost the train of thought.

MR. McCREA: Could you read it back, please?

(Thereupon, the reporter propounded the pending question.)

A. Yes.

Q. (By Mr. McCrea) Doctor, whatever the debates over reports of human health effects in earlier animal studies, by 1955 it was common knowledge among medical scientists at Monsanto that PCBs were systemically toxic, was it not?

MR. CARNEY: Let me object to, I think the question contains undefined terms as to what you mean by systemically toxic and what you mean by toxic.

MR. McCREA: Would you reread the question?

(Thereupon, the reporter propounded the pending question.)

A. Well, the answer to that is yes, but that is, this is not unique in industrial chemicals. All industrial chemicals have a certain amount of toxicity. It varies from very little to quite toxic. We consider this in the lower range.

Q. (By Mr. McCrea) Did you say that in your letter?

A. Not in this letter, but I've said it in many letters.

Q. And on this date, September 20, 1955, you knew that the actual limit for toxic systemic effects caused by PCB had not been precisely defined?

A. Yes, sir, we had, we had defined a safe level, but we hadn't defined what will make you sick, but I think the answer is you want to define a safe limit. You don't want to define a toxic limit. That's what I said.

Q. The next sentence says, "It does not make too much difference, it seems to me, because our main worry is what will happen if an individual gives any type of liver disease and gives a history of Aroclor exposure." Doctor, what do you mean by any type of liver disease?

MR. CARNEY: Well, you did misread a word. I don't think it was intentional. You used the word gives

instead of develops.

Q. (By Mr. McCrea) What do you mean by any type of liver disease in sentence two of paragraph four of your letter dated September 20, 1955 at page 57?

A. I meant by that liver disease that can occur in the ordinary run of people who are not exposed to PCB at all. I mean by that infectious hepatitis, serum hepatitis, cirrhosis of the liver, alcoholic hepatitis. That's what I mean by any type of liver disease.

Q. Can PCBs contribute to hepatitis? Was it your opinion on September 20, 1955 that PCBs could contribute to hepatitis?

A. They could cause a chemical hepatitis if there was a sufficient exposure, yes.

Q. Could PCBs contribute to cirrhosis?

A. No, sir.

Q. Could PCBs contribute to alcohol cirrhosis?

A. I don't know.

Q. Were there any other types of liver disease that would be included in your definition?

A. We would include everything there except malignancies of the liver. I think that runs, we've got infectious, we've got toxic, we've got hep -- Well, I guess we could say hepatitis from drug needles, but that's a serum hepatitis. I think that takes care of most of the

liver diseases.

Q. What about yellow atrophy of the liver?

A. Yellow atrophy of the liver is the end result of hepatitis, of continuing, fulminating hepatitis because the vast majority of hepatitises get well.

Q. Doctor, on September 20, 1955 when you wrote this letter to Dr. J. W. Barrett, did you feel that it was a waste of money to do any other research to determine the extent of harm Aroclor could cause to humans?

A. I didn't say that. I just talked to him about whether there should be any work done on safe levels of the material in the air.

Q. As it affects health?

A. Yes.

Q. And did you feel it was a waste of money to do any more work on determining safe levels in the air as those safe, as those levels would affect health?

A. We have determined that already. That was a definite. It was proved. It was proven. We had excellent data on it.

Q. Is that consistent with your statement in paragraph four, "We know Aroclors are toxic, but the actual limit has not been precisely defined"?

A. Well, I explained that earlier, Mr. McCrea. I said we don't know how much the exact limit is that you can

work in and get sick. We know the exact limit you can work in and be safe. There's a big difference between those two.

Q. Did you inform Westinghouse of that information?

A. Of what information?

Q. The level in which workers would be safe.

A. It was in the medical literature.

Q. Did you inform Westinghouse?

A. I may have.

Q. Of the levels which workers could work in and be safe?

A. I may have, and we also have it in our bulletins, so Westinghouse, I'm sure, got some of the bulletins. If you mean I myself called, sent a letter to Westinghouse, I may or I may have not, but I do know that Mr. Wheeler wrote to their industrial hygienist and explained all that. I know that it was in our bulletins that Westinghouse got, and I also know that Westinghouse had a medical department that was as up-to-date on the medical literature as I was.

Q. You don't recall yourself ever communicating verbally or in writing with your author on the letter to Westinghouse as to what the safe levels were?

A. I do not recall.

Q. You state, "It does not make too much difference, it seems to me, because our main worry is what will happen if an individual develops any type of liver disease and gives a history of Aroclor exposure." Is your concern there that because the levels are not defined and you know that PCBs produce liver problems, that the connection would then be made if a person simply establishes exposure?

A. Well, in the first place, I don't know what you mean the levels were not defined. We had a safe level determined. Now, if you want to rephrase that sentence explaining what you mean by that or leaving it in or --

Q. What do you mean by that sentence?

A. Well, I don't know. I didn't say the sentence. Which sentence are we talking about, yours or this one?

Q. Yours, sentence two in paragraph four.

A. "We know the Aroclors are toxic. The actual limit has not been precisely defined." By that I said we do not know what level you have to work at to get sick. We know what levels you have to work under to stay well.

Q. The last sentence is, "I am sure the juries would not pay a great deal of attention to MACs." To what are you referring when you say juries?

A. Jury is a group of people at a trial.

Q. Are you stating that if a person establishes two things, that he had exposure to PCBs at any level and a history of liver disease, that the juries would rule that the exposure caused the liver disease?

A. No, sir, I'm not saying that at all.

Q. What do you mean?

A. Well, all I'm saying is if you talk to a jury about .5 milligrams per cubic meter, 1.0 cubic meter, I think the jury will make their mind up on, by using good common sense. Here is the evidence in the case, and make their decision there regardless of what the MACs may or may not have been.

Q. What did you think juries would pay attention to if not the MACs?

A. I'm not a lawyer. I don't know.

Q. Why did you make that statement in the letter?

A. Because I didn't believe they would pay much attention to MACs. I think they would base their decision on the entire amount of evidence submitted by the defendants and the plaintiffs, the medical records in the case. That's what I would think. That's why I made it. I see -- I mean, I believe I'm oversimplifying when I said my main worry is what would happen if an individual developed liver disease. Our main worry was we wouldn't want a fellow to get any liver disease.

Q. Were you not worried that a jury would rule that if a person had exposure to liver disease, there would be a finding for that individual?

A. I may have in 1955, but I certainly didn't by 1974 because there was no such jury verdict in the 39 years since then.

Q. But this was, as you say, you may have felt that way in '55?

A. I may have.

Q. On the next page which is page two you state, "We, therefore, review every new Aroclor used from this point of view." Point of view refers to what?

MR. CARNEY: Let me just for the record, I think we have less than a minute to go and I don't want to get cut off in the middle of an answer.

A. Yeah, but why don't we keep going a little so we don't have to wait when we get over there? It's only quarter after 12. We're going over to O'Connell's. I think we need to keep going till quarter till one or something like that.

MR. CARNEY: I agree, but this tape is about to run out, and we'll decide on whether we break for lunch or go to another tape.

Q. (By Mr. McCrea) To what does point of view refer?

MR. CARNEY: Well, let me -- Why don't we cut at this point so we don't get in the middle of an answer. We've got less than a minute.

MR. McCREA: Break.

(Thereupon, a short recess was taken.)

Q. (By Mr. McCrea) Dr. Kelly, back on the record. We're on page 58 of your September 20, 1955 letter to Dr. J. W. Barrett. In the first sentence of the first paragraph you state, "We, therefore, review every new Aroclor used from this point of view." To what does point of view refer?

A. Well, it refers to the next two sentences. In other words, if I had a colon there instead of a period, the point of view is this: If it is an industrial application where we could get air concentrations and have some reasonable expectations that the air concentrations will stay the same, we are much more liberal in the use of Aroclor.

If, however, if it is distributed to householders where it can be used in almost any shape or form and we are never able to know how much of the concentration they are exposed to, we are much more strict. That's the point of view.

Q. Had you sold Aroclor PCB for use in households?

A. No, sir, but this is England and I don't know what they were going to do over in England.

Q. You say, "We are much more strict." To whom are you referring when you say we?

A. Monsanto Company.

Q. Did you sell PCB to be used as a plasticizer in silos?

A. Not as a plasticizer. We had sold it as a paint for silos. I don't know if that was sold by Monsanto or by the distributors, but Monsanto PCBs were used as a paint in silos.

Q. Do you have any data on the air concentrations to which individuals were exposed inside the silo where that was used as a plasticizer?

A. No, sir.

Q. And did you market it after 1955 to be used as a plasticizer in silos?

A. Again it was used as an ingredient in the paint sometime, but I do not know when it was. I don't know if we actively marketed it or if it was marketed by a distributor because it was used in a very few states, Ohio and Michigan, I believe. It was not a widespread use throughout the country.

Q. Did you know after 1955 and the date you authored this letter that PCBs were used in a plasticizer

formulation on the inside of silos?

A. You mean after 1955?

Q. Yes, sir.

A. Yes, I did, certainly.

Q. And did you also know that you had no data on the concentration levels inside those silos?

A. Yes, sir.

Q. And did you continue to market the product notwithstanding the fact you had no data on the concentration levels inside the silos?

A. They continued to be used, yes, sir. Now, I don't know when you're saying marketing, I don't know if we were actively marketing it, but it was used in silos.

Q. In the last sentence you state, "No amount of toxicity testing will obviate this last dilemma and therefore, I do not believe any more testing would be justified." Did you feel that it was a waste of money to investigate whether there was, whether there were any health effects that could be determined by any future testing?

A. I think it's never a waste of money to find out what the toxic properties of a compound are.

Q. When you made that statement, "No amount of toxicity testing will obviate this last dilemma and therefore, I do not believe any more testing would be

justified," did you believe it was a waste of money to do any further testing to determine what health effects were determined, were caused at what levels?

A. No, I did not believe it was a waste of money, but I saw no reason for doing it because we could not get the other parts of the equation. We would never know how much the man was going to be exposed to in these, if it were distributed to householders and so --

Q. And if you did know, you felt the jury wouldn't pay attention to it at any rate?

A. No, I didn't say that at all. That's your words.

Q. You said, "I am sure the juries would not pay a great deal of attention to MACs."

A. That's correct, but that's not --

Q. Those were your words.

A. Yes, but you want to repeat your words?

MR. McCREA: Please.

(Thereupon, the reporter propounded the previous question.)

A. What do you mean by pay attention to it?

Q. (By Mr. McCrea) Maximum allowable concentrations.

A. Well, there certainly would be no maximum allowable concentrations developed in household use. We

would never know what the person was exposed to, so that wouldn't enter into the discussion at all with the juries.

Q. But if you did know the maximum allowable concentration, your opinion was a jury wouldn't pay attention to it?

MR. CARNEY: You're talking about if there was, PCBs were sold to households for use in households?

MR. McCREA: No, in industrial or households.

MR. CARNEY: Yeah, but you're mixing apples and oranges. He's saying that he doesn't think any more testing should be made with regard to selling and distributing PCBs to householders, not the workplace. So you're trying to twist these words and confuse the jury here, Mr. McCrea. I don't know that -- I hope you're not doing it intentionally, but you're certainly doing it, to confuse householders with the workplace.

Q. (By Mr. McCrea) Doctor --

MR. CARNEY: And there wasn't even any testimony by Dr. Kelly that PCBs were marketed in the United States to be used in the household.

Q. (By Mr. McCrea) We'll come to that later. Dr. Kelly, you made the statement on page one, quote, "I am sure the juries would not pay a great deal of attention to maximum allowable concentrations." Were you referring to a case where a person in industry would develop liver disease

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with exposure to PCBs with a known maximum allowable concentration?

A. I was not referring to any case at all because a case hadn't occurred. If that -- If I was referring to a hypothetical case, that's something else. I was certainly not referring to any actual case.

MR. McCREA: Would the court reporter please reread the question?

(Thereupon, the reporter propounded the previous question.)

A. My answer was, was I referring to a case. That's what you asked. There was no such case, so I obviously wasn't referring to one, to any specific case. Now, if you are referring to a hypothetical case, let's phrase it that way to me.

Q. (By Mr. McCrea) When you stated on page one, quote, "I am sure the juries would not pay a great deal of attention to MACs," maximum allowable concentrations, were you referring to a potential situation where a worker developed liver disease in an industrial setting with a known maximum allowable concentration?

A. Yes, would develop liver disease that could be from any of the four or five conditions that I mentioned. Serum hepatitis, alcoholic hepatitis, other compounds he was working with to give him a chemical hepatitis,

infectious hepatitis, liver tumors. Yes, I was referring to that.

Q. And was it your opinion that the data already gathered by Monsanto was more than enough to convince unbiased people on a jury of the connection between PCBs and systemic damage without reference to maximum allowable concentrations?

MR. CARNEY: I'm going to object to that. That question is so vague and convoluted and unintelligible that I certainly don't understand what you're asking. You're reading a question out of some letter that you got, probably from your co-counsel I would suspect, and I would say it's the most unintelligible question I've heard in this deposition, and that's saying something.

MR. McCREA: Would the court reporter please reread the question?

(Thereupon, the reporter propounded the pending question.)

A. Well, it's English, but I still have trouble analyzing the question.

MR. CARNEY: It's a when did you stop beating your wife question, Doctor, is what it is.

A. Well, as I said earlier, I believe a jury will take all the evidence into account. If there were levels shown that were under the maximum allowable concentration,

that's fine, but I'm sure opposing counsel would say, "Well, you didn't take this every hour, every day that this man worked, so conceivably he's worked at higher levels. Isn't that true," and I would have to say yes. So I think the jury takes into account what the evidence is of his exposure, of his medical condition and make their judgment on that.

Q. (By Mr. McCrea) Are you stating in this letter that Monsanto could present definitive information as to the maximum allowable concentrations and if the plaintiff had liver disease and could establish exposure, that the jury would not pay attention to Monsanto's proof of maximum allowable concentrations?

MR. CARNEY: I'm going to object to that. It's compound. It's more -- I couldn't believe it, but I think this question is more unintelligible than the last one. The memo doesn't say those words. I don't see them in there at all. You're twisting and contorting and harassing this witness for four days. I think this is unconscionable, and I think the jury will pay attention to that conduct, not MACs. I think they're going to want to know about the evidence and what you have, what proof you have that there's any connection between your plaintiff's health problems and PCBs, and so far you haven't touched on that at all.

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MR. McCREA: I would ask the Court to strike the comments of Mr. Carney as being totally irrelevant to the objection and furthermore, purposely interjecting inflammatory comments to the jury which he knows have no relationship whatsoever to the question. Now, would you please read the question back?

MR. CARNEY: I would just caution you, Doctor, if you don't understand the question, just say so.

(Thereupon, the reporter propounded the pending question.)

A. I would have to say I don't know whether they would or not. I'm not an expert on how juries decide cases.

Q. (By Mr. McCrea) In the sentence preceding that you refer to your main worry. You say, "It does not make too much difference, it seems to me, because our main worry is what will happen if an individual develops any type of liver disease and gives a history of Aroclor exposure." By worry, what do you refer to?

A. I refer to that if you have a product that is a, that is capable in some overexposures of causing a particular condition and there are numerous other conditions entirely unrelated to occupation that cause the same condition, there is always a possibility that a jury may believe that this condition is due to his work

involvement rather than to a nonoccupational cause if he has the illness. If he doesn't have the illness, obviously the jury will not believe it at all.

Q. Dr. Kelly, when you say our, did other people have the same worry as you stated in this letter at Monsanto Company on the date of September 20, 1955?

A. I think everybody in industrial medicine has this worry with all sorts of compounds. That's why there's so many cases in litigation, because they may have no foundation, but there's a temporal relationship between work and the condition they have.

Q. Did you continue to market PCBs for use in nonindustrial applications after you authored this letter?

A. You mean did I personally myself?

Q. Monsanto.

A. Did Monsanto? I don't know. You're talking about Monsanto in England, Monsanto, U.S.A.?

Q. U.S.A.

A. Well, I don't know if they marketed it in non-industrial applications before with the exception of paint, and I don't know whether that use was marketed by Monsanto or was just developed, a paint company calling up a distributor and buying the PCBs. I don't know, so the answer is I don't know.

Q. After this date, did Monsanto continue to

market PCBs for non-industrial uses despite the fact that you knew and you and Monsanto knew no maximum allowable concentrations could be obtained?

A. Well, we knew -- The answer is if we marketed it, if they were marketed, yes, but we knew the maximum allowable concentrations were obtained by heating the material, and we knew that paint is not put on when it's hot. So I don't believe there was any necessity for looking for a maximum allowable concentration on paint. The problem with paint has not been on the workers. It's been on the stuff flaking off and getting into the silos, the silage.

Q. Have you ever tested for the maximum allowable concentrations of PCBs inside a silo?

A. No, sir, I have not.

MR. CARNEY: For the record, I don't know how many workers are inside of silos.

MR. McCREA: How about farmers, Mr. Carney?

MR. CARNEY: That's what I'm saying. I don't know.

MR. McCREA: Do they count?

MR. CARNEY: Everybody counts.

A. A farmer doesn't climb into a silo. He unloads the stuff on the bottom. The paint is put on when the silo is empty.

Q. (By Mr. McCrea) What about the people that put it on? Did you test for the maximum allowable concentrations during that process?

A. When they put it on, it's at the ambient temperature and the stuff does not volatilize at the temperatures that exist on a farm.

Q. You state in the third sentence on page 58, "If, however, it," meaning PCB, "is distributed to householders where it can be used in almost any shape and form and we are never able to know how much of the concentration they are exposed to, we are much more strict." In what way were you much more strict?

A. I don't know how we were there, but maybe we didn't allow it in some uses. I don't know. I don't know what I meant by that in 1955.

Q. Now, your attorney has stated that this was written in 1955. Isn't it a fact that you've reviewed this document with your counsel before testifying here today?

A. I don't think so. He gave it to me, said, "Look this over," but I didn't review it with him.

Q. So you did look the document over before testifying?

A. Well, I've seen it before.

MR. CARNEY: You gave it to -- You gave the documents to me and I handed them to him and said, "I

thought you might get some questions on this document," and I was very correct. You've gotten -- This stack of Exhibit Six is a one inch stack of documents and you're on page 58. We've got 261 questions, so I assume I was correct. We've already had lots of questions on the first 58 pages.

Q. (By Mr. McCrea) Dr. Kelly, how much time did you spend reviewing this document before your testimony here today?

A. This one here?

Q. Yes, sir.

A. A minute.

Q. And you can't tell us what you meant when you wrote, "We are much more strict"?

MR. CARNEY: He's already answered that, Mr. McCrea. Let me object. I am really getting irritated at you. I've been restraining myself, but we are now in your fifth day. I was not correct. We're in the fifth day. We started on the 31st of May. You started your cross. You went through on June 1, on June 12, on June 13 and now June 15, 1990, and it's after noon, so we're half a day here so, and you're still, and you're asking these repetitive questions and that's why this deposition is being drug out for some reason. I don't know, but, you know, at some point why don't you ask an intelligent question that isn't repetitive so we can get through with this thing. I don't

know how many more days you're going to go, even though you've promised two and a half days ago that it would be one day only.

MR. McCREA: What's your objection to the question?

MR. CARNEY: Repetitive.

MR. McCREA: My objection, and I will note to the Court we don't have an answer. Dr. Kelly who is a medical director from 1936 to 1974 and authored this letter stated, "We are much more strict." I presume that he knew then what he meant. I presume that with his testimony in all of these cases and his preparation for this deposition that he could define for the jury what he meant.

MR. CARNEY: And he's answered that he doesn't recall, and I'm sorry, Mr. McCrea, but I don't fault this man that he can't recall what he meant by a couple of words that he wrote 35 years ago. I dare say that you can't recall what you were doing 35 years ago.

MR. McCREA: Would you like to show me a letter and see if I recall what it means?

MR. CARNEY: Mr. McCrea, you've got an answer to your question and you're now badgering this witness who's been sitting here, very patiently I might add, and you're into the fifth day and you're asking him if, and he said he can't recall what he meant by a word 35 years ago.

Q. (By Mr. McCrea) Dr. Kelly, would there be any way for you to refresh your memory?

A. No, sir.

Q. As to what you meant by that statement?

A. No, sir.

Q. And by dilemma, what are you referring?

A. The dilemma is the material may be used in a situation where we don't know how it's being used. It's not being used by a sophisticated organization like GE or Westinghouse. It's being used in a mom and pop shop someplace in England or it may be used in the household. I don't know. Remember, this man is a research man. He's not a marketing man. He was talking about potential applications.

Q. Recognizing that you did not know and had no way of knowing what the concentrations were and knowing that PCBs were toxic as you admit, what warnings did you distribute to the household users?

A. I don't know if there were ever any household users. That's what I said. There's a big if, "If, however, it's distributed to householders." I don't know if householders ever used it. I never saw it.

Q. Did you --

A. On a grocery store shelf.

Q. You said, "We are much more strict." Does

that suggest you did distribute it to householders?

A. No, it does not. It might be that somebody wrote up and said we're thinking about using this for X purpose.

Q. You state, "If, however, it is distributed to householders where it can be used in almost any shape and form and we are never able to know how much of the concentration they are exposed to, we are," present tense, "much more strict."

A. Well, yes. Suppose somebody writes into me in 1955 and said, "We are going to use this on an over the shelf counter that you -- We're going to use it to clean bath tubs with or something like that." We're going to say, "We don't approve. We don't recommend that use at all."

Q. You're saying that you had no evidence on the date you authored this letter that any householder ever got your product with PCB in it?

A. In the United States I know of no householder that ever got a product of, certainly at this state, yes, sir. The answer is I do not know.

Q. But in the future you do know that it was distributed at least for coatings in silos?

A. That's correct. That's not quite the household use.

Q. What warnings did you give for its use as a plasticizer?

A. We used the warnings do not use at an elevated temperature, do not breathe the fumes at elevated temperatures, do not -- and avoid repeated or prolonged skin contact.

Q. Did you discuss this letter with the attorney from Monsanto?

MR. CARNEY: You just asked that about five minutes ago.

A. The answer is no.

MR. CARNEY: I think the answer is the same this time as it was five or six minutes ago.

Q. (By Mr. McCrea) The last sentence states, "Let's see what our discussions with Dr. Newman and yourself bring out." What information did those discussions produce?

A. I don't recall what they were. They certainly weren't very earthshaking because it doesn't stand out in my mind what it brought out. I don't know.

Q. Dr. Kelly, you initially stated that Aroclor stood for products containing benzene and terphenyls?

A. No, I did not. There's no benzene in Aroclors.

Q. All right. I misunderstood your answer.

Could you explain to us why you recommended in the last sentence, "I do not believe any more testing would be justified"?

MR. CARNEY: I'm going to object to that. We've been covering this sentence and this letter for well over an hour. It's getting very repetitive.

A. Well, yes, I'll say why I did it. We had enough information from toxicity testing to show that we knew what the safe levels were and the worker could work with eight hours a day for the rest of his life.

Q. (By Mr. McCrea) And you knew that it would not obviate the one dilemma where you don't know the maximum allowable concentrations?

A. We don't know how it was used. If you give this out to -- If it were going to be used in the household which people might be smearing all over them, which people might have under the sink where the children could drink it, there are a lot of reasons outside of the MACs that I would be concerned about. The household product is different than an industrial product.

Q. And you would warn as to those consequences?

A. I would warn --

MR. CARNEY: If it was being sold as a household product so that the children might drink it?

A. I would put on it in addition to do not

breathe at elevated temperatures or do not breathe in confined spaces, do not get on your skin, avoid contaminated clothing. I would put on do not take internally, but I think in the industrial environment you really don't have to write that down because workers are not going to be drinking industrial chemicals.

Q. (By Mr. McCrea) Would you warn that it's a systemic poison?

A. I would tell them what they shouldn't do. If I were selling gasoline I would say, "Don't have matches around here." I wouldn't say, "Do not have matches around. This is going to blow up in your face." You don't have to put the results down. You just tell them what not to do.

Q. Would you explain to them that if it gets on their skin it can go into their body?

A. Well, I'm telling them not to put it on their skin.

Q. Doctor, turn to page 59.

THE WITNESS: Why don't we break for lunch at this time now before we start another one. It's 1:00.

MR. McCREA: That would be fine.

(Thereupon, a lunch recess was taken.)

Q. (By Mr. McCrea) Dr. Kelly, for the record, we're in the middle of a tape.

A. Yes, sir.

Q. And continuing on here after a lunch break. Can you turn to page 59 of Plaintiff's Exhibit Six?

A. Yes, sir.

Q. Do you recognize the exhibit?

A. Yes, sir. This exhibit consists of pages 59, 60 and 61.

Q. Have you seen this particular document before the deposition today?

A. Yes, I have.

Q. I'll refer you to the bottom of page 59 beginning with the third paragraph of -- strike that -- the third sentence of the last paragraph, the word "Secondly."

A. Yes, sir.

Q. Do you see that?

A. Yes, sir.

Q. And that paragraph states, "Secondly, it is possible that prolonged or repeated skin contact could lead to chloracne." I assume you agree with that?

A. Yes, I do.

Q. "I know of only two cases where such experience has developed during the long history of production and use of Aroclors," and this is the author speaking who is Elmer P. Wheeler, assistant director of medical department; correct?

A. Yes, sir.

Q. In a letter to Westinghouse Electric Corporation?

A. Yes, sir.

Q. "In one case, an Aroclor was being used as a heat transfer medium in a system that allowed vapors to escape when the material was heated to 600 degrees Fahrenheit." Is that correct? Is that F for Fahrenheit?

A. Yes, sir.

Q. Are you familiar with that case?

A. Yes. That's that case in Indiana that I talked about several times during this deposition.

Q. Can you identify for us where in Indiana and what company?

A. No, I can't because it was a pretty small company. It was in something. It was a rather obscure medical journal. Not obscure, but one that wasn't widely circulated like the Journal of the Indiana State Medical Society or something like that.

Q. All right, sir.

A. But that's the one I called Dr. Spoiler about who is either head of industrial hygiene or health department or something in Indiana.

Q. All right, sir. Then the next sentence, "Several workmen developed quote, 'blackheads', quote, which were found by an industrial physician, but which in

his words were so insignificant that the men were not aware of them nor would a general practitioner notice them."

A. Oh, well, I'm sorry. The case I referred to Elmer Wheeler didn't mention here because they didn't have chloracne. They developed a chemical hepatitis. This is a case that he refers to in New England someplace that was written up by a Dr. Maigs, M-a-i-g-s, at Yale University. That's the one. It was a heat transfer unit, also.

Q. All right.

A. The case I refer to in Indiana was a chemical hepatitis. It was not chloracne.

Q. Okay. Is this last sentence descriptive of chloracne?

A. You mean "Several workmen developed blackheads"?

Q. Right.

A. Well, it's very mild chloracne, but it can run a whole gamut of severity. It could get quite severe chloracne.

Q. He goes on to state, "This indicates to me, however, that sufficient exposure, whether by inhalation or vapors or skin contact, can result in chloracne which I think we must assume could be an indication of more serious systemic injury if the exposure was allowed to continue." Dr. Kelly, did you ever get any more specific data on the

extent of the blackheads described by Doctor or by Elmer P. Wheeler in this letter?

A. First of all, he's not a doctor. He is, I believe, a Master's degree. He's an industrial director of industrial hygiene. Well, I called Maigs about this, the doctor that took care of it, and after the article appeared, and it wasn't very severe frankly. In fact, I think he said one or two of them didn't know they had it until they were called in. All the workers were called in and the doctor examined them, said, "Hey, I think we've got chloracne."

Q. Would you agree that with this case of chloracne a general practitioner would not necessarily be expected to identify it as he states?

MR. CARNEY: Well, I'm going to object. I think it would call on this witness to speculate about some unknown general practitioner, what he might or might not find with regard to a mild case of chloracne which referred to in this letter which I think was a reference to a Maigs article.

A. I think it all depends on the interest of the general practitioner. He certainly can diagnose acne. He's seen acne in a lot of cases, and if this were a peculiar type of acne, he might very well decide to look up the literature and come out with an answer.

Q. (By Mr. McCrea) Does this suggest that an individual could have chloracne as a result of exposure to PCBs and that that condition could easily go undiagnosed by his general practitioner?

MR. CARNEY: I'm going to object. You covered these questions several days ago at length. There was about a half hour's worth of questions about that, and now you're covering it repetitiously again, so it's repetitious.

A. Well, somebody diagnosed these cases because that's how Maigs got the word around. So it wasn't Maigs that diagnosed them. It must have been a general practitioner up there in Connecticut someplace.

Q. (By Mr. McCrea) Didn't it say an industrial physician?

A. I don't know. Did it? I don't --

MR. CARNEY: I'm going to object. You're asking him to -- The Maigs article would be the best evidence of what it says, and this is just a brief summary of what was in that Maigs article.

A. I think they refer to Maigs at that time, but Maigs didn't go out at the plant to look at them. I think somebody saw these people with chloracne and decided to call in the industrial medical department of the state of Connecticut.

Q. (By Mr. McCrea) Okay. What, Doctor, would you describe as the mildest case of chloracne that could be caused by exposure to PCB?

A. Well, it started as half a dozen blackheads over the cheekbones.

Q. Could it consist of one blackhead?

A. I would doubt very much if it consists of one. I don't know how you could tell a blackhead there from a hickey. No, I don't think so. I think you have to -- You diagnose chloracne on the extent of it. Just if there's one blackhead, that's not chloracne. You look at pigmentation. You look at several things.

Q. Could chloracne consist of blackheads only?

A. Blackheads only?

Q. Yes, sir.

A. It's possible.

Q. Is that a permanent condition?

A. No, sir. It depends again. Now, how permanent is permanent? For the rest of its life?

Q. Yes, sir.

A. No, I don't think. It might. I think sometimes they do. If they turn into cysts, if they get infected cysts, they have scars which last the rest of their life. If the blackheads are expressed and they were removed in exposure, it isn't permanent.

Q. Do you agree with the statement that this condition of blackheads could be an indication of more serious systemic injury if the exposure were allowed to continue?

A. Well, yes, if the exposure were allowed to continue, yes, but if the exposure were allowed to continue, then exposure were severe, you'd have more than blackheads. You'd have -- You might have widespread chloracne. You wouldn't get systemic injury if you just had a few blackheads.

Q. Isn't it a sign of systemic injury that you have blackheads?

A. You wouldn't get any other systemic injury. Yes, I believe the blackheads are a systemic reaction to the chloracne, to the PCBs. It's not a local skin contact, but you would not, it would not necessarily mean that he had any other systemic effects rather than that limited amount of chloracne.

Q. Doctor, can you turn to page 64?

A. Yes, sir.

Q. Do you know why this document was confidential?

MR. CARNEY: Let me object. I don't think you've established any foundation that the doctor saw this document during the time he was employed by Monsanto.

Q. (By Mr. McCrea) Dr. Kelly, did you review this document or read this document while you were medical director at Monsanto Company?

A. Not that I remember. I wouldn't have the slightest idea why it's marked confidential.

Q. You recognize this as a Monsanto Company document?

A. Well, I can't tell. The name is on there, but I don't know whether that's a Monsanto document or not.

Q. Do you recognize the names of the preparers of the document, J. W. Molloy and R. G. Moody?

A. No, sir, I do not.

Q. It has a date of July 1964; correct?

A. Correct, on --

MR. CARNEY: You read it on the document.

A. On the document it's correct, yes.

MR. McCREA: Yes.

A. Yes, that's correct.

Q. (By Mr. McCrea) Can you turn to page 70? Can you explain to the jury the difference -- Strike that. On page 70 under the heading "Safety and Housekeeping" there is a subparagraph six and then a list of chemical compounds. Is that correct?

A. Yes, sir.

Q. Do you see B?

A. B?
Q. B.
A. Yes.
Q. Which says "Biphenyl"?
A. Yes, sir.
Q. Is that a PCB without the chlorine?
A. Well, you cannot have a PCB unless you have chlorine. This is a biphenyl. So PCB is chlorinated biphenyl.
Q. What are the chemical elements in a biphenyl?
A. Carbon and hydrogen.
Q. Do you have an opinion as to the toxicity of the biphenyl compared to polychlorinated biphenyl?
A. Yes, I think it's less toxic.
Q. Do you agree with the last sentence in the right-hand column under biphenyl which states, "Inhalation of biphenyl fumes is not recommended since it can cause a drugged effect on the person"?
A. Well, I don't know why that last sentence is in there. I would say, "Inhalation of biphenyl fumes or any other fumes is not recommended," period.
Q. Do you know what is meant by drug effect?
A. No, I don't know, but something like gasoline, I suppose. If you inhale gasoline fumes you get a jag. I imagine what this is, what they call it. What this man

wrote I do not believe was written by any medical authority.

Q. Will you turn to page 78, please?

A. 78?

Q. Yes, sir.

A. Yes, sir.

Q. Are you familiar with the corporate development committee as it existed at Monsanto Company on April 22, 1968?

A. Yes, sir.

Q. Can you tell us what the positions were of the gentlemen listed on page 78?

A. Well, Charlie Sommer was chairman of the board. I don't know if Ed Bock was the president at that time or whether he was executive vice president. Christian was a vice president. Gillis was a vice president. Mueller was a vice president. O'Neal was a vice president. He was later chairman of the board. Throdahl was a vice president, and Flitcraft was a secretary.

Q. On page 79 there is a reference or an excerpt from the minutes at the bottom. Do you see that?

A. Yes, but I'll have to assume that this is an excerpt from the minutes. I mean, I don't know of my own knowledge that this is an excerpt from the minutes.

MR. CARNEY: I don't think there has been any

foundation that Dr. Kelly was on the corporate development committee, and I don't think there's been any foundation and I doubt that he was in attendance at the April 22, 1968 meeting, and it doesn't at least show that he was in attendance, so I don't know what purpose reading some minutes that haven't been authenticated is to Dr. Kelly. It might be more appropriate if you ask questions of the people who were at the meeting.

Q. (By Mr. McCrea) Dr. Kelly, in 1968 were you familiar with the marketing projections of Monsanto for PCBs?

A. No, sir, I was not.

Q. Would you turn to page 80?

A. Yes, sir.

Q. Can you identify the document on page 80 with a date of March 3, 1969?

A. Yes, that is a document written by Elmer P. Wheeler or somebody. I don't know whether it was a publication or in-house use or out-house use, extra house use. Sorry. On second thought, it must have been sent outside. Whether it went outside to customers or to whom, I don't know, or to other people in the industry, I don't know.

Q. All right, sir. The date of this document is what?

TOWOLDMON0000875

A. March the 3rd, 1969.

Q. Will you address your attention to the fifth paragraph on page 81?

MR. CARNEY: Which was page two of the document?

MR. McCREA: Correct.

A. The fifth paragraph, yes, sir.

Q. (By Mr. McCrea) It starts PCBs are. Paragraph states, "PCBs are used in several quote, 'plastic type', quote, applications. Here the chemical is incorporated into the polymer as an integral part of the solid material. This applies whether the polymer is used as an adhesive, an elastomer or surface coating." Is that an accurate statement?

A. Yes, sir.

Q. Do you know for what period of time PCBs had been used in plastic type applications by Monsanto?

A. No, sir, I don't. I know when they were stopped. I think they were stopped around 1970.

Q. Will you turn to page 83?

A. 83?

Q. Yes, sir.

A. Yes, sir.

Q. The date of that document is what?

A. April the 14th, 1969.

Q. Do you recognize it?

A. Yes, I recognize it.

Q. Do you know what is meant by the second sentence in the second paragraph, "We can't really satisfy pollution people with this explanation"? Do you know?

A. I would -- Again this is a surmise. It looks like they were getting the Aroclor back and putting it into operations that they thought were not, were not likely to leak into the environment, and they also said the pollution people may think this is probably not correct. It may leak into the environment.

Q. Can you turn to page 85?

A. 85?

Q. Yes, sir.

A. Yes, sir.

Q. Well, first can you go back and identify the people at the top of page 83, Olson, Bryant, Kountz, Kuhn and Johnson? Do you see that, sir?

A. Yes. Don Olsen was, I thought, in marketing. I don't remember any of the other names.

Q. Now, can you turn to page 85?

A. Yes, sir.

Q. The date of this document is April 28, 1969. Is that correct?

A. Yes, sir, yes, sir.

Q. And this again is the corporate development committee?

A. Yes, sir.

Q. Can you identify the people on that document?

A. Yes, sir. Ed Bock, I think he was the president of the company. He was chairman of the corporate development committee. Bible was a vice president. Gillis was a vice president in charge of sales. Putzell was the secretary of the company and general counsel. Charlie Sommer was the chairman of the board of the company. Throdahl was vice president in charge of research, I believe. John Ehlets was a lawyer who was a secretary of the committee.

MR. CARNEY: When you're asking him to identify the document, are you saying the, can he identify this as the minutes that were taken on the 28th?

MR. McCREA: No, I'm asking him to identify these people.

MR. CARNEY: Okay. And identify the document, you weren't asking him to identify that these, in fact, are the minutes, are you?

MR. McCREA: No.

MR. CARNEY: I didn't think you were.

Q. (By Mr. McCREA) Have you seen this document before today?

A. I think I saw it yesterday.

Q. All right. Are you familiar or is -- On page 86, Dr. Kelly.

A. Yes, sir.

Q. It states, "Organic Division Appropriation Request Number CEA-2080 for $1,100,000 for solid Aroclor expansion - Anniston." Can you tell us what is meant by solid Aroclor expansion?

MR. CARNEY: I'm going to object here. I don't think there's any testimony that the witness was at this meeting, and so this might call for him to speculate as to whoever took these minutes, what they meant by putting some words down that probably were a very brief summation of what was said.

A. Well, some Aroclors are solid, and that's what solid means, solid like a piece of ice or a lump of coal. Expansion means they were going, presumably they were going to expand the production facilities of Anniston for this solid Aroclor.

Q. (By Mr. McCrea) Do you know in what products they were used?

A. They were not used electrically, in electrical. I don't know.

Q. Turn to page 87.

A. Yes, sir.

Q. At the bottom of the page it states, "Monsanto's worldwide Aroclor business amounts to 104 m pounds a year." Is that -- What is that?

A. Million.

Q. And it says, "70 m." Is that 70 million pounds?

A. That's correct.

Q. "Used in functional fluids." Is that like capacitors and transformers?

A. Capacitors, transformers, heat transfer units, hydraulic fluids.

Q. All right. And "34 million pounds in plasticizers." Can you give us examples of plasticizers?

A. Well, waxes and lubricants. I think they were putting some of it in vinyl sheeting. I'm not sure. They were using it in carbonless carbon paper as a plasticizer.

Q. How much of that went to non-industry people?

MR. CARNEY: I'm going to object. I'm not sure that this witness --

A. Non-industry? You mean like who by non-industry?

MR. McCREA: Consumers that would use the product outside of an industry setting.

MR. CARNEY: You mean in the home?

MR. McCREA: Correct.

MR. CARNEY: I don't know that this witness -- Well, if he can answer it.

A. I don't know. I think the only one that you can possibly use was the carbonless carbon paper.

Q. (By Mr. McCrea) Can you turn to page 88?

A. Yes, sir.

Q. At the bottom of the document it states, "Plan of Action - H. S. Bergen and J. E. Springgate."

A. Yes, sir.

Q. Who is Mr. Bergen?

A. Well, he and Springgate were the top people in the department that were the product managers for PCBs. That meant they were in charge of production, marketing, research.

Q. On the date of November 17, 1969 the statement is made under "Plan of Action", "The availability of alternate products to satisfy customer requirements was reviewed. Main problems are that no replacement product is available for capacitors and replacement products for other uses pose a pollution problem." Is that an accurate statement as of November 17, 1969?

A. Yes, sir, it is. Pollution means pollution to the environment.

Q. And is it -- All right. And then the next paragraph, "In plasticizer uses, evidence is not available

as to whether Aroclors escape from end products, either through leaching or by dispersal in burning." Would you agree with that statement as being accurate?

A. Yes, sir.

MR. CARNEY: We've got less than two minutes.

Q. (By Mr. McCrea) Can you turn to page 89? There a list of paragraphs there one, two, three through 12. Do you see those?

A. Yes, sir.

Q. And were you familiar with this plan of action as described on page 88 and then itemized on 89?

A. Yes. Let's read the recommended plan of action that's on page 88. This is to establish the tailored program for each business group and each customer market situation to assure that the loss of PCBs in the environment, if any, is minimal. That's our plan of action there. Then one to 12.

MR. CARNEY: We're off the tape. We'll have to continue.

(Thereupon, a short recess was taken.)

Q. (By Mr. McCrea) Dr. Kelly, directing your attention to page 89, do you see paragraph six and seven or itemization six and seven?

A. Yes, sir.

Q. Were these part of the plan of action as you

knew it?

A. Yes. Let me read the plan of action.

Q. Yes, sir.

A. This is from the corporate development committee meeting of November the 17th, '69 at which I was present. That's on page 87. It shows me as being present, and the recommended plan of action is to establish a tailored program for each business group and each customer market situation to assure that the loss of PCBs in the environment, if any, is minimal. Now we go to page 89. Do you say six and seven?

Q. Yes, sir.

A. Yes, sir. Any questions?

Q. Yes. At this meeting in which you were present, number six on the agenda states, "Introduce to market replacement products for Aroclor 1254/1260." What replacement products were considered on that date?

A. I think they were all gleams in the eye. I don't think they had any. They were potential products in the research group. I don't believe they had any ready to go in market.

Q. Were they chlorinated hydrocarbons or were they non-chlorinated hydrocarbons?

A. They may have been either one, but I don't know because it said develop them, and I don't know when

they're going to develop. I was not -- That wasn't part of my responsibility. That was the research department's responsibility. They were supposed to develop, introduce to market replacement products, but also, I believe they had to develop them.

Q. Number seven states, "Continue and expand biodegradation test program with Aroclor series, particularly 1242, 1248 and 1254." Can you describe that for us?

A. You mean describe what the test program was?

Q. Right.

A. No, sir, but I'll tell you what it was. They were testing how you get Aroclors that are in the environment to biodegrade faster.

Q. What was the thinking at that time as to how that should, could be done?

A. I can't answer that.

Q. Was there any plan under the plan of action to replace Aroclor 1242 with a non-chlorinated hydrocarbon?

A. I don't know, but if you see in channel, number ten they were going to talk about seeing if they could eliminate two of the carbon atoms from Aroclor 1242 and 1248.

Q. Do you know if on this date there was any plan to replace Aroclor 1242 with a non-chlorinated product?

A. I think they would be happy to do it if they had one that worked that had inflammability and it was a good dielectric.

Q. Number three, it states, "Reduce and effectively control PCB effluents from Monsanto plants." Why was that part of the plan of action?

A. Well, we couldn't very well talk to our customers and say, "Don't let the PCBs go into the environment," if we were doing it ourself.

Q. Was an effort made to reduce and effectively control PCB effluents from Monsanto plants?

A. Oh, yes, a very successful one.

Q. Did you feel that was necessary to protect the environment?

A. Yes.

Q. Number four, "Educate customers on need to reduce and effectively control PCB effluents at their plants." What was the format of the education program?

A. I don't know. That was not part of the medical department's responsibility.

Q. Did Monsanto take on that responsibility?

A. To educate the customers on the need to reduce them? Yes. You must recognize, they said the need to reduce it. They couldn't very well tell them how to reduce it because they didn't know what other compounds went into

it our effluent stream.

Q. But Monsanto assumed that responsibility?

A. To educate the customers. I mean, there are two responsibilities there. One is to stop it and the other is to tell the people the need to reduce it, and so Monsanto certainly educated the customers on the need to reduce and effectively control PCB effluents in their plants.

Q. In items one through 12, were human health effects a consideration?

A. I would say --

MR. CARNEY: I'm sorry. Which items?

A. On number eight it was when we said continue the toxicological test program because we did not know what the feasibility, what the long term effects of small amounts of PCB, if taken or when taken in the food, might be.

Q. (By Mr. McCrea) Did you tell people to whom you sold PCBs that you did not know the long term effects?

MR. CARNEY: Well, let me object to it. The question is vague unless you explain what you mean by long term effects. Long term effects in rats, in rabbits, in birds? I'm not sure what you're talking about there.

Q. (By Mr. McCrea) You may answer if you recall the question.

A. Yes, I told people of any -- Quite a number of people called me up and I said, "To the best of our medical opinion, there are no long term health effects from the ingestion of PCB in the amounts that are present in the food." I told them that I've consulted with the government about it and showed them what we were doing and what our preliminary results are, and I told them that from, my opinion was there would be no problem.

Q. Did you tell people on the date of 1969 that you were going to conduct a toxicological test program to determine the long term effects?

A. I'm sure I did. I'm sure I said we are, have tests under way to reinforce my opinion.

Q. And you expected those tests to show there were no long term effects?

A. I expected them -- I expected some of the tests to show it. Certainly when you do a test you want to get positive results in some of the levels, but I was also sure we'd come up with a safe level.

Q. Did any of the other itemizations under the plan of action relate to human health?

A. I don't think so.

Q. Did Monsanto ever consider who in the United States had the most exposure to PCBs and where the greatest need was to concentrate on the prevention of disease

processes?

MR. CARNEY: Objection to the form of the question, compound.

THE WITNESS: Will you repeat the question?

(Thereupon, the reporter propounded the pending question.)

A. Well, you have two questions there. I didn't know who had the most exposure. I knew who the people who used the most material, but I didn't know the perimeters of their exposure. GE and Westinghouse certainly were the large users of the material. Westinghouse had information that we had sent them. Westinghouse had information that they had carried out themselves on the inhalation and feeding of PCBs.

So I knew they were the larger user, large users, but I didn't know the amount of exposure. We had told them what our recommendations were as far as safe handling procedures and that if they followed them, we knew they would have no trouble.

Q. Was there any change in the manner in which Westinghouse -- strike that -- the manner in which Monsanto attempted to prevent contamination of workers during this period of time, 1969?

MR. CARNEY: Objection to the form of the question. I don't know what you mean by manner. It

contains undefined terms.

Q. (By Mr. McCrea) Let me restate that. In paragraph four you state as part of the plan of action to, "Educate customers on need to reduce and effectively control PCB effluents at their plants." Was there any -- Was there any program to educate customers on the need to reduce and effectively control PCBs in the workplace so as to prevent contamination of workers?

A. We had told them that from the time we started selling them the material. We did not increase our warnings. Remember, this whole problem was not because of problems with workers. This whole plan of action was to decrease the, to decrease the environmental contamination which was causing birds to lay, to lay eggs without shells, and we were afraid you could kill a whole species of birds.

Q. So in 1969 there was no increased concern about the PCB health effects on workers?

A. I didn't say that. Is that a question?

Q. I thought you did say that.

A. No, I didn't.

MR. CARNEY: I didn't hear that, either.

Q. (By Mr. McCrea) Was there an increased concern in 1969 by Monsanto Company with regard to the health effects on workers exposed in an industrial setting?

A. No, sir, there wasn't in an industrial

setting. Now, that's a little different statement.

Q. Then obviously there was no corresponding increase in education?

A. There was not any increase in education. We had carried out an educational program since the products were introduced, and we had no reports of any ill effects from our customers.

Q. The bottom of that page it states, "The status of Aroclor 1242 should continue to be tested to determine whether it contributes to this problem." Is that the environmental problem?

A. Yes, sir.

Q. And what was the result of that testing?

A. Well, I think they thought it would biodegrade and they found out later that it did not biodegrade as much as they thought it would, so eventually they discontinued the use of Aroclor 1242.

Q. As of 1969 there was no plan to eliminate 1242?

A. Well, I don't know whether there was or not. They were going to change the type of configuration of Aroclor 1242, and I don't know. I think that the, in the back of their head was if they couldn't eliminate the five and six, the chlorine from the five and six positions, that they might very well have thought, "Well, we'll have to get

out of the 1242." They at that time thought it was going to be biodegradable, and when they found out later that it wasn't biodegradable, then they decided to get out of the 1242 business, also.

Q. Dr. Kelly, in Plaintiff's Exhibit Three, in your letter to Dr. Herbert Blumenthal on April 8, 1970 you stated, "Secondly, we have essentially a crash program under way to find non-persistent, non-chlorinated substitute products." Was there a crash program under way on April 8, 1970 to find non-persistent, non-chlorinated substitute products for Aroclor 1242?

A. If that's when I wrote the letter there was. I certainly didn't lie to him. Yes, if I in April 8th, 1970, which is now four months after, five months after these minutes that I've been reading from, we did have essentially a crash program that defined non-persistent, non-chlorinated substitute products, yes.

Q. For 1242?

A. For all of them.

Q. Is that, to your knowledge, documented anywhere in the minutes of Monsanto Company?

MR. CARNEY: I'm going to object unless you can establish that this witness has reviewed all the minutes of the company over the last 30 or 40 years.

Q. (By Mr. McCrea) Do you know if the crash

program to find non-persistent, non-chlorinated substitute products for Aroclor 1242 is documented in any minutes or any letters or memoranda which you have read?

A. Well, which I have read?

Q. Yes.

A. Yes, it certainly was documented in the things that I have read because I didn't pull this second paragraph out of the thin air. I didn't make it up. I knew they had a crash program under way. Whether that documentation still exists or not, I can't tell you, but I knew it. Otherwise, why would I write to them?

Q. What was the Aroclor 1016 product?

A. What was it?

Q. Yes.

A. It was a chlorinated compound that was chlorinated to 16 percent.

Q. And did that replace the Aroclor 1242?

A. In some instances it did, yes.

Q. Do you know when the program was commenced to develop Aroclor 1016 in relationship to your letter dated April 8, 1970?

A. No, sir, but 1016 is a chlorinated product and I'm talking in my letter of April the 8th, they were also looking for non-chlorinated. 1016 is non-persistent, but they were also looking for non-chlorinated. 1016 is

chlorinated.

Q. Why did they use the number 1016?

A. Because it's biodegradable.

Q. Why did they use the number 16 in the 1016?

A. I believe it's because it was chlorinated to 16 percent of -- The average chlorination was 16 percent.

Q. Isn't it a fact, Dr. Kelly, that it contained 41 percent chlorine and there was no rhyme or reason to calling it 1016?

A. I don't know that.

Q. Can you turn to page 90? Do you see the document on page 90 and then, Dr. Kelly, do you also see the document on page 91?

A. Yes, sir.

Q. And 90 states, "Retyped for Legibility." Do you see that at the top?

A. Yes, sir.

Q. Did you write this memorandum?

A. Yes, I did.

Q. The date of the memorandum is what?

A. March 30th, 1970.

Q. Did the individuals at the upper right-hand corner receive copies?

A. Yes, they received them.

Q. Who are those individuals?

A. Well, as I mentioned Bergen and Springgate before, they were either the product managers or one of them was a boss, one was a number two in the PCB department. Minckler was head of the, vice president, head of the organic division or Monsanto Chemicals Company, whichever it was called at that time. Phosha Park was a man in the environmental department.

Q. Was he also a lawyer?

A. He was a lawyer in the environmental department.

Q. All right. Springgate?

A. Springgate is the same as Bergen.

Q. This letter went to W. B. Papageorge?

A. That's correct.

Q. WPAPA stands for what?

A. That's the code number for the mailing department. That's like a zip code. William P-A-P-A, PAPA. Just like I'm RKEL.

Q. In the first sentence you state, "We have been in communication with Dr. Hill of the Ohio State Board of Health." Does that include you?

A. It includes members of the medical department. I think Wheeler was the one that was doing most of the communicating with Hill.

Q. Did you talk with Dr. Hill?

A. I may very well have. I don't recall.

Q. You state, "He has found PCB, particularly Aroclor 1254, in samples of milk from at least three herds in Ohio." Is that information based on a communication to you by Dr. Hill?

A. Either to me or to Wheeler to me.

Q. "He has traced this contamination back to silage from three different silos." Again, was that a communication made by Dr. Hill to either Wheeler or yourself?

A. Yes, sir.

Q. "Dr. Hill reported concentrations of 0.2 parts per million of PCB in the silage in the center of the silo and up to 20 parts per million in the material next to the walls." Again, that's a communication from Hill to Wheeler or you?

A. Correct.

Q. "He also stated that concentrations in the milk were between 0.1 parts per million and 0.6 parts per million and that some of the milk had been destroyed." On the date of March 30, 1970, what was the recommended FDA limit?

A. I don't think they had one.

Q. Did that concern you, Dr. Kelly, that PCBs were getting into milk from the silage?

A. Yes, it did.

Q. Did that concern you as to potential human health effects?

A. Potential with a question mark, yes. It also concerned me, I don't believe milk should be contaminated with anything, whether it's PCB or dirt.

Q. "The silos are concrete silos whose interior surfaces were painted in 1967 using a formulation that contained 1254." Were you knowledgeable on March 30, 1970 that PCBs had been used to coat interior surfaces of silos without having had this communication from Dr. Hill?

A. I don't remember whether I was or not. I certainly wasn't knowledgeable in 1967 because I don't think I had heard about it until -- There may have been something in some of the newspapers or something about this that I may have found out, but I wasn't knowledgeable about it for very long before this communication.

Q. When you wrote the letter that we spent some time discussing back on page 57, did you send that letter to marketing people at Monsanto?

A. Where is the letter now?

Q. That's the letter from you to Dr. J. W. Barrett.

A. Well, that was to England.

Q. Did you send it to your marketing people in

the United States?

A. Well, I'll look. No, I didn't.

Q. The next sentence in paragraph two states, "I don't know" --

A. Where are we now? Which page are we now?

Q. Right, yes, sir, page 90.

A. We're back on 90?

Q. The March 30, 1970 memorandum to Mr. Papageorge.

A. Yes, sir.

Q. Second sentence, paragraph two. "I don't know if there was any other Aroclor in the formulation nor do we know if the coating -- nor do we know the coating manufacturer; although, this could be found out if important." Did you determine the name of the coating manufacturer?

A. Well, I gave that problem to Papageorge. By that time he was man in charge of the PCB problem. He was the point man on this whole situation.

Q. Do you know if Mr. Papageorge expressed your concerns to the coating manufacturer relating to the contamination of the milk caused by the PCBs in the silos?

A. Frankly I don't know if he could ever find the coating manufacturer, but to answer your question, I don't know whether he did or not.

Q. You do recognize that as potentially being important?

A. Oh, certainly.

Q. Because this wasn't the only silo with PCBs in it?

A. Well, there were three of them.

Q. Weren't there 50 others?

A. There may have been, but we're talking now about March the 30th, 1970, and I don't know whether 50 is correct or not.

Q. "The presence of PCB in the silage came from flaking off of the material and possibly from leaching out during the silage storage." How do you know that?

A. Well, I would imagine that's the only two ways you can get the PCB out. The paint either flaked off or the silage leached the stuff out. There's no other way to get it.

Q. How would the silage leach the PCB from the plastic coating?

A. Because you're fermenting it and you're getting God knows what sort of chemicals as a result of -- You get acid chemicals from fermentation inside a silo and that has an action on the paint.

Q. How did you figure that out?

A. Well, I guess my knowledge of PCBs and paint.

Q. Did you know that --

A. And silos.

Q. Did you know that in 1967?

A. No, because I never knew that it was used in 1967 in a silo.

Q. If someone had asked you in 1967, would you have given them that information based on your knowledge of paint?

A. I wouldn't know whether I would or not at that time.

Q. Did you have that working knowledge in 1967 even though you didn't know PCBs were used in a plasticizer in silos?

MR. CARNEY: And you're asking about the knowledge about paint, PCBs and silos?

MR. McCREA: The fermentation and the acid leaching out the PCB.

A. What was the question again then?

MR. McCREA: Could you read it back, please?

(Thereupon, the reporter propounded the pending question.)

A. I don't believe I did because of several reasons. One, I had no knowledge if it was being used there, and if there were any used there, there were no reports in '67 that the material was getting into the

silage and getting into the milk, so I did not have any idea at that time.

Q. (By Mr. McCrea) Explain the process as to how the fermentation of the silage and the acid leaches the PCB from the plasticizer.

A. It dissolves the paint and the PCB comes out of the paint.

Q. How was that established?

A. I don't know how it was established.

Q. Well, how did you come to that information?

A. Well, as I told you before, there are only a couple ways it can get out of there. You've got this paint, a solid thing on the wall and either flakes out, it comes out or it's dissolved by some of the material in the silage. Nobody's in there scraping it off.

Q. Have you ever stepped into a silo?

A. Yes.

Q. With a PCB plasticizer on the walls?

A. No.

Q. Have you ever asked a farmer to describe what it is like to be in a silo with silage in it with PCB in the plasticizer?

A. No, but I've asked the farmer to describe how he's in the silo with no paint at all or enamel silo. There are an awful lot of fumes in there. There are

nitrous fumes in there. There are acid fumes. There's quite a possibility for chemical reactions to go on in the silo.

Q. But you've never specifically asked a farmer what it was like?

A. No.

Q. To be inside a PCB coated silo?

A. No, sir.

Q. Next, "At present they will have to destroy about 150 tons of silage which is valued at about $30 per ton." When you say they, to whom are you referring?

A. I would imagine the people who owned the silo or the Ohio State Board of Health is telling them to destroy the silage.

Q. Other than the fact that there are PCBs in the plasticizers which were manufactured by Monsanto and sold by an unknown coating manufacturer, was there any reason to destroy the silage?

A. Other than the fact that there --

Q. Were PCBs in the silos, was there any reason to destroy the silage?

A. Yes, because when the cows ate it, they had PCBs in the milk.

Q. Who paid for the loss of the silage?

A. I don't know.

Q. Did Monsanto pay for it?
A. I said I don't know.
Q. Did Monsato offer to pay for it?
A. I don't know.
Q. And the loss to the farmer was how much according to your calculations?
MR. CARNEY: Well, you're assuming that that was the farmer and, you know.
A. Well, whoever owned --
Q. (By Mr. McCrea) The cost.
A. Whoever owned the 150 tons of silage that was destroyed, it would cost $30 a ton. Whoever owned that silage had an expense of $4,500.
Q. In your opinion, was the silo of any value with the PCB plasticizer inside of it?
A. Was it of any value? Yes.
Q. Could they reuse that silo?
A. Yes, they sandblasted it and reused it.
Q. Do you know what the cost of the sandblasting was?
A. No, I don't.
Q. And your testimony is that this silo was sandblasted?
A. No, I didn't say that at all.
MR. CARNEY: You asked him if it was of any

value. I think he was saying that it --

Q. (By Mr. McCrea) You said -- Excuse me. Did they sandblast this particular silo?

A. I don't know.

Q. All right. Do you know what happened to the silo?

A. I don't know.

Q. Do you know if the farmer took a loss on it because of the PCBs?

A. I don't know that.

Q. Do you know -- And you don't know if he had to replace it with another silo?

A. I don't know whether he did or not.

Q. Did you ever communicate with the farmer?

A. No, sir, I did not.

Q. Then you go on to say, "As a rough guess, they consider there may be 50 other silos involved in Ohio that were painted with the same formulation." Would those other people predictably have the same problems as this farmer?

A. It's possible.

Q. Did you make any effort to communicate with those farmers?

MR. CARNEY: I'm going to object, you know. He wrote this memo to Mr. Papageorge who was the point man. I think you've got the wrong witness here. Mr. Papageorge

is the person who was in charge at Monsanto doing this.

Q. (By Mr. McCrea) Did you or anyone else at -- Did you make any effort to contact those farmers?

A. I did not.

Q. Did anyone at Monsanto make an effort to locate and contact those farmers?

A. I don't know.

Q. In your opinion, was there a human health, was there a potential human health problem as a result of PCBs in those silos?

A. No, sir.

Q. Didn't you just say that there was a human health problem as a result of .6 parts per million?

A. No, I did not.

Q. In the milk?

A. I did not say that. I said we didn't want any in the milk. We didn't want any contamination in the milk. I didn't say we didn't want .6 PCB in the milk because there was a health hazard. I said I don't believe milk should be contaminated with anything.

Q. In your opinion, was there a potential human health problem?

A. Well, in March 1970 I don't think we knew. That's why we were running our long term experiments.

Q. Was there a potential human health problem?

A. Well, I said we did not know if there was a potential.

Q. All right. The next sentence says, "They are also looking into the fat contamination of the cows themselves." Do you know the results of those tests?

A. No, sir, I do not.

Q. Did you maintain any communication with Dr. Hill after March 30, 1970?

A. I do not recall if I did. I believe that Mr. Papageorge may have, but not I.

Q. Do you know of any herds of cattle which had to be destroyed in the United States as a result of PCB contamination from silos?

A. I do not know.

Q. Did you offer to assist Dr. Hill in remedying this problem?

A. Yes, I told him Monsanto would do anything that we could to cooperate with them in any shape or form and he should contact Mr. Papageorge who could direct Dr. Hill's request to the proper agency inside Monsanto.

Q. Did you offer to replace the farmer's silo?

A. I personally?

Q. Monsanto.

A. That was not my responsibility. To answer it, no, I did not.

Q. Has Monsanto ever paid to replace a PCB coated silo?

A. I do not know.

Q. Do you have an estimate as to how many PCB coated silos there were in the United States as of this date?

A. No, sir, I do not.

Q. Next sentence says, "All in all, this could be quite a serious problem, having legal and publicity overtones." What do you mean by publicity overtones?

A. Well, I believe that the publicity, if a Monsanto product were present in the milk, that's bad publicity.

Q. And how would that affect Monsanto?

A. Well, Monsanto wants to be a good neighbor. Monsanto doesn't want PCBs in milk. They don't want PCBs adulterating food.

Q. What effort did Monsanto make to eliminate the PCB contamination of milk from the PCB plasticizers, caused by the PCB in plasticizers in silos?

A. You'll have to ask Mr. Papageorge and I believe he will tell you that whatever they did. He will also tell you that it was quite successful because you don't hear anymore about PCBs in milk or in silage.

Q. Could that be because they've all been

condemned?

A. No, sir, I don't believe so, and I don't know what you mean by condemned.

Q. Condemned.

A. Tore down?

Q. No, condemned, ribbons placed around them marking condemned.

A. I don't know if anyone ever was. I don't know. I never saw one.

Q. Did you tell Mr. Bergen this was a serious problem verbally?

A. Well, I wrote him a letter. I don't know whether I discussed this memorandum after I talked with him or not -- after I wrote him I mean. I may have talked with him.

Q. You state, "All in all, this could be quite a serious problem having legal overtones." What are the legal overtones for Monsanto from this serious problem?

A. Well, there again I get outside my field, but I thought if we were contaminating silage due to our PCBS, the farmer may look to us for remedial action.

Q. Did you take any effort to avoid that consequence by going to the farmer first?

MR. CARNEY: I'm going to object. You've asked this question about six or seven times. He indicated

he didn't know what happened, whether the Monsanto paid the farmer or if indeed it was the farmer that owned the silage. He doesn't know. I think he wrote this memo to Mr. Papageorge who was the point man for Monsanto. You've established that he doesn't know what Monsanto did. I don't know how much clearer that can be made. I will stipulate that with regard to what Monsanto did with the farmer, Dr. Kelly doesn't know. He's said it very clearly, and I don't think asking him three or four times is going to move the deposition along.

Q. (By Mr. McCrea) Dr. Kelly, you recognized that this could cost Monsanto money?

A. That was the least of our problem.

Q. What was the most of your problem?

A. We didn't want the milk contaminated.

Q. Did you suggest to Mr. P. S. Park that Monsanto correct this problem of PCBs in silos?

A. Mr. P. S. Park is a lawyer in the environmental group. He is a very ethical Monsanto employee. He's now retired from Monsanto. I clued him in onto the legal problem, and it is up to him to do it. It was not up to me to handle any legal problems with Monsanto.

Q. Do you know if Monsanto ever calculated the number of PCB silos in the United States and what it would

cost to replace them?

A. No, sir, I do not know.

Q. Last paragraph, "This brings us to a very serious point"; correct?

A. Yes, that's what I said.

Q. "When are we going to tell our customers not to use any Aroclor in any paint formulation that contacts food, feed or water for animals or humans?"

A. Was there a question?

MR. CARNEY: You read that -- You read his words accurately. I'll agree with that.

A. Yes, and I wrote that.

MR. CARNEY: I don't know if there's a question.

Q. (By Mr. McCrea) When did you tell your customers not to use any Aroclor?

A. I do not know when the marketing people told them. I do not know if they had already told them by the time I wrote Papageorge and I didn't know about it, so I cannot answer your question.

Q. Do you know if it was ever done?

A. Of my own knowledge did I ever, do I recall sending a memorandum to the customers? I don't know, but I would imagine that it was done, but that again is speculation.

Q. You state, "I think it is very important that this be done." Why?

A. Well, we still didn't want PCB in the milk.

Q. "It may be that some of our customers will assure themselves on the basis of non-extractability that a particular formulation might be safe, but I think we should make a blanket recommendation against these uses." That was your opinion?

A. Yes, sir, it was.

Q. And you were adamant about it?

A. Yes.

Q. And you sent it to everybody you knew who was of authority in Monsanto?

A. Yes, sir.

Q. You were a medical doctor?

A. Is that a question? Yes, I was and am.

Q. Doctor, can you tell us what it is that you brought to this particular situation that somebody without a medical degree could not?

A. Well, I don't believe that what I brought to this situation was information of a problem, and I believe I summarized a problem and sent it to the important, responsible people in the legal department, in the production department, in the marketing department and to the man who was in charge of the environmental aspects of

PCB.

Whether or not Mr. Wheeler could have done the same thing, I think he probably could have because there was not a great deal of information in there that you need a medical person to talk about. We don't want PCBs or Aroclor in any food, feed or water for animals or humans, and you didn't have to have a medical degree to know that.

Q. If you had to communicate to the farmers of this country your expression of concern, what would, how would you have done that?

MR. CARNEY: What time are you talking about?

MR. McCREA: 1970.

A. All the farmers in the country, whether they have silos or not?

Q. (By Mr. McCrea) Correct.

A. Whether they use PCB paint or not?

Q. Correct. How would you have gone about that?

A. I would have said -- Well, first of all, I wouldn't have gone about it. I would have gone to the person whose responsibility it was. There is a man working full-time on PCBs. I'm in charge of the medical department. We've got lots of other things that are doing. This man's full-time. He's got his own staff doing it, so I would tell him my beliefs and let him do it. I would not communicate with the farmers.

Q. Do you know if there was any notification to your insurance carriers of this potential liability?

A. I don't know.

Q. You knew that Monsanto had used publicity releases to communicate its position on PCBs in the past; correct?

A. Yes, sir.

Q. Was there any publicity release issued that reflected your concerns on PCBs getting into the milk?

MR. CARNEY: I might suggest to you, Mr. McCrea, you're trying to -- I think you're asking a lot of these questions to the wrong witness. Mr. Papageorge has all this information as I think you do know, in fact, in this very same exhibit, and I refer you to starting on page 100 and going through to 115 is a Papageorge document explaining and answering some of these questions.

MR. McCREA: Are silos referenced in that?

MR. CARNEY: I think plasticizers are at page--

MR. McCREA: Are silos?

MR. CARNEY: You were talking about plasticizers in the silos.

MR. McCREA: Is the problem of PCBs flaking and leaching from plasticizers in silos and getting into the milk of dairy cattle referenced in the Papageorge

affidavit dated September 14, 1971, if it's an affidavit?

MR. CARNEY: I think if you look at page 107, they talk about the plasticizers, eliminating the plasticizers.

MR. McCREA: Do you see silos mentioned there?

THE WITNESS: Are you talking to me or to him?

MR. McCREA: No, I'm not, sir. It's hard for me to turn all the way around.

MR. CARNEY: You know, I think if you'd ask Dr. Papageorge, he would be the one that would be most knowledgeable about this. Dr. Kelly was the head of the medical department.

MR. McCREA: All right. I'll just state for, not for the jury and not for Mr. Kelly, Dr. Kelly, that there's no reference to silos in that particular communication if I read it properly.

MR. CARNEY: I didn't say there was, did I?

MR. McCREA: No, but you said I could read it and determine the response.

MR. CARNEY: No. What I'm telling you is that what -- You've asked a lot of questions about what Monsanto did with regard to the plasticizers. Did they eliminate them? You've asked lots of questions about how they noticed or notified the various people in various groups, and I think you have that information. You know -- You've

seen Mr. Papageorge testify about those matters, haven't you?

MR. McCREA: Never, never.

MR. CARNEY: Well, I think you have.

MR. McCREA: Never. And I will represent to you that the elimination of PCBs in plasticizers does not solve the problem which Dr. Kelly addressed rather eloquently on March 30, 1970 of PCBs already in the plasticizers.

MR. CARNEY: I can say and state for the record that Monsanto did solve the problem very well and with, and they were a very good corporate citizen in the way they handled the problem, an excellent corporate citizen in the way they handled it. Now, Dr. Kelly may not know that because he was the medical director and I don't think he knows everything that went on at Monsanto, but I can state that to you.

Q. (By Mr. McCrea) All right. Well, I accept what you state and quite frankly don't have that much information about what they did. Dr. Kelly, after you wrote this March 30, 1970 communication to Mr. Papageorge, did you get any feedback from him, Mr. Bergen, Minckler, Park or Springgate as to the remedies and the, that you suggested?

A. I may very well have. I don't recall it. I

do know that over the years the problem diminished to a zero point.

Q. All right. Before March 30, 1970 had you made similar requests verbally?

A. Well, I don't think so.

Q. Other than this document which speaks for itself, Dr. Kelly, do you recall any other efforts on your behalf to see that the customers did not use Aroclor in the paint?

A. Well, I never talked to any customers. I don't know whether, what Wheeler might have done with Papageorge. I don't know, but to answer your question, I did not and as I said this, you talk like this was in silos all over the country. This was in a pretty small group of areas where this paint was distributed.

Q. Do you know how many silos were involved?

A. No, sir, I do not.

Q. But if it's one farmer and it's his silo, it's important; correct?

A. Of course it is.

Q. Did you correspond with the FDA about this problem?

A. Yes, I talked to them, and that's when I talked to Dr. Fitchu of the FDA because he knew about it. He asked me how our tests were coming and when we started

them and when we were going to get finished with them. Yes, I talked to the FDA about it.

Q. When you say test, you're talking about what?

A. A long-term feeding test.

Q. Did you talk to the FDA about the number of silos in the United States with PCB in them and what could be done to see that that was not getting into the milk of dairy cattle?

A. Not I, but I don't know whether that came up at the time when Colander and I went up to see Dr. Fitchu and other people of the FDA when we were starting our tests which can be dated in this letter, I believe. Yes, I certainly did, I believe. Where are we, March? Yes, I antedated that. We told them what we were doing. They agreed with what steps we should do as far as the testing is concerned, and I believe they were cognizant of the fact that there was PCBs in the milk. Certainly they were.

Now, as far as answering your question did I talk to the FDA about what we were going to do about getting, cleaning up this problem with the silage, I don't know whether I taked to them or not.

Q. Dr. Kelly, you described earlier in your testimony 12 points of a plan of action dealing with environmental aspects of PCBs. Did you add to that plan of action a recommendation and potential solution for PCBs

getting into the milk as a result of their flaking and leaching from the plasticizers in silos?

A. We didn't have to write it out. We knew we had a problem and got on it. I mean, we didn't write it out and say, "Okay, now we've got 13 plans instead of 12." We recognized the problem and we, and Papageorge started out to solve the problem and to remedy it.

Q. Can you describe for the jury what he did?

A. No, you'll have to ask him.

Q. Can you turn to page 92?

A. Yes, sir.

Q. This, sir, is minutes of meeting of the corporate management committee, April 20, 1970. Is that correct?

A. Yes, sir.

Q. And you attended the meeting as indicated by your name under the heading, "Organic Division - Report of PCB Status"?

A. Yes, sir.

Q. There are figures there representing sales of Aroclor?

A. Yes, sir.

Q. You say, "Division has maintained an aggressive program of customer education." Does that include the people who put PCBs in plasticizers in silos?

A. I don't know what it includes, but I don't even know if there was Aroclor being used in silage, paint for silage in April of 1970. If you notice, our plasticizer sales have dropped down pretty much. It's down to $3 million worth. I don't know what it was before, but it was considerably higher than that.

Q. Did that include an aggressive program of customer education with regard to the customers who had put PCBs in plasticizers where they were existing on farmers' fields?

A. I don't know. This says the division has. The medical department did not. This was a division responsibility. They had Papageorge there. They had Bergen there. They had Minckler, they had Mason, they had Smith, Springgate, all these people from the division. They're the ones that carried out the aggressive program of customer education, cooperative efforts with government research, etc.

Q. You see on page 93 it states at the top, "FDA indicated it was contemplating a residue level of 0.5 parts per million in milk." Do you see that?

A. Yes.

Q. And did the levels in Ohio exceed that?

A. Did what?

Q. Did the levels in the milk in Ohio exceed that

level?

A. No, sir.

Q. I thought it said 0.6 parts per million.

A. Did it? I don't know. Maybe it did.

Q. Can you refer to page 90, the last sentence of the first paragraph?

A. Page 90? Well, that's a little confusing here because on, when it's retyped it says between 0.1 ppm and 0.6, and then the one I'm looking at where it wasn't retyped it says 0.1 and 0.5 ppm.

Q. I read that as a six on --

A. You want to look at mine?

Q. I accept what you're saying.

A. Okay.

MR. CARNEY: Mine says five.

Q. (By Mr. McCrea) All right. Did Monsanto do any testing to determine levels of PCB in fish which were in waters to which Monsanto discharged PCBs?

A. I think they may have, yes, sir, but I'm not certain which locations.

Q. You don't know the results?

A. No, sir, I don't.

Q. Second paragraph on page 93 references the targeting of effluent levels. Do you know how those were established, 50 parts per billion and ultimate target of 10

parts per billion?

A. I think that was established by what we thought was feasible. We tried to get down to as low as we could, as low as we could.

Q. Third paragraph states, "Sales are being terminated to a number of industrial users where there are inadequate possibilities of control for such uses as pesticide extenders." What is a pest -- How were PCBs used on the date of April 20, 1970 as a pesticide extender?

A. Well, I think it would be better if you asked somebody from the agricultural, Department of Agriculture of the United States Government because they were the ones that came out with the idea to use PCB in agricultural as a pesticide extender. In other words, you mix this and presumably it stays around on the plant longer.

It was peanuts as far as our marketing was concerned and we were not happy with it, but the government, the Department of Agriculture stated that this is possibly a good use for PCBs.

Q. How were PCBs used in medicinal products?

A. I never heard of it. I don't know.

Q. Dental products?

A. Waxes.

Q. Cosmetics?

A. I don't know.

Q. Did Monsanto locate these industrial users and then terminate the sales?

A. Well, they said they did. Sales were being terminated to a number of industrial users.

Q. Did you attend this meeting where it was discussed? It indicates you did.

A. Well, yes, but I don't think they elaborated on it anymore than that. They said, "We're terminating these to a number of industrial users with inadequate possibilities of control," but I don't think they put them out by name.

Q. When did Monsanto first know that PCBs were used in pesticides, as pesticide extenders?

A. I haven't the slightest idea.

Q. The statement is made, "Sales will be continued for transformers, capacitors and heat transfer uses which are closed systems or sealed units and which permit reclamation or other control of material." Is that correct?

A. You read it correctly, yes, sir.

Q. Do you consider transformers, capacitors and heat transfer uses as closed systems today?

A. They are unless something happens to the heat transfer units. Sometimes there are leaks in it. Sometimes there are fires in the capacitors, but as of

fires in the transformers in 1970, I don't believe there was any record of any fires of transformers or fires of capacitors or leaks in -- Well, there were leaks in heat transfer units at Yusho at that time.

Q. Dr. Kelly, if a manufacturing plant called you today and asked you if you thought it was advisable to have 1,337 PCB capacitors inside their plant, what would you tell them?

A. I'd say, "I'd like to come out and look at your plant and see how they're being used."

Q. Do you think that would present a risk that should be eliminated by replacing the same capacitors?

A. I would have to make that decision after I saw the installation.

Q. Down under conclusions, Dr. Kelly, it makes reference in the first paragraph, the last line to NCR application. What does that stand for?

MR. CARNEY: I think we're about to lose our tape.

A. Well, I can answer that real fast. That's a carbonless carbon paper, National Cash Register.

MR. McCREA: Thank you. Break.

(Thereupon, a short recess was taken.)

Q. (By Mr. McCrea) Dr. Kelly, we're back on the record. On page 93 under conclusions the committee states,

quote, "A replacement product should be developed on a crash basis for the NCR application," which stands for National Cash Register in the use of PCBs in carbonless paper. Is that correct?

A. That's correct.

Q. And H. L. Minckler was on the corporate management committee on April 20, 1970; correct?

A. I don't think he was.

Q. Well, I believe you're right. He was on the organic division?

A. Yeah.

Q. And J. E. Springgate was a member of the organic division?

A. Yes, sir.

Q. And H. S. Bergen was a member of the organic division?

A. Yes, sir.

Q. And were those people participants in the decision to develop a crash program or to develop on a crash basis a replacement product for carbonless paper?

A. Yes, sir.

Q. And the date of that meeting was April 20, 1970?

A. Yes, I'll take your word for it. I've misplaced paragraph, page 93. I've got a 92. That's April

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the 20th, 1970.

Q. All right.

A. But I don't have 93. It must be in here someplace.

Q. I think the record will reflect that the date of the minutes of the meeting of the corporate management committee was April 20, 1970. And on March 30, 20 days before that, you sent your letter expressing your concerns about the PCBs in milk from the silos to H. S. Bergen, H. L. Minckler and J. E. Springgate; correct?

A. Yes, sir.

Q. Did they discuss anything to be done on a crash basis with respect to those concerns which were expressed by you to them 20 days earlier?

A. I don't know. I certainly know that Papageorge was very, very much involved and very much aware of the problem and he might be much better -- he will be much better able to answer that than I do, than I am.

Q. Go to page 94.

A. I've got problems. Something's happened to my pages from 91.

MR. CARNEY: Do you want to use mine?

A. I don't have a 94 here. In fact, my next page is 100. I thought I had one before, but I don't. Yes, sir.

Q. (By Mr. McCrea) Can you identify the document on page 94 of Plaintiff's Exhibit Six?

A. Well, I will read what it says. It's a photostat of some letter written by a Bernard H. Falk, it looks like, to the representatives of the member companies in the transformer section, capacitor section of the National Electrical Manufacturers Association dated August the 6th, the 2nd, 1971.

Q. Dr. Kelly, did you have any communications with Congressman Ryan?

A. No, sir, I did not.

Q. Did you have any participation in preparing any speeches or information to be given by Monsanto to Congressman Ryan?

A. No, sir, I did not.

Q. On this date do you have an understanding of the effort being generated by Congressman Ryan with regard to PCBs?

A. I may have heard about somebody talking about it at lunch, but I certainly had no formal connection with any of Congressman Ryan's actions.

Q. Will you go to page 95?

A. Yes, sir.

Q. Can you identify this document which consists of two pages and attachments of an additional three pages?

A. Well, what it says is, "A bill to prohibit the introduction or delivery for introduction into commerce of the chemical compound known as polychlorinated biphenyl."

Q. And the date is July 26, 1971?

A. That's correct.

Q. Do you have any working knowledge today as you testify of the purpose of H. R. 10085 introduced by Congressman Ryan?

A. Well, except what he said, "To prohibit the introduction and delivery for introduction into commerce of the chemical compound known as polychlorated biphenyl." I take it that was his purpose.

Q. Did Monsanto have meetings to discuss this bill in which you attended?

A. No, sir. That doesn't mean that he didn't have meetings, but I do not recall ever being at a meeting where they discussed Ryan's bill.

Q. All right, sir. Dr. Kelly, will you turn, please, to page 97?

A. Yes, sir.

Q. Are you -- This is a speech by Congressman Ryan to Congress reported in the "Congressional Record," I believe. Have you seen this before today? See the heading in the left-hand column, "PCBs - En" --

A. I see that. I don't believe I have. I do not

read the "Congressional Record."

Q. All right. Without spending a lot of time on this document --

A. Okay. That will be new.

Q. Congressman Ryan makes reference to chickens being contaminated with PCBs, I believe, in North Carolina by leaks of PCB from a heat transfer system. With that general statement, Dr. Kelly, as you sit here today, did you in any way participate in the investigation of that particular situation?

A. No, sir, I do not believe I did.

Q. Do you have any working knowledge of the situation in which the chickens became contaminated with PCBs?

A. No, I don't. In fact, they talk about the Campbell Soup Company. Is that what we're talking about, with the chicken fat? Is that the one? That's the first time I saw it. I don't know anything about it.

Q. All right. Down at the bottom of column one on page 97 there's a one paragraph description of human health effects as described by Congressman Ryan on the date of this address to Congress, July 23rd, 1971. Would you please read that paragraph which starts at the bottom of column one and ends at the top of column two to yourself and then tell us if there are any health effects which he

describes as being caused by PCBs with which you disagree?

A. Do I wait till I get through reading it or do I mention my differences of opinion as we go along?

Q. I think it would be preferrable to mention it as you go.

A. "By far the most frightening hazards" --

MR. CARNEY: Well, let me just -- I think he--

MR. McCREA: He can read it out loud.

MR. CARNEY: I think he said to read it to yourself.

A. Oh, okay.

MR. CARNEY: And then --

Q. (By Mr. McCrea) Why don't you read it out loud and then as you disagree, you can state your disagreement.

MR. CARNEY: I'm going to object to any, having --

MR. McCREA: That way it gets on the record.

MR. CARNEY: That's what I mean. If you want to get Congressman Ryan in here to testify about what he said, that's one thing, but to have, you know, a speech that he read be read into the record is, you know, hearsay. I don't have Congressman Ryan here to cross examine. We've got Dr. Kelly here. He says he doesn't have any knowledge about this bill of Dr. Ryan's, so I don't know. I think

you've got the wrong person here to cross examine about Dr. Ryan's speech.

A. Mr. Ryan, the Honorable Mr. Ryan. He's not a doctor. He's a politician.

MR. CARNEY: I'm sorry. I didn't want to demean the profession of doctors by calling him --

A. We have a different way of stating things.

Q. (By Mr. McCrea) Dr. Kelly, why don't you read what he states. Then as you come to something with which you disagree, state your disagreement.

A. Well, yes, I disagree with the first sentence, "The most frightening hazard is the effect of PCBs on humans." Certainly I don't think there's any frightening hazard. I think that is rhetoric from a congressman. Let's see what else.

He also states, gives no limitation of exposure, no statement about exposure. He says, "Polychlorinated biphenyls may be taken into the body by direct action upon the skin or by a vapor through a respiratory tract." That's true.

"The effect on the skin is chloracne." Well, that all depends on how much you get on and how long you've been doing it. "The early symptoms of which are pimples, a dark pigmentation, later, more serious eruptions." That again is how much you are exposed to.

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"Persons who have been continually exposed to PCB may suffer nausea, vomiting, loss of weight, edema and abdominal pain, increased respiration, lower blood count and inhibition of the carbohydrate metabolism." That -- If he is not referring to Yusho or Yetching, I would like to see his basis for his statement, "More serious effects are those of the kidneys." I don't know where that is documented outside of Yusho.

"The principal effect, however, is on the liver possibly leading to atrophy followed by death." That certainly has not occurred in an industrial setting. Now, this I do not consider -- I do not consider a Congressional speech a scientific document. He is making statements, and I don't know the basis of the statement, so I disagree with him.

Q. All right. Would you go to the top of paragraph three in the first paragraph -- excuse me, Doctor -- the top of column three. In about the middle of that paragraph he states, "I requested that he," and I believe that refers to the administrator of the Environmental Protection Agency, "Obtain from Monsanto those production and sales figures necessary to determine the extent of possible PCB contamination data which Monsanto has refused to provide." Are you aware of a request by Congressman Ryan to Monsanto for sales records in order that the

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environmental effects could be checked out?

MR. CARNEY: Let me object to the question. I object to your reading a speech back in 1971, July 26, I guess, of 1971, by a congressman who's trying to get publicity and run for office and win votes and making a speech in the "Congressional Record" and then examining Dr. Kelly about the speech which he says he wasn't in attendance at and doesn't recall seeing. You know, this deposition could go on for a year. It's already, you're in your fifth day of cross examination. You've indicated you're going to go tomorrow and, you know, I don't know how many speeches by congressmen or other people you can read into the record. It's improper. If you have a question of Dr. Kelly, ask the question of Dr. Kelly.

Q. (By Mr. McCrea) Dr. Kelly, did --

MR. CARNEY: And you're not only reading it, but you're making assumptions about who he is. Now, Congressman Ryan isn't even here for me to examine him on what he means by some of those words. So this is an entirely improper course of action that you're taking, Mr. McCrea, and all I can see is that you're trying to delay this case and bore the tears out of the jury and the judge. You've certainly bored me by all this repetition and now just reading a speech 20 years ago by a congressman trying to win votes.

MR. McCREA: Was he trying to win votes with Monsanto?

A. I don't think he's alive frankly. I don't know when he was running for office in the '70s, but was there a question on the floor?

Q. (By Mr. McCrea) There was and you may answer it.

A. I'd like to know what it is.

MR. McCREA: I forget.

(Thereupon, the reporter propounded the pending question.)

A. I am aware of a request, and he states a half truth. He states, "I requested that he obtain from Monsanto those production sand sales figures necessary to determine the extent of possible PCB contamination." Monsanto, I've seen documents that said we will give you sales and production figures.

Then he asks for names of customers and Monsanto said that they, to the best of my knowledge, they could not give the names of the customers without some particular reason. So the good congressman is having a half truth in that statement.

MR. CARNEY: And I might add, I assume it's probably a misprint, but it doesn't talk about PCBs there. It talks about PBC, and it doesn't say that Congressman

Ryan requested it. It says, "I requested that he," somebody, whoever he is, "obtain it." So there's, I think, a mischaracterization to what's said. This is very confusing. We don't -- It's hard to understand what's being talked about there.

Q. (By Mr. McCrea) Did Monsanto Company have an action planned to determine the customers who had purchased PCBs in the potential areas of environmental contamination on this date, July 26, 1971?

A. I don't know what you mean by an action planned. What do you mean?

Q. Well, I'm referring back to your corporate notes where you say plan of action on page 88.

A. Yes, sir.

Q. Did you have a plan of action to determine your PCB customers and the potential environmental pollution as a result of sales to those customers?

MR. CARNEY: In addition to the 12 points, the sum of which I think addressed that problem? Are you saying in addition to those 12 points?

MR. McCREA: Correct.

A. I don't know. You'll have to ask Papageorge or Bergen or Springgate.

Q. (By Mr. McCrea) Could you go to page 99? Column two, fourth paragraph with the heading "Monsanto

Tests."

A. Yes, sir.

MR. CARNEY: We're still in -- Can I have my standing objection that you're reading from Congressman Ryan's speech back in 1971?

Q. (By Mr. McCrea) Yes, you may. It says, "Recently completed Monsanto tests, conducted over two years, showed that rats fed food containing up to 100 ppm showed enlargement of the liver, but suffered no other effects, the company spokesman said. Dogs showed no ill effects, he said. Representative Ryan said he was skeptical of tests ordered by the company for its own products." Do you see that?

A. Yes.

Q. Does that refer to IBT tests?

A. No, he refers to tests ordered by a company for its own products, and just like I'm skeptical about a congressman's statements when he's running for office. I think that this is absolutely ridiculous. Who is going to run the tests if the company doesn't run them themselves? Is the government going to run them? The U. S. Food and Drug Division accepted the tests. They know an awful lot more about toxicity than Ryan does.

Q. All right. My question is: Does that paragraph refer to the tests that were done at IBT or is it

some other test facility?

MR. CARNEY: I'm going to object here. You're asking this witness to speculate about what was inside Congressman Ryan's mind, and other than winning votes and trying to get re-elected, which I think we've probably established, but what was inside his mind when he makes a speech back in July 26th, 1971. Why don't you ask Congressman Ryan?

MR. McCREA: I would also note that he was interested in protecting the environment and protecting human health, and in 1977 Monsanto Company fully concurred with the ban of PCBs. It took six years to educate Monsanto, but they fully concurred with the ban six years later.

MR. CARNEY: Well, you know, Mr. McCrea, you're making speeches that are untrue, that are inflammatory, that are improper. You have no -- You're not testifying and here you are making these speeches. We're here to take Dr. Kelly's testimony. If you have a question, fine, but to make a speech that Monsanto did something improperly is an outrage to me, and it's improper and unprofessional conduct on your part, and I would urge you to get on with questions and quit making speeches. The jury isn't interested in what you think or what I think. They want to hear the evidence from the witnesses that are

under oath.

MR. McCREA: I was just defending Congressman Ryan.

MR. CARNEY: Well, I didn't know that was the purpose of this. You're getting so far off the track in the fifth day of your cross examination, Mr. McCrea. Now you're defending a congressman who's running for office, you know. I'm glad you're doing that, but let's not do it on the record and waste the jury's time.

Q. (By Mr. McCrea) Dr. Kelly, would you turn to page 100?

A. 100?

Q. Yes, sir.

A. I've lost that one, too. Do you have 100? Oh, I'm back here.

MR. CARNEY: Why don't you give those back.

A. I may need those back. Yes, sir.

Q. (By Mr. McCrea) Are you familiar with this document which has as its caption, "Monsanto's PCB Program, W. B. Papageorge, Presented at ANSI," A-N-S-I, all capital letters, "Committee C-107 Meeting - September 14, 1971"?

A. What did you ask me about it? Am I familiar?

Q. Are you familiar with it?

A. Well, I've seen it, but I don't know when I saw it, whether I saw it during my time with Monsanto or

not. I don't really believe I did, but I've certainly seen it since I've been out.

Q. Would you turn to page 104?

A. Yes, sir.

Q. Would you read the paragraph three beginning, "Through the years," just to yourself and then I'll ask you if that makes any reference to PCBs and plasticizers in silos.

A. I've read it. What is your question?

Q. Does it make any reference to silos?

A. With the exception it said, "Uses such as in paint formulations."

Q. Is there any reference whatsoever in this document consisting of 15 pages to the problem of PCBs flaking and leaching from plasticizers in silos into the silage contaminating the cattle and contaminating the milk?

A. Well, we might as well turn off the film because I'll have to read this. I can't answer that.

Q. All right, sir.

A. So are we turning it off?

MR. McCREA: Yes.

MR. CARNEY: Well, let me object to this while we're still on the record.

MR. McCREA: Let's --

MR. CARNEY: This deposition, you're into the

fifth day and now you're asking the witness to read a 15 page document that he says he doesn't know that he saw when he was with Monsanto, and to see if there's a word there.

MR. McCREA: Just a second. I'll save you time.

MR. CARNEY: Okay.

MR. McCREA: I'll agree that the document speaks for itself and that it may be read by the jury.

MR. CARNEY: Well, you know, whether -- We're not in the courtroom now. We don't have the jury, and I think we'll have to address that to the judge at the time. Whether it's appropriate to have the jury take the time to read this 15 page document or not, I think we'll have to address at a later date.

Q. (By Mr. McCrea) But I'm -- Dr. Kelly, I don't think it's necessary for you to read this document unless you'd like to.

A. No, I don't need to.

Q. All right, sir. Would you turn to page 114 of the Papageorge document, the sixth line, sixth line from the bottom of the page beginning, "There is still" --

MR. CARNEY: You're on 114?

MR. McCREA: Yes, sir.

A. Sixth line, "There is still," yes.

Q. (By Mr. McCrea) Yes, sir. That statement by

Dr., by Mr. Papageorge reads, "There is still a lot of information that is needed to help us determine the long term effect on human beings." That statement was made September 14, 1971. As of September 14, 1971, do you or did you as medical director concur with that statement?

A. Well, I have to see --

MR. CARNEY: I don't know that you've established that he actually saw that statement. He doesn't know if he saw this document. Are you asking him today or back --

MR. McCREA: I'm asking him if --

MR. CARNEY: If he saw that in '71, would he agree?

MR. McCREA: Did he concur with that statement on September 14, 1971.

MR. CARNEY: Well, I'm going to object to using the word did he concur because I don't think he could concur with something unless he saw it to concur with it. If you're saying did he believe that to be a true statement back then whether or not he saw it or not, I think he could probably answer that. So I object to the form.

Q. (By Mr. McCrea) Dr. Kelly, on September 14, 1971 did you believe that to be a true statement?

A. Well, first of all, I'm not going to pick one sentence out of this. Let's take the sentence before it.

Q. Dr. Kelly --

MR. CARNEY: Let him finish his answer, please.

MR. McCREA: Just a second, please.

MR. CARNEY: Just a minute. If you'd let him finish his answer because I don't like your interrupting him while he's in the middle of his answer, so please.-

A. You're asking me to pick one sentence out of context, and if I am going to concur or agree with this statement, I've got to look at the previous statements and the following, the statements following it.

Q. (By Mr. McCrea) Dr. Kelly, I'm asking the question. Your attorney may ask you on redirect any other information which he feels is necessary to present to the jury. My question is: Do you agree with the accuracy of that sentence, "There is still a lot of information that is needed to help us determine the long term effect on human beings"?

A. Now --

MR. CARNEY: Let me object to it.

Q. (By Mr. McCrea) Now, if you want to go and address other portions of this document as not in response to my question, fine, go ahead, but I would ask that the Court at the trial restrict your answer only to that which is responsive to my question. Go ahead and answer.

MR. CARNEY: Well, I'm going to object to your picking out a sentence in the middle of a 20 -- I'm sorry -- a 15, 16 page document out of context, and that sentence has some undefined words to it. It says, "There's still a lot of information." It doesn't say what kind of information, what he means by a lot. It might call for Dr. Kelly to speculate. I note -- I think that the doctor is entitled to read the sentence in front of it or any other sentence to bring it into context, and I invite the doctor to do that.

A. Well, I don't believe Mr. McCrea wants me to do that.

Q. (By Mr. McCrea) No, you can go ahead and do it. I'm just stating that I asked a question as to that sentence and when this is given to the jury, we'll get a ruling from the Court, but you may answer it. I can't restrict you on how you're going to answer it.

A. Good. Thank you. What was the bottom line on this question?

(Thereupon, the reporter propounded the previous question.)

A. Well, to answer that in a yes or no situation, I would need a lot of information myself. In the first place, I think it, in context he stated the, "Studies today would indicate that these PCBs are not and cannot be

classified as highly toxic."

Then he goes on to say, "There is still a lot of information that is needed to help us determine the long term effect on human beings." I do not know if at that time we had the two year testing on the two different species.

I think that he referred also to other items as how much is in the food that people are taking. So that is just as important as the toxicity of the material. So certainly that information is needed to help us determine the long term effect. You have to equate -- There are two parts to the equation, how toxic are small amounts and what's the size of the amount. Does that answer your question, Mr. McCrea?

Q. (By Mr. McCrea) Yes, sir. Would you go to page 110? I'll direct your attention to the last sentence in paragraph two beginning, "PCB was brought out." The statement says, "PCB was brought out as" --

MR. CARNEY: You're talking about the middle paragraph; right?

MR. McCREA: Paragraph two. What did I say?

MR. CARNEY: I thought you said the last. I'm not sure.

MR. McCREA: The last sentence of paragraph two. I don't know what I said. The sentence which states,

"PCB was brought out as an example of a material introduced into society."

A. Mine says brought up.

Q. (By Mr. McCrea) Brought up?

A. U-p, brought up.

Q. Mine says brought out.

A. You want to see mine? Page 11, 110?

Q. Yeah. That's interesting.

MR. CARNEY: I think you're looking at a different sentence. It's the last sentence on paragraph two.

A. Is that what we want now?

MR. CARNEY: Yeah.

A. Okay. That is one of the problems of picking items out of 15 pages.

Q. (By Mr. McCrea) I don't dispute that, Doctor.

A. Okay.

Q. It states, "PCB was brought out as an example of the material introduced into society and thought at one time to be most valuable, but is now considered a serious threat to all of us." Do you agree?

MR. CARNEY: I'm going to object. Again you're --

Q. (By Mr. McCrea) With that?

A. No, I don't agree with it.

MR. CARNEY: And I'm going to object to your taking a 15 page document, reading one sentence totally out of context. If you're going to read from this document, you're misleading the jury by reading sentences totally out of context. You're doing this throughout the deposition, and this is an example of it. That's not a proper way unless you've established that this witness is familiar with the document or he authored the document or he received the document.

A. And here again I may further explain, you've got to read the sentence in front of it. Individuals -- "Initial hearings were held in August to which a select few individuals were invited to testify." Who were they? I don't know.

"PCB was brought out as an example of material introduced in society and thought at one time to be most valuable, but is now considered a serious threat to all of us." Those aren't Papageorge's words. Those are these unnamed individuals who were invited to Senator Phillip Hart's committee, and I don't agree with it at all.

MR. CARNEY: And I think this is just an example, Mr. McCrea, of how you're misleading the jury by trying to infer that these were Papageorge's words. This is an example of the improper questioning of the witness by implying that it's Papageorge's words when now we read the

sentence just before it and it's clear that they weren't Papageorge's words at all, but some unnamed individuals who we don't even know the names of. I don't think the names are in this memo. How can I cross examine some unnamed people? This is total, totally improper.

Q. (By Mr. McCrea) Dr. Kelly, would you go to page 116?

A. 16 this time?

Q. Yes, sir.

A. Yes, sir.

Q. Can you identify the exhibit?

A. Yes. I haven't seen this until this trial. It's a letter from Dr. Kimbrough to Dr. George Levinskas of Monsanto dated October the 15th, 1971.

Q. Do you know what did -- In the second paragraph, and you state you have not seen this until this date?

A. That's to the best of my recollection. I may have, but it doesn't fit itself in my consciousness.

Q. Okay. It says, "Does Monsanto have a cytology screening program?" Do you know what is meant by that?

A. Yes. It means can you screen -- I presume she's talking about bladders. Again, I'll answer this question and then I'll read the whole letter out. It says here, "Does Monsanto have a cytology screening program?"

Yes, that, we did have one for an entirely different product in which we were looking for a potential bladder carcinogen, and that means you take urine, urine, centerfuge it down, stain the sentiment and look for bladder cells. Now, first paragraph we go to, "Enclosed"--

Q. Let me ask this. Does this relate to PCBs, this document?

A. I don't think so because the next one --

Q. All right.

A. You say, "Enclosed is a copy of the article on bladder cancer in the U. K. that I mentioned on the phone," and following that is this article 117, "Bladder Tumors in the Electric Cable Industry," and I read that four different times and I don't see PCB in it at all. So I don't know what it's doing in here.

Q. At the bottom she says, "For the sake of completeness, I'm also enclosing the summaries of two articles which I am sure you have seen. Both articles report some findings on Aroclor 1260 Lot AK-3." Do you know what she means by that?

A. I don't know. It certainly wasn't this one because this doesn't mention Aroclors or PCBs at all.

Q. Then it says, "Let me know if you need any Aroclor. We seem to have more than sufficient for our studies."

A. I don't know what she meant. I mean --

Q. Okay.

A. And frankly this is, just to clarify this, this article that she says, "Enclosed is a copy of the article on bladder cancer in the U. K. that I mentioned on the phone." That's Kimbrough to Levinskas, and the article under your plaintiff's exhibit pages 117 and 120 does not mention Aroclor or PCBs any place.

Q. I read those and that also is my understanding.

A. Good.

MR. CARNEY: Are you saying --

A. Why is it in there?

MR. CARNEY: The article that starts on page 117 of Exhibit Six is the enclosure?

MR. McCREA: I don't know.

MR. CARNEY: Okay.

Q. (By Mr. McCrea) But what I was concerned with, Dr. Kelly, does this statement, "Does Monsanto have a cytology screening program," apply?

A. Yes, but not for PCB people.

Q. What is cytology? What does that mean? Is that urine?

A. Looking at cells. It could be urine. It could be a pap stain from women for cancer. They cough up

stuff. That's cytology. You're looking for the stuff that's under the microscope.

Q. All right. Are you familiar with the article written by J. G. Vos and J. H. Koeman of which the, I guess you would call it an abstract, appears on page 121, but not the full article?

A. Yes, sir, I am.

Q. On this date do you recall if there was anything in that article with which you disagreed?

A. No, sir, I don't think so.

Q. Dr. Kelly, are you familiar with the article written by J. G. Vos and R. P. Beems, B-e-e-m-s, that appears on page 122 again in which only the abstract of the article is provided and the full article is not?

A. Am I familiar with it?

Q. Yes, sir.

A. Well, yes, but I believe on this particular one I would need more information if the next question is going to be do I agree with all the findings. I don't know.

MR. CARNEY: I'm going to object to the prior question where you asked if Dr. Kelly agreed with the prior article. He said he didn't disagree with it, but I think that's an overbroad question because I'm sure it has at lot of statements in it. We don't have the full article here,

so I would object to the form of the question as being overbroad.

Q. (By Mr. McCrea) Do you recall the question as to the article on page 121, Dr. Kelly? I asked you if you agreed with that article.

A. Well, I agreed with the abstract, but there wasn't, I would have to know more about it from going over the whole article to know if I agreed with his findings.

Q. Fair statement, and I think that's an appropriate clarification. Now, Dr. Kelly, with respect to the article on page 122 again with regard to the abstract, is that information with which you were familiar during the time you were with Monsanto as medical director and do you agree with the information contained in that abstract?

A. Well, there again because he is talking about--

MR. CARNEY: Objection to the form. It's compound, but go ahead.

A. He is talking about, could be lesions, but I would have know no more about them because that certainly has not been a very positive thing in the examination of animal toxicity reports.

Q. (By Mr. McCrea) Would you -- And we've got some fine print here, Doctor, and your eyes are probably better than mine, but would you read the, what appear six

sentences down on the first paragraph? It says, "A subsequent study revealed the presence of tetra- and pentachloridibenzofuran in Phenoclor and Clophen."

A. Yes, sir.

Q. Is that a reference to what we earlier referred to as furans?

MR. CARNEY: I'm going to object. It may call for this witness to speculate.

A. Yes, sir, but also this again is a fallacy of looking at the abstract because Phenoclor and Clophen are either Italian, German or French pentachlorphenyl, and during the body of this article he says we didn't find these things in the Aroclor. That very little significant statement is not listed in this abstract, but it's in the body of the literature.

Q. All right, sir.

A. Tetrachlorbenzenes in the European PCBs, not in the Monsanto PCBs.

Q. But I believe --

A. Under the analysis done in 1971.

Q. I believe you stated Monsanto tested its PCBs and did find furans?

A. Later on, but this man did not find it.

Q. All right, sir. And we've been over that; fair?

A. That doesn't mean we can't go over it again.
Q. Will you turn to page 123?
A. Yes, sir.
Q. Do you recognize this document?
A. I really don't.
Q. Do you recognize the names which are written on page 123, the last name L-e-i-s-y it appears, Richard and the last one I can't read?
A. I recognize Richard here. As I said, he was in research before. I don't know the other people, but obviously one's a general manufacturing superintendent of the East St. Louis plant and the other is a manufacturing manager which is right below him.
Q. And in looking at this document, you do not recognize it as having been something you have read before?
A. I may have, but every department in the company has what they call their manufacturing processes, and so I might very well have seen it.
Q. All right. Would you go to page 125?
A. Yes, sir.
Q. It has a Roman numeral three, "Toxicity" in the middle of the page. Underneath that -- You see that?
A. Yes.
Q. Underneath that it says, "The following toxic rating code will be used in describing the toxicity of

these materials, 0 - none; 1 - slight; 2, moderate; 3, high' U - unknown." In the first chemical is --

MR. CARNEY: I don't have a record. I'm on the wrong page.

MR. McCREA: 125.

MR. CARNEY: Okay.

MR. McCREA: Do you have 125?

MR. CARNEY: Yes, I have it now.

Q. (By Mr. McCrea) Then the first chemical which they discuss is biphenyl, code 82601. Do you see that?

A. Yes, sir.

Q. And in six it says, "Toxic Hazard Rating, Acute Local: U." That means unknown. Is that correct?

A. Yes.

Q. "Acute Systemic Ingestion, 3." That means high; correct?

A. Yes, that's what he says, but I don't agree with him at all.

Q. "Inhalation"?

A. Three.

Q. Three, high. "Chronic Local: U," unknown. Do you not agree with that?

A. No.

Q. Categorization?

A. It's --

MR. CARNEY: Let me object before you answer.

A. It's not a high toxicity.

MR. CARNEY: Let me just object, Dr. Kelly, before you answer the question.

A. Okay.

MR. CARNEY: This is a document that the witness did not author. He doesn't know if he saw it while he was employed by Monsanto. Some of the people that did author it, I notice a Mr. Savage, I know he's still with Monsanto, but, and you're obviously free to take the depositions of people that have knowledge of this document. This witness doesn't know about it. He would have to speculate as to what the authors meant by these designations, number one, and you know, we don't know whether these -- If we don't know what they meant by these designations, it's pretty hard to speculate as to the significant of any of this. I think we've got the wrong witness again.

Q. (By Mr. McCrea) Do you know who -- This says, "Prepared by: R. M. McCutchan." Do you know who he was, Dr. Kelly?

A. No, I don't know who he is. He's not in the medical department.

Q. Would you go to page 130? You recognize this document?

MR. CARNEY: I take it your question is did he see this document when he was employed?

MR. McCREA: Correct.

A. I really don't remember this at all. It doesn't say who it's from. It doesn't say the date on it. I don't know anything about it.

Q. (By Mr. McCrea) All right. Do you see paragraph three?

A. Which page?

Q. Page 130.

A. Yes, sir.

Q. And does that state, at least in this document, "All plasticizer customers were notified on December 31, 1971 of our intention to discontinue PCT." What does that stand for?

A. I don't know what it means, but unless they had a different name for the plasticizer use of PCBs. I don't know, but they're talking about PCB, so I'm sure that it's PCBs.

Q. Does that refresh your memory as to the plan of action with respect to eliminating the PCBs in plasticizers?

A. Well, yes, but I don't know if there were any other plans. This is undated, so I mean, it's obviously sometime after December 31st, '71. I don't know if there

were other plans of action of which I wasn't privy. I may not have known about it.

Q. All right. Will you go to page 131?

A. Yes, sir.

Q. The second to the last paragraph it is stated, "We have been in close touch with the Federal Interagency Task Force under Dr. Edward J. Burger, Jr.'s direction. This task force, task force is preparing to issue a report on PCBs about mid-February. We will be allowed to work with them in its preparation." Do you have any understanding of Monsanto's involvement in working with the Federal Interagency Task Force?

A. No, sir, I was not involved with it. I may have seen reports, but I don't know Monsanto's involvement.

Q. You go to 133?

A. Beg your pardon?

Q. Page 133, Dr. Kelly.

A. Yes, sir.

Q. Do you recognize this document?

A. I recognize what it is. It's a letter from Howard Bergen undated, obviously sometime before January the 15th, 1972. I don't know any more about it than that.

Q. All right. Were you aware that Monsanto was requiring its purchasers such as Westinghouse, General Electric, McGraw Edison to indemnify Monsanto in case

Monsanto got sued for PCB damage to the environment for health effects?

A. No, sir, I wasn't. Is that in here?

Q. Yes, sir.

A. No, sir, I don't know anything about that.

Q. All right. Can you identify the document on page 141?

A. 41?

Q. 141.

A. Well, it's a letter from --

MR. CARNEY: Well, again --

Q. (By Mr. McCrea) Can you identify it? Have you seen that before this date?

A. I may have seen it. I saw it yesterday. I took this home last night, but I don't recall it, no.

Q. Before that date did you see it?

A. No, I don't recall it.

Q. Do you have any working knowledge as you testify here today about requests of the U. S. Environmental Protection Agency for a list of Monsanto's customers who purchased PCBs?

A. No, sir, I do not have a working knowledge. In fact, no knowledge at all.

Q. Will you go to page 143? Do you know the gentleman who wrote this letter whose signature appears on

page 145?

A. Mr. T. Katayama?

Q. Yes, sir.

A. No, sir, I do not.

Q. Is this a Monsanto Chemical Company document?

A. Mitsubishi Monsanto. I don't know if that's fully owned by Monsanto. I thought it was 50-50 or maybe it was 51-49. I don't know.

MR. CARNEY: Don't speculate, Doctor.

A. What?

MR. CARNEY: Don't speculate.

A. I said I don't know, but it's not a Monsanto document. It's Mitsubishi Monsanto Chemical Company.

Q. (By Mr. McCrea) He states on page 145, the second to the last paragraph, "The grand funeral of PCB in Japan is close at hand," and that was written on March 22, 1972. Did you have any knowledge as to the approach of the Japanese with respect to PCBs on this date?

A. No, sir, but you must remember, in Japan they had an awful lot of trouble from eating the material, eating the Japanese material.

Q. All right. Can you go to 146?

A. Yes, sir.

Q. Have you seen that article, that letter written by W. B. Papageorge before this date?

A. Yes, the last 48 hours or 24 hours.
Q. But not while you were serving as medical director of Monsanto?
A. Not that I recall. I found 93.
Q. What's that? You found 93?
A. I said I found number 93 that I was worried about.
Q. Would you like to go back and discuss it?
A. No, thanks. I think we discussed it pretty fully.
Q. Would you go to page -- First of all, can you identify the document that appears on page 148?
A. Yes, sir. Page 148.
Q. Yes, sir.
A. Did you ask me would I identify it?
Q. Yes. Do you remember this document?
A. No, sir, I do not.
Q. All right. Will you go to page --
A. I saw no carbon to me on this. Yes, sir.
Q. All right. Would you go to page 151?
A. Yes, sir.
Q. The fourth paragraph on that page which begins, "On the basis of available evidence," do you see that?
A. Yes, sir.

Q. It says, "On the basis of available evidence, it would appear that PCBs pose less of an acute toxic health hazard than many substances not proposed for your list, and at the levels found in the total environment are not a threat to public health. We believe these views agree with the conclusions reached by the Interdepartmental Task Force on PCBs in its report dated May 1972 (CCN-72-10419)." Do you know who participated on the Interdepartmental Task Force in preparing that report?

MR. CARNEY: I'm going to object. It's again reading a sentence in a multipage letter that this wasn't authored by this witness or copied to him.

Q. (By Mr. McCrea) Do you know who participated on the Interdepartmental Task Force?

A. Well, the Interdepartmental Task Force is not a Monsanto task force. It's a government task force, so I do not know who those people are. Whether any Monsanto people were invited to participate, I don't know. I was not. I don't recall anybody from the medical department. So the answer to your question is no, I don't know.

Q. (By Mr. McCrea) All right, sir. Do you recognize the document which begins on page 154 titled "Minutes of Meeting on Proposed PCB Effluent Standards, February 28, 1974"?

A. No, sir, I don't.

Q. On page 157 there's a reference to E. S. Tucker. Was he the gentleman who did your analytical analysis?

A. Yes, sir. That's Scott Tucker.

Q. Did he do analytical analysis on PCB levels in the blood of your workers on any other, on more than one occasion or just the one occasion which he reported in 1972?

A. As long as I was there that's all he did. Whether he did more after I left, I don't know.

Q. Dr. Kelly, in this document, did you participate in this?

A. No, sir, I don't believe I did at all. I don't think I ever saw it.

MR. McCREA: Break.

(Thereupon, a short recess was taken.)

Q. (By Mr. McCrea) Dr. Kelly, I direct your attention to page 174, a document dated March 12, 1974.

A. Page?

Q. 174

A. Yes, sir.

Q. Is the author of that letter the attorney for Monsanto?

A. He was one of them. He was our environmental attorney. He's not associated with them anymore. I think

he's in a private law practice.

Q. The next page is the beginning of an affidavit of W. B. Papageorge?

A. Yes, sir.

Q. And that affidavit goes to page 189 where it is signed. See that?

A. Yes, sir.

Q. I'd like to ask you one question about the affidavit, and that relates to the third paragraph on page 184.

MR. CARNEY: Let me just state for the record that this is an affidavit dated March 14, 1974.

Q. (By Mr. McCrea) Dr. Kelly, do you have page 184?

A. Yes, sir, I do.

Q. The third paragraph on page 184 states, "We note in `Water Quality Criteria, 1972,' in those sections pertaining to polychlorinated biphenyls, the frequent use of unpublished data and the disturbing use of qualifying phrases such as `may adversely affect,'" which is in quotes, "Apparently related," which is in quotes, or "The work suggests," which is in quotes. "In our opinion, none of the discussions present, present adequate data to support establishment of responsible effluent standards for PCBs." My question to you, Dr. Kelly, is: Did Monsanto

take the position in 1974 that these qualifying phrases were not sufficient to establish --that because of these qualifying phrases, there was not sufficient data to set effluent standards for PCBs?

A. I can't answer that because I do not know.

Q. All right. Will you turn, please, to page 190?

A. Yes, sir.

Q. Does this post-date your employment at Monsanto? The date on the top of the page I see is December 9, 1974.

A. Yes, it does, and whoever wrote it, obviously my departure didn't make much impression on them because he copied me in.

Q. I didn't notice that. Where are you copied?

A. Right below Bratsch, Engman, Fort, Kelly, Levinskas and Savage.

Q. All right. Did you get -- Did you actually receive this document?

A. No, sir. In fact, I don't --

Q. Do you know who authored this?

A. I don't know.

Q. Is this a Monsanto form?

A. Well, it's Monsanto stationery.

Q. Is it a memorandum type form?

A. Yes, sir, interoffice communications.
Q. The names two and then there are six names including yourself. Is that correct?
A. Yes.
Q. Was it authored by Papageorge and Wheeler?
A. I can't make -- I just don't know. I don't know who it is.
Q. All right.
A. Those two names are up there, but I don't know. I'd like to see the second page, but there isn't any fall, any second part of it.
Q. This states in paragraph two that -- In paragraph one it discusses a meeting with NIOSH. Can you explain to the jury the function of NIOSH?
A. It's the National Institute for Occupational Safety and Health. It's a research arm of the government in the Department of Health, Education and Welfare.
Q. It says the original purpose was to explore whether Monsanto had a suitable occupational group for study to assess the potential chronic affects of PCBs. To your knowledge, before this date had there been any study of workers in America to determine chronic effects of PCBs?
MR. CARNEY: I'm going to object to the form of the question as to what you mean by study.
A. Well, if you consider what I did when I

examined the people who were presently working in the department, if that's called a study, fine. I don't know when the Zack study was done. I don't know if that was before December. No, it wasn't done before December of 1974 because it was done after I left there. She wasn't there when I was there, so I would say mine was the only one and that, as I said, it's not anything I would term a study. It was just a report on the health status of the present workers at the PCB plant at East St. Louis.

Q. All right. This says, "What this would involve is obtaining work histories of time spent in PCB departments and medical records of active and still-living inactive employees." Is that correct?

A. Yes, sir.

Q. And they also make reference to examination of death records?

A. Yes, sir.

Q. And they say, "The study was stimulated by a report from Dr. Kimbrough, that she had found an alarming rate of liver cancers in rats fed Aroclor 1260."

A. Yes, to the female rats, yes, none in the males.

Q. Do you know if Monsanto agreed to make their employees available for a suitable occupational study of chronic effects of PCBs?

A. Oh, I'm sure they did because I've seen letters and I know that the people from NIOSH came down and walked through the plant and said, "You don't have enough people here. We don't think it's feasible to do it." Yes, we made everything available, everything they wanted. That presumably, whether this caused Zack, caused the subsequent medical director to have Zack do it or not, I don't know.

Q. We go to page 191.

A. Yes, sir.

Q. Have you seen this document before today other than cursory review?

MR. CARNEY: Again, I think all the documents from page 190 through to 262 in this Exhibit Six now post-date the retirement of Dr. Kelly, so I think I just note that for the record so that it might make things go a little faster.

Q. (By Mr. McCrea) You see the second paragraph on page 191, February 3, 1975, letter from Dan A. Albert to Papageorge?

A. Yes, sir.

Q. It says, "We have in the past" -- "We have had in the past workplace meetings with our employees explaining proper use of Interteen and telling them unless it is consumed, it presents no real danger to them." Do you agree with that statement?

MR. CARNEY: I don't know what you mean by agree with it. Did you read the words correctly? We're talking about a document.

Q. (By Mr. McCrea) You agree with the accuracy of that statement?

MR. CARNEY: Well, I just want to object for the record that here we're now getting into documents that are, were generated after Dr. Kelly retired from Monsanto and reading out -- He didn't get the document. He didn't see it. He didn't write it. To ask him questions about documents will take an awfully long time that he didn't have any involvement with.

A. Will you ask -- May I answer now?

Q. (By Mr. McCrea) Yes, sir.

A. Well, this is by a Westinghouse staff supervisor. He writes this on February the 3rd, 1975. There are at least three letters in this batch of exhibits on plaintiff's exhibits from Wheeler to Spiker in which we have explained to him dating back as far back, I think, as 1969 what the problem, what the problems were, the toxicity were, the safe handling of data, the maximum allowable concentration, that was all given to him.

Now, I don't know whether Albert was right or not because it depends on what the exposure was. I don't know what his exposure was, so I don't know whether Mr. Albert

was accurate in his statement or not, but he, Westinghouse certainly had all the opportunity in the world to know about the toxicity of Inerteen because they even carried out some of their own work back before 1940.

Q. Do you agree --

MR. CARNEY: Just for the record, I think we ought to note that Albert doesn't appear to work in the Bloomington plant.

MR. McCREA: He works in South Boston, Virginia where they make PCB transformers.

MR. CARNEY: I don't think any of the plaintiffs worked in that plant, just for the record, so the jury isn't confused.

Q. (By Mr. McCrea) Dr. Kelly, do you agree with the accuracy of that statement?

A. Well, it all depends on what you mean. I don't know what his exposure level is. Suppose he has -- If this were in our plant, I would have had a workplace meeting with our employees saying proper use of Interteen will present no real danger, yes, that's true. Unless you eat it, so he -- I don't know if you, he said explaining the proper use of Interteen that's used properly, there is no real danger.

Q. Okay. Then you have to define what is meant by using it properly; correct?

A. Well, using it according to our instructions is properly.

Q. All right. Will you go to page 192? Did anyone from Monsanto show you these questions shortly after you finished working for them?

A. No, sir, not that I recall at all.

Q. Would you focus on question two? And this comes from Westinghouse. Would you consider this a report of problems? Question two, it says, "Several hourly employees have mentioned recently that many chemicals such as Interteen cause sterilization after a prolonged use. Is this true?"

A. No, it's not true. I mean, is it true that they mentioned it or is what?

Q. No, is that true?

A. Is the statement true?

Q. Right.

A. I don't know anything about Inerteen causing sterilization.

Q. All right.

MR. CARNEY: Well, I note for the record it says, "Chemicals such as Interteen." It doesn't identify the other chemicals.

Q. (By Mr. McCrea) All right. You go to question six. It says, "There is one employee in our plant

who had no problem whatsoever with Inerteen years ago. After six years of using, now when he works in Inerteen (which is a part of his job) he develops a swelling on the inner bicep of his left arm, only in one location. Could this be from Inerteen or not? It goes away as soon as he gets out of the Inerteen. It is similar to the swelling after taking an injection."

A. Is there a question?

Q. What would your response be to that question?

MR. CARNEY: If he had been employed at Monsanto back then?

MR. McCREA: Correct.

MR. CARNEY: And got that question?

A. I would say conceivably maybe he had an allergic reaction. I do not know why it would be just on one spot on his arm unless he has got some job where he leans on a rail or something in that job and he gets contamination, but I can't conceive of any other reason. An allergic local reaction comes and goes that way, and it's only in one spot.

Q. (By Mr. McCrea) All right. Will you go to page 195? And that is a letter from Papageorge to Albert; correct?

A. Yes, sir.

Q. Will you go to page 196? Do you see the

questions of Mr. Albert repeated in answers from Monsanto to Westinghouse?

A. Yes, sir.

Q. Is the answer to question one -- Do you agree with the accuracy of the answer to question one?

A. May I read it?

Q. Yes, sir.

A. Yes, I would agree with it. I don't believe that I would say that polychlorinated biphenyls has not been recognized as skin irritants. It all really depends if you consider paint remover an irritant. If you get that on your hands enough, it's literally efficient paint remover. I think it could detach your skin. With that exception, the rest of it looks all right with me.

Q. You agree with the, specifically with the last sentence in the next to the last paragraph, "Although chloracne is difficult to evaluate in animals, in humans this takes the form of comedones (large blackheads with typical acute pustules) and may be an external symptom of overexposure preceding serious," and serious is underscored, "liver injury"?

A. It may be and maybe not. The majority of chloracnes in industrial work have not been associated with overexposure, but for the sense of completeness, he put it in.

Q. You agree with the last sentence, "Animal data and human experience indicate that the toxic effects are similar whether exposure results from ingestion, inhalation of vapors or absorption of the liquid material through the unbroken skin"?

A. Yes, sir.

Q. Question two says, "Several hourly employees have mentioned recently that many chemicals such as Inerteen cause sterilization after prolonged use. Is this true?" Answer: "There is no evidence that polychlorinated biphenyls cause sterilization in humans."

A. I agree with that. That's true.

Q. Is there evidence that polychlorinated biphenyls cause loss of libido?

A. It has been reported by the workers. Whether it's true that that was the cause, I don't know.

Q. Question three, "Since Inerteen affects birds and other animals, if there is no real effects to human beings, how do you explain it to employees in such a way that they will understand why it can kill a bird and not a human?" Answer: "There is a potential real effect to humans including death." Do you agree with that?

A. Well, as discussed in number one.

Q. As discussed in the answer to question one.

A. Yes, but he could answer that, they could put

that answer on to any industrial chemical made in the United States. Potential? What potential? One in a million? It all depends on what you do with it. If you take a bath in it, if you swallow it, a pint of it. So that would -- That's my comment on that statement. Now, you want the second part?

Q. I don't think there's a question. The second part of the answer?

A. Yes.

Q. Would you like to comment on it? If you would like to comment on it, you may. I don't have a question to address to it.

A. Well, I think that they could probably explain to them that the problem with the birds has been the thinning of egg shells, and that particular mode of reproduction is certainly different than the humans.

Q. All right. Question four, "If an employee spills Inerteen on his clothing and later takes the clothing home to be," I think that's washed, "With other clothes, will this have any effect on he or his family and should he carry his clothes home to be washed?"

Answer: "There should not be any effect on an employee or his family from home laundering of work clothing. If washed with other clothing, there may be residual odor of the chlorinated hydrocarbons in the

clothing." You agree with that answer?

A. Yes, sir.

Q. Shouldn't Papageorge have told him that that's an unsafe practice for a worker to have PCBs on his clothing and that if a worker gets PCBs on his clothing, it should be changed immediately?

A. I think he answered the question that was asked him. I don't believe he wanted to go into a discourse about all safe handlings. Here is 12 questions they asked him and he gave information to a non-technical people, person so he could answer the questions.

Q. Do you consider it safe for a worker to get Inerteen on his clothing and wear it?

MR. CARNEY: That's not the question that was asked here.

MR. McCREA: No, it's not.

A. It all depends how much. Yes, if his clothes were dredged with Inerteen, he shouldn't wear them, certainly not.

Q. (By Mr. McCrea) Are you familiar with articles in the literature back in the 1930s which stated that clothes worn by a worker should be washed separately from the family clothes?

A. They're talking about chlorinated naphthalene, Mr. McCrea.

Q. Well, if it says chlorinated diphenyl, are they talking about chlorinated naphthalene?

A. Every time they use the term chlorinated diphenyl, they have proceeded it by saying naphthalene and/or diphenyl. It's never -- There's nothing in the literature back in the '30s that said chlorinated diphenyl alone.

Q. Question five: "Employees carry Inerteen home on the soles of their shoes and complain quite a bit about the affect Inerteen has on wearing out their shoes. Is this a serious problem? Will Inerteen in the soles and leather of shoes over a long period of time have an effect on the feet and skin since the shoe is the only protective equipment we wear on our feet and the Inerteen penetrates through the leather?"

Answer: "There should not be polychlorinated biphenyl on the floor for workmen to contaminate their shoes to carry home. The plasticizer or solvent action will destroy or shorten the life of the shoes. More importantly, the wearing of contaminated shoes could lead to absorption of the liquid through the soles of the feet as though, as through any other unbroken skin surface."

A. Yes, sir, I agree with that.

Q. Do you think it's a serious problem?

A. Well, if they -- It all depends. If it

happens all the time, certainly it's serious.

Q. Question six --

A. Also, if there's that much on the floor, that's a serious problem.

Q. Question six, we've already addressed that one, I believe. The answer to question six which was the fellow that had the swelling in his arm, "We do not believe there can be any association between a swelling of the inner bicep of the arm and exposure to polychlorinated biphenyls."

A. Well, I would disagree with that. I think I would say this man may be getting some of the transformer fluid in this particular area and he's allergic to it. If it goes away when he leaves and when he comes back it's in the same spot, that's an allergic reaction. It can't be anything else.

Q. Question seven: "Are there hand cleaning solvent materials that we should be using when working in Inerteen to coat our skin before working in it and to wash it off after we finish working in it? Please give your recommendation. Our employees working in Inerteen are not able to use gloves since it is an assembly area. Even if they could, the Inerteen would destroy the protective glove."

MR. CARNEY: Just so we're clear, Mr. McCrea,

you're not claiming that these questions are questions that employees at the Bloomington plant had, are you?

Q. (By Mr. McCrea) No. Answer: "We assume the question refers to the use of barrier creams rather than a hand cleaning solvent. There are a number of barrier creams available to protect workers against water insoluble solvents. Probably the most effective include silicone to provide an impenetrable shield. A problem with such creams is that they may offer a false sense of security. Proper use includes a discipline which requires liberal application at the beginning of a work shift and after each washing of hands during the work day." Do you agree with that answer?

A. Yes, sir, I agree with it. I also agree -- I might be more positive in saying we really don't think the barrier creams are all that good, but if it's the best you've got, do it. I also think that at that particular time, I'm not sure whether Neopreen gloves were, could to be used or not. I don't know whether that was in, could not be used, couldn't be used with Inerteen or not be dissolved by the material. I'm not sure.

Q. We go to page 199. Do you identify -- Do you recognize and can you identify the document?

A. Yes, this is the "Hygienic Guide Series" put out by the American Association of Industrial Hygiene on

Chlorodiphenyls containing, 42, 54 and 42 percent chlorine.

Q. We go to page 201.

A. Yes, sir.

Q. Roman numeral four, "Medical Information, A, Emergency Treatment: Skin surface is exposed to chlorodiphenyls." That's PCB; correct?

A. Yes, sir.

Q. "Should be thoroughly washed with soap and water at once." Do you agree with that?

A. Yes, sir.

Q. "If clothing has been contaminated, it should be removed promptly." Do you agree with that?

A. Well, it all depends what you mean by promptly. I mean, I wouldn't pull it off as though it had battery acid on it or something like that, but. . .

Q. Define promptly for us.

A. Well, I think you'd have to ask them how they're using it. My idea of promptly might be entirely different than theirs. I might say within a reasonable time. Then he'll ask me what is reasonable. Well, if the man is going to go to lunch in a half an hour, he can certainly, depending on how much he's got on his clothes, he can wear it, use it for a half an hour.

Q. So you would --

A. If it happens every day, that's a different

thing.

Q. You would define promptly as what, half hour?

A. No, promptly would be any reasonable man would assume to be prompt. Now, I can't say because you weren't telling me how much is on the clothes. You're not telling me how far the man is from where he's going to change the clothes, if he's got a set of clothes right next to him or if he has to walk a quarter of a mile. So there are all sorts of variables, and I cannot quantify that.

Q. Go to column two under B, "Special Procedures." Do you see that, the last paragraph?

A. Yes.

Q. The last sentence, "Persons with known liver disease should not be exposed to repeated contact with the chlorodiphenyls." Do you agree with that?

MR. CARNEY: I'm going to object. It doesn't define -- I'm sorry. Where are you reading from, the last? Okay. I'll withdraw the objection.

A. Now, again --

Q. (By Mr. McCrea) Now, Dr. Kelly, do you agree with the accuracy of that statement?

A. Well, I've got to define what contact is -- I mean, what repeated is. Is repeated every day for a year? I don't think anybody should be exposed to repeated contact with chlorodiphenyls whether they have liver disease or

not. We warn against repeated or prolonged skin contact.

Q. Did Monsanto advise prospective employees of that particular special procedure?

A. Well, we wanted them to avoid repeated contact, so I think we were more conservative than these people. They just said people with known liver disease should not be exposed. We say everybody should not be exposed to repeated contact with chlorinated diphenyls.

Q. Did you screen potential employees by determining if they had known liver disease before they started working in PCBs?

A. I think we gave these individuals the same examination we gave any of our industrial workers.

Q. I'll ask it one more time.

A. Well --

Q. Did you screen prospective employees for the existence of known liver disease before they started working in PCBs at Monsanto Company?

MR. CARNEY: I'm going to object to it. You haven't spelled out the time frame.

MR. McCREA: From 1936 to 1974.

MR. CARNEY: And this question has been asked and answered several times today.

A. We did not screen the employees who worked in the PC department for liver disease any more than we

screened anybody who came to work in the chemical plant for liver disease, pre-existing liver disease.

Q. (By Mr. McCrea) Would you turn to page 203? Have you examined in detail before today's date the documents relating to the IBT studies contracted between Monsanto and IBT?

A. Well, what documents do you mean, Mr. McCrea? Do you mean the reports?

Q. Yes, sir.

A. Well, the reports came before I left. I read the reports. There were other reports that came after I left.

Q. Have you seen this document and reviewed this document before today, the April 18, 1975 letter from J. C. Calandra to Dr. George Roush, Jr.?

A. I don't think I have.

Q. Was Calandra indicted along with Wright for falsifying studies at IBT?

A. I don't know if he was.

Q. Have you seen the document on page 204 before today which goes 204 through 208?

A. I may have, but I'm not sure.

Q. Do you have any present recollection of having seen that document before today's date?

A. I may have. I mean, I don't know.

Q. All right. Fair answer. We go to page 209. Before today's date, have you reviewed this document which is a letter from George J. Levinskas to Dr. J. C. Calandra dated July 18, 1975?

A. Again, I may have seen this in conjunction with some of these depositions, but I don't recall whether I have seen it before. I believe I have seen it, but I don't recall when.

Q. Have you seen the data on page 211?

A. No, this I have no recollection of having seen.

Q. Page 212. Have you seen this document dated August 4, 1975 which is a letter from J. C. Calandra, president of IBT, to Dr. George J. Lavinskas, manager, Environmental Assessment and Toxicology, Monsanto Company?

A. Again I may have.

Q. Did J. C. Calandra agree to -- In paragraph one he states, "We will amend our statement in the last paragraph on page two of the Aroclor 1254 report to read, quote, 'does not appear to be carcinogenic', quote, in place of, quote, 'slightly tumorigenic', quote, as requested."

A. What was the question about that, that you --

Q. Are you familiar with the fact that your former company requested IBT to change the wording on the

results of their studies?

A. Well, just a moment. The answer is yes, but you have picked out one sentence and implied that they have edited all these studies and there's two other articles or two other reports he called the material non-carcinogenic. This one and 1254, he said slightly tumorigenic. So Lavinskas wrote them and said, "Let's get the wording together on all the same."

As far as the company would be concerned, I think the sentence "does not appear to be carcinogenic" would be worse for Monsanto than slightly tumorigenic, and after all, the problem with the Aroclor, the discussion or the debate about the Aroclor toxicity studies was a presence or absence of carcinogen, of cancers. That was what -- They were reviewing all the material to see does this material cause cancer in the livers of the rats.

So the answer then was if it doesn't say it -- Now, it might have been better to say slightly tumorigenic, but does not appear to be carcinogenic, well, I don't think that would hurt anybody, but I believe they wanted, if the condition, if it were true in 40, in 60 and 42, and they wanted the reports to read all the same if that were true.

Q. Is that testimony based on information given to you by George Lavinskas?

A. Yes, I've talked to George about it.

Q. Did George know that slightly tumorigenic was a positive finding indicating a positive result indicating a positive action by PCBs?

A. I'm sure he did, but remember, we are talking about the problem and this was do these PCBs cause cancer in the liver of rats. Kimbrough said they do. Our work at Bio-Test showed they don't.

Q. Would you also --

MR. CARNEY: Would you let him finish?

MR. McCREA: Yes, I will.

A. And so tumor, slightly tumorigenic does not mean cancerous at all.

Q. (By Mr. McCrea) What does it mean?

A. It means they are hepatomas which are, could be considered a localized overgrowth of normal liver cells. That's what hepatoma is.

Q. Is that something that is unwanted in a liver?

A. Well, I think anything -- Yes, it's unwanted.

Q. What does does not appear to be carcinogenic mean?

A. Does not look like it causes cancer.

Q. Is that a negative finding?

A. Well, I don't know. It's pretty positive. If you say, "I don't believe there's any cancers here," that's pretty positive, isn't it?

Q. Positive that it doesn't cause cancer?
A. Yes, that's right.
Q. But sightly tumorigenic is absolutely a crystal clear communication that PCBs do, in fact, cause that?
MR. CARNEY: Cause cancer?
MR. McCREA: No.
MR. CARNEY: In rats?
Q. (By Mr. McCrea) Cause these slightly -- that PCBs are slightly tumorigenic.
A. But then we would have to get down to the reports on the 1254, and let's see how many there were here and let's see whether that same English was used on 1260 and 1242.
Q. It was, wasn't it?
A. Well, I don't know. Let's see it. I don't know.
Q. All right. Go ahead. Look at it.
A. Where is it?
Q. They changed the wording in all the reports, didn't they?
A. No, I don't think so. It was just talking here about 54.
Q. All right. You don't think they changed the wording on any other reports?

A. Well, I don't know. Let's see the reports, Mr. McCrea.

Q. All right. Well, let's go to the letter.

MR. CARNEY: Mr. McCrea, the problem is you're showing him documents. This is six months at least after Dr. Kelly retired from the company, and if you want to ask him about what's in a report and whether it was changed or not, I think you ought to show him the report. That would be the best evidence of it. Then we don't have to speculate about whether it was changed or what it said.

Q. (By Mr. McCrea) Go to page 209 to determine whether or not Monsanto changed the wording on the reports for 1242, 1254 and 1260.

MR. CARNEY: Well, I'm going to object to Exhibit 209 indicating what was done on the reports. This is a letter from Dr. Lavinskas to Dr. Calandra. I think the best evidence of whether a report was, some wording was changed -- I might add it's insignificant. I don't know why we're wasting time on this slight word change, but the reports would be the best evidence.

Q. (By Mr. McCrea) If a doctor came up to you and he said, "Dr. Kelly, we've done a" --

A. Which doctor by the way? Who?

Q. If a doctor came up to you --

A. Oh, okay.

Q. And said, "Dr. Kelly, we've done a magnetic resonance imaging on your grandchild and he has a slightly tumorigenic condition in his liver," would that concern you?

A. Certainly it would, but the point is you are talking about a completely different situation. On a magnetic resonance imaging you can't tell whether that tumor is a cancer or not. Certainly it would concern me, but here we have got microscopic sections which show that this is not a cancer.

Q. Dr. Kelly --

MR. CARNEY: And we're talking about rats here, not a grandchild.

MR. McCREA: We're talking about the word slightly tumorigenic and the impact that would have on the reader.

MR. CARNEY: But the slightly tumorigenic is a reference to a rat.

MR. McCREA: Which Monsanto wants the public to accept as being valid with regard to conditions in human health.

MR. CARNEY: Well, I think -- I don't think Monsanto cares whether you use -- Does not appear to be carcinogenic is not inconsistent or at odds with slightly tumorigenic. I think you're acting like these two phrases

are at odds with each other, and I think Dr. Kelly is saying they aren't.

Q. (By Mr. McCrea) We'll let a jury determine whether or not those mean the same thing. All right. Now, with respect to whether or not they changed the wording on other reports --

A. Who is they by the way?

Q. IBT.

A. All right, all right.

Q. At the insistence of Monsanto.

A. Well, I don't know whether there's been any insistence. In the first place, he suggested it. In the second place, this letter that you wrote on July the, or was written by George Lavinskas on July the 18th, 1975 said the previous conclusion of slightly tumorigenic was changed to does not appear to be carcinogenic. Now, I don't know at whose insistence that was changed. Do you have a letter there showing that Lavinskas wrote them and said change these other two?

Q. Yes, I do.

A. May I see it?

Q. All right. The second paragraph, Dr. Kelly, of the July 18, 1975 letter from George J. Lavinskas to Dr. J. C. Calandra states, "In two instances, the previous conclusion of, quote, `slightly tumorigenic,' quote, was

changed to, quote, 'does not appear to be carcinogenic.'"

MR. CARNEY: What page are you reading from?

Q. (By Mr. McCrea) Page 209. "The latter phrase is preferable. May we request that the Aroclor 1254 report be amended to say, quote, 'does not appear to be carcinogenic.'" That letter would indicate that two previous conclusions were changed and that he is requesting that a third change for Aroclor 1254?

A. It doesn't indicate that at all to me because I don't know who changed that. It might very well be that -- After all, they're in there testing for cancer, so it might very well be that IBT decided we believe it's wiser to put down does not appear to be carcinogenic if you're doing a carcinogenic study, and they didn't do it on 54 and that's why George wrote them and said the latter phrase is preferable, and I didn't see anything in there about insistence on this stuff.

Q. Go to page 211.

A. Yes, sir.

Q. Does that show three columns, one, the product; two, the supplemental report that was mailed; and three, the supplemental report that JCC delivered?

A. Yes, sir.

Q. And for Aroclor 1260 did the mail report contain the conclusion slightly tumorigenic?

A. Yes, sir.

MR. CARNEY: I'm going to object here. You're looking on a summary of some reports and it seems to me it would be better to have the actual reports be the best evidence of what's in there.

Q. (By Mr. McCrea) And did the supplemental report which was delivered by Calandra contain the conclusion does not appear carcinogenic?

A. Yes, sir, but it doesn't say at whose option this was put in. You were going to give me a letter where Lavinskas wrote about 1260 or 1242 asking for a change in those two studies and --

Q. I'll try and locate that between now and tomorrow.

A. Fine. I'd be happy to see it.

Q. Aroclor 1254, the supplemental report which was mailed contained the conclusion slightly tumorigenic. The supplemental report which was delivered also contained the phrase slightly tumorigenic. And do you understand by the letter of July 18 that Lavinskas is requesting a change of that conclusion for 1254 from slightly tumorigenic to does not appear carcinogenic?

A. It's not a change in the conclusion. What he is doing is saying, "Let's have all the reports read the same." If that's -- If they're not carcinogenic, let's say

it. They're running this test because there was a reevaluation of the test because there was a dispute whether these materials were carcinogenic, and if you're running a test looking for cancers and you don't find any, I think the thing to do is to say you don't, it isn't carcinogenic. It think in the NCA work they said, with 1250, NCI, National Cancer Institute, with 1254 they said under the, under the circumstances of this test, 1254 is not carcinogenic.

Q. Is there a question to you, Dr. Kelly?

A. I thought there was.

Q. On Aroclor 1242 the supplemental report stated slight tumorigenic. The hand delivered report from Calandra was changed to does not appear carcinogenic. Is that correct?

A. That is correct on this statement, yes.

Q. Dr. Kelly, have you ever requested a change in a conclusion of a laboratory doing toxicological work?

MR. CARNEY: You're implying that there was a change in the conclusion. I think that mischaracterizes the record.

MR. McCREA: Well, I understand that your position is that the word slightly tumorigenic and does not appear carcinogenic mean exactly the same thing.

MR. CARNEY: No, what I am saying is I don't

think they're inconsistent, you know. It's not like saying it's carcinogenic and then saying it's not carcinogenic which is, I think, the implication you're trying to give.

MR. McCREA: No, tumorigenic as opposed to not causing cancer which he said is a positive finding. Tumorigenic is a positive finding which indicates a health problem. Does cause, does not appear, does not appear to be carcinogenic indicates no health problem.

MR. CARNEY: Well --

MR. McCREA: Slightly.

A. No, it doesn't. Are you quoting me? That isn't what I said.

MR. McCREA: All right.

A. You are putting words that are entirely different than I have testified to.

Q. (By Mr. McCrea) What does slightly tumorigenic mean?

A. Means there is a small amount of tumors found in the test animals that were not malignant, were not cancer.

Q. Is that a physiological change?

A. It may be.

Q. Is that a physio --

A. And it may be pathological because after all, hepatoma is made up of liver cells. It's not a change in

the cell. It's made up of liver cells, normal liver cells.

Q. Is that a change in the liver?

A. Yes, it's a change in the liver.

Q. Is that a change in the liver caused by PCBs?

A. It's caused by lots of things, but it could be caused by PCBs, yes.

Q. What does does not appear to be carcinogenic mean?

A. It means that it does not appear to be, that PCB does not appear to cause cancers in the test animal.

Q. And from that can you detemine if there were any changes in the liver?

A. No, sir. Remember, we are looking to see whether they're cancerous or not and you are quibbling about phrases and I'm saying that here the National Cancer Institute used the same phrase in describing 1254, does not appear to be carcinogenic under the details of, under the, this program of their testing. They use that term.

Q. Did you -- Did Monsanto inform the government of this change?

A. We gave the government every report we had.

Q. Dr. Kelly, has Monsanto made any independent reviews of the work done at IBT as a result of Paul Wright's indictment?

MR. CARNEY: I'm going to object here. You're

now going back to IBT and I thought we covered that for a couple of hours. I don't know what day it was, but one of the last five days.

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

A. I know only from an anecdotal point of view, and my answer to that is they have, that they have reviewed and done work on the toxicological work on products of theirs that were suspected or alleged by the government to be affected by the IBT people. Neither of those two -- One was TCC which is a soap bacteria stat and the other was an agricultural chemical, and they, I've never seen any subsequent reports, but I have been told that the results were consistent with what IBT found and PCB was not involved in the case, so they did not recheck it.

Q. Dr. Kelly, would you go to page 224? Have you seen this document?

A. I haven't got up to it yet.

Q. All right. 224.

A. Yes, but I've got to see the document.

Q. I understand. I'm trying to help you out on the page.

A. Well, I don't know what form I've seen this document. It says, "Background Information on Polychlorinated Biphenyls" by NIOSH. I don't know if that was part of the material that went into the proposed

criteria document by NIOSH or not. I don't believe I've seen it in this form as we've got here, 28 pages. It doesn't say where it was published or anything else.

Q. Would you go to page 229?

MR. CARNEY: Why don't we -- If we're going to another page, we're almost finished with the tape, and it's about quarter till six. I think we've been going since 8:30 or close to that. That's when we were supposed to start. I guess we got started a little bit late. I think that's a pretty long day, and I believe just --

MR. McCREA: Are you saying you'd like to stop? I mean, that's fine with me.

MR. CARNEY: Well, I think we're within a few minutes of the end of the tape. I think you've indicated, so the jury will know when there's light at the end of the tunnel on this thing, that you've thought you could complete or you indicated you were sure you could complete this cross examination in three more hours. Is that correct?

MR. McCREA: Correct.

MR. CARNEY: Okay. Why don't we quit for the day.

MR. McCREA: Agreed.

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