IN THE CIRCUIT COURT
TWENTIETH JUDICIAL CIRCUIT OF ILLINOIS
ST. CLAIR COUNTY

FRANCES E. KEMNER, et al	)	
	)	
Plaintiffs,	)	
	)	
VS.	)	No. 80-L-970
	)	
MONSANTO COMPANY,	)	
	)	
Defendant.	)	

Before the HON. RICHARD P. GOLDENHERSH, Judge

REPORT OF PROCEEDINGS

JURY TRIAL

July 17, 1985

APPEARANCES:

MR. REX CARR and MR. JEROME SEIGFREID
on behalf of the Plaintiffs;

MR. KENNETH R. HEINEMAN and MR. JOSEPH NASSIF
on behalf of the Defendant.

KIMBERLY GANZ, CSR, RPR, CM
Official Court Reporter

BE IT REMEMBERED, that on July 17, 1985 the same being one of the regular judicial days of said court, the above-entitled cause came on regularly for hearing before the HONORABLE RICHARD P. GOLDENHERSH, one of the Judges of said court, at the St. Clair County Building, 10 Public Square, in the City of Belleville, St. Clair County, Illinois. Whereupon the following proceedings were had:

(The following proceedings were had in the hearing and presence of the jury).

THE COURT: Good morning.

GEORGE ROUSH

having resumed the witness stand, being previously sworn, testified further as follows:

CROSS EXAMINATION

By

MR. REX CARR.

Q. Doctor, I will show you what has been marked 1510A and ask you if that is a blowup of 1510 which we had discussed yesterday?

A. Yes, sir.

MR. CARR: I offer 1510A.

MR. HEINEMAN: Your Honor, may we incorporate our same objections with respect to 1510?

THE COURT: So incorporated. Admitted over

objection.

MR. CARR: And I also offer 1511, Your Honor, which is the Krummrich Plant bulletin that had identified.

MR. HEINEMAN: Your Honor, we would object to the document in that it is incomplete. I know that Mr. Carr has the complete document from which this was taken. We don't, it is obviously a Monsanto WGK day newsletter and so we are not objecting on the basis of authenticity but we think the full document ought to be used and not use this excerpt. In addition to that, Your Honor --

MR. CARR: If we might approach the bench and counsel point out what he thinks that is relevant that should be included, I might agree with him.

THE COURT: Gentlemen, will you come up here, please, and I will take a look at it also.

(Bench conference had out of the hearing of the jury.)

THE COURT: That is the one paragraph.

MR. CARR: What do you think is relevant that should be included?

MR. HEINEMAN: I think the whole statement ought to be included.

MR. CARR: What statement?

MR. HEINEMAN: The whole statement that they have

made with respect to the update.

MR. CARR: Even though the Supreme Court suspended it.

THE COURT: I am not including that. There is no way I am including that. What do you feel about this one sentence, well, two sentences, I guess, that are in your excerpt other than that.

MR. CARR: Well, the one sentence deals with the venue, the suspension about it.

THE COURT: That is not --

MR. CARR: The other one is WGK made the material leak from the train car in Sturgeon.

MR. HEINEMAN: I want the whole statement included.

MR. CARR: The Judge has said that he is not going to include this statement about the Supreme Court action. Do you want the sentence WGK made the material which leaked from the train car at Sturgeon?

MR. HEINEMAN: My statement is I want the whole portion of it included and if the whole thing is not going to be included then I object to it on the basis that it is incomplete and it is misleading.

THE COURT: Objection is overruled.

MR. CARR: So I may state for the record, Your Honor, the only part of this that I am using that I consider

relevant deals with the doctor's contention and Monsanto's contention and Suskind's contention that no significant health problems arise from being exposed to dioxin and that the workers have been fully informed and that is the part that I have taken. The other part relating to this case that I have not taken is this part quote the Sturgeon trial has been suspended by the Illinois Supreme Court. Monsanto maintains that year long lawsuit at trial should be tried in Boonville, Missouri, where the train car leakage of ortho-dichlorophenol occurred. Carr maintains it should remain in St. Clair County. WGK made the material which leaked from the train car in Sturgeon, end of quote. That is the only portion relating to this matter that I have not included in this Exhibit 1511. I don't think that it is relevant and that this court should necessarily advise or inform this jury about the suspension by the Supreme Court because it was not suspended that had anything to do with the fact that the trial should be tried in Boonville, Missouri. The Supreme Court has made it clear that the Supreme Court did not suspend this trial to start with. That this court suspended this trial because of not knowing the reasons for the Supreme Court action and for Monsanto to put into the record of this case something that is not material to and not related to the issue that I want to discuss and inaccurate at that would be

improper and I think the Court's action is appropriate.

MR. HEINEMAN: I am sorry, Judge. Did you overrule the objection?

THE COURT: I did overrule the objection. Yes, I did.

(The following proceedings were had in the hearing and presence of the jury).

THE COURT: The Plaintiffs' Exhibit 1511 is admitted into evidence.

Q. Doctor, both 1510. Doctor Roush, both 1510 and 1511 contain statements made by representatives of Monsanto relating to the health of the Krummrich Plant employees, do they not, sir?

A. Yes, sir.

Q. And both statements are based primarily upon the results of Doctor Suskind's study of the Krummrich Plant workers in 1979 and '80, isn't that correct, sir?

A. No, sir.

Q. Is there some other statement of Doctor Suskind, that is on the Krummrich Plant workers, that he studied these workers anything other than the September 29, 1980 report that he made?

A. No, sir.

Q. Well, then his only statement relating to the

health of those workers, most of necessity, be based on the study that he performed in October of 1979 and reported to you in September of 1980, isn't that correct, sir?

A. Yes, sir.

Q. Then it is true as I stated it that his statements are based upon the study that he performed in 1979 and reported in 1980, isn't that correct, sir?

A. Yes, sir.

Q. Yes. And, Doctor, in this document, 1510 and 1511, you refer to the Sauget Plant employees and their health and you tell them and the world that they were found to have no significant health problems, did you not, sir?

A. Yes, sir.

Q. And, Doctor, this statement that you made at the time you made this statement, you had a copy of the analysis of the Suskind study that we performed or we made in this case, did you not, sir?

A. Yes, sir.

Q. And you in making this statement totally nill, in other words, the laboratory findings, the porphyrin findings, and the symptomatology reported by those workers, did you not, sir?

A. No, sir.

Q. Did you mention those abnormalities and the

symptomatology of the workers in either of these 2 statements, sir?

A. No, sir.

Q. Then you paid no heed and gave no reference to and gave no weight to the symptomatology and these laboratory abnormalities, isn't that correct, sir?

A. No, sir.

Q. What weight did you give to the multiple abnormalities reported by the laboratory?

A. Doctor Suskind reviewed them.

Q. Doctor Suskind didn't mention them, Doctor Roush. I am asking you now in making this statement, you ignored the laboratory findings that we pointed out to you by the document that we gave you in June, did you not, sir, and gave no weight to those findings, did you, sir?

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

Q. You gave no credence, you gave no effect, you considered these findings insignificant, did you not, sir, of no significance as relating to the health of the Krummrich Plant workers?

A. Doctor Suskind did that, yes, sir.

Q. And did you not -- well Doctor Suskind did not see the analysis that we performed, did he, sir, unless you have sent it to him. Did you send it to him?

A. No, sir, I did not.

Q. He did not see it, he was not aware of the analysis that we had performed upon his, on his medical records and his lab reports, isn't that correct, sir?

A. That is correct.

Q. So, you are the ones, Monsanto, you at Monsanto are the ones that gave no weight and no significance to the multiple findings that we pointed out existed in that exhibit, isn't that correct?

A. Yes, sir.

Q. Now, you also make the statement and you made it yesterday that Suskind found, he made the statement in 1511 that Suskind found insignificant health problems and in point of fact as we pointed out yesterday, Suskind made no mention of the health, either the existence of health problems or the non existence of the health problems other than chloracne and relating some lipid findings and some SGOT findings to chloracne, isn't that correct, sir?

A. Yes, sir.

Q. Doctor, the information in 1511 that is contained about the Suskind 1980 report, is that the sum total of the information that you at Monsanto have given the employees of Monsanto relating to Suskind's report?

A. I don't know.

Q. Do you have any information as to any other information given to these workers at Monsanto relating to Suskind's 1980 report?

A. Not direct.

Q. Do you have it indirect from somebody in your company?

A. The plant supervisory personnel have the responsibility to explain.

Q. Do you have indirect knowledge that came to you from somebody in your company?

A. No, sir.

Q. All right. Then you have no knowledge either, no information either direct or indirect that the 1980 report was communicated to or given to the workers other than this exhibit 1511, isn't that correct, sir?

A. No, sir. I have nothing else.

Q. And, Doctor, then is it a fact that because I am advising you that I sent a copy of your 1980 report to the union and a copy of our analysis of it, is that then the only information that you are aware of to date, since 1979 up to 1985, the only information your employees have of what Suskind found in this 1980 report, the only information is what they have received from the Plaintiffs attorneys in this case so far as you know, sir?

A. Yes, sir.

Q. Don't you think, Doctor Roush, that you owed them the duty to send them a copy of this report and not me? I have no obligation to those workers. I neither represent them nor have a case against you for them. Why should it fall upon me to give them a copy of a report that you had since 1980, sir?

A. Would you repeat that question for me?

(The Court Reporter read back the last question.)

MR. HEINEMAN: Excuse me. I would like to object to the question. I am not clear on it. Is he wants Doctor Roush to give his impression of what Mr. Carr's motivation was in sending the report to the workers --

MR. CARR: If Doctor Roush wants to do that, that is perfectly all right with me but that is not what I have asked him. I asked him in essence, counsel, why Monsanto hasn't given this information to its workers.

THE COURT: You may proceed, Mr. Carr.

A. Because the report is not complete.

Q. Doctor, we have explored that yesterday.

A. Yes, sir.

Q. And there is nobody on earth that has said that it is incomplete and nobody said it was incomplete until we brought it out in June of 1985. You didn't say it. You had

no memo. You had no writing. Doctor Suskind didn't say it. He was never advised of it that you felt it was incomplete. You never sent him a single thing so that excuse doesn't wash, Doctor Roush. Is there some reason other than the fact that you think it is an incomplete report that you didn't send it to the workers? Is there any reason other than that, sir?

MR. HEINEMAN: Your Honor, I object to Mr. Carr's statement. I ask that the jury be instructed to disregard it. He apparently overlooked the doctor's testimony with respect to his oral communications with Doctor Suskind in which he said it was incomplete and he apparently didn't mention that and I object to his statement as being misleading and it should be stricken from the record.

THE COURT: Objection is overruled. It was not misleading.

Q. Doctor Roush, did you ever tell Doctor Suskind that this report was incomplete?

A. Yes, sir.

Q. And when was it you told him that, sir?

A. Everytime he asked for the final payment for his study.

Q. Doctor, you have already said that you sent him or ordered it sent to him his final payment?

A. In the last month.

Q. Yes, and he hasn't given you any different report, has he, sir?

A. No, sir.

Q. So, therefore, he still insists this is the final report?

A. He said let's consider it the final report.

Q. He did say let's consider it the final report. Thank you, Doctor Roush. Because I am sure that that is the fact. He did say that is the final report, didn't he, sir?

A. When we talked, the last month, he did.

Q. Indeed he did and you paid him for it, didn't you?

A. Yes, sir.

Q. Now, you are not waiting for an additional report from Doctor Suskind, are you, sir?

A. Yes, sir.

Q. You are?

A. Yes, sir.

Q. Didn't he just, didn't you just say that he said this is the final report?

A. He said consider it the final report.

Q. Didn't you just say that, sir?

A. Yes, sir.

Q. If that is considered the final report, sir, why

are you waiting for an additional report?

A. Because he told me he is working on a report.

Q. When did he tell you he started working on that report?

A. When we went to see him a couple weeks ago.

Q. Aha. So he started working on it a couple of weeks ago?

A. No, sir. He had been working on it.

Q. So you went to visit him personally, is that right?

A. Yes, sir.

Q. And before you told me it was over the telephone, Doctor Roush.

A. No, I didn't.

Q. You didn't?

A. No, sir.

Q. Well, I misunderstood you then because I asked you did you have any telephone records of it or any memos of it and you responded no, that you did not.

A. That is right.

Q. I asked if you had any writing of it and you said no, you did not. When did this visit take place, sir?

A. In the last 2 or 3 weeks.

Q. Be a little more specific, sir. It took place during the time we were in recess, didn't it?

A. Yes, sir.

Q. And took place after you received my analysis, isn't that correct, sir?

A. No. I don't know. I don't know the relationship between the two.

Q. And who went with you, Doctor Roush?

A. Doctor Nassif.

Q. Doctor Nassif? You mean Joe Nassif the attorney here?

A. Yes, sir, and Mr. Snively.

Q. And Mr. who?

A. Snively.

Q. And who is he, sir?

A. He is a Monsanto lawyer.

Q. Another lawyer?

A. Yes, sir.

Q. So two lawyers and you went to Suskind and talked about this report that he gave to you in September of 1980?

A. No, sir.

Q. Isn't that what you just said you did? You and these 2 lawyers went to him and talked about this report?

A. We went to talk about his study, not his report.

Q. Isn't this report part of his study?

A. It is a result of his study.

Q. You went to him to talk about this study?

A. Yes, sir.

Q. As characterized by this report, didn't you, sir?

A. That is part of it.

Q. And you sat down in his office and you told him hey, look, this September 29, 1980, report that you have given us, Carr has pointed out that there is multiple laboratory abnormalities that you haven't mentioned. There is multiple porphyrin abnormalities that you haven't mentioned. There is multiple symptoms that you haven't mentioned. How about that, Doctor. Will you not give us a report in which you mention these and discard these findings of Carr's? Isn't that the essence of what this conversation was that took place between you and Doctor Suskind?

A. No, sir.

Q. Did you have a copy of my analysis with you, sir, either you or Nassif or Snively?

A. I don't recall.

Q. Give me your best memory, sir?

A. I don't recall.

Q. Doctor Roush, do you know when the document was given to you?

A. I don't recall the date.

Q. I don't care about the exact date. The document

was given to you in the week following our recess, Doctor Roush.

A. Yes, sir.

Q. You went to Suskind sometime after that, did you not, sir?

A. Yes, sir.

Q. Yes. And did you not discuss with Doctor Suskind the fact that we had reported in this document or had reported these multiple abnormalities?

A. Yes, sir.

Q. Yes, indeed you had. And this whole visit to Suskind and at the time you visited him, he told you that is or that is considered the final report, didn't he, sir?

A. No, sir.

Q. Oh, didn't he say -- Isn't that what you said, sir? Didn't you just say that he told you let's consider this the final report?

A. That is so he would get payment for it and that is all.

Q. Doctor, if you withheld payment all these years because it wasn't a final report and he said well let's consider this the final report, you said okay now we will pay it and you have ordered the payment of it, haven't you, sir?

A. Yes, sir.

Q. Then you, in fact, do agree, you and he both agreed that this is to be considered the final report. He said let's consider it the final report and you said okay, here is your payment. Isn't that exactly what took place, Doctor Roush?

A. Yes, sir.

Q. And then you asked him or during the course of the same conversation you said this document that Carr has prepared is embarrassing to us. It shows multiple abnormalities. It is something that we have not revealed to our workers. We haven't told them about these abnormalities. We haven't given them this thing but we are sure Carr has or will. Can you not prepare us something to offset what he said here in this report? Isn't that the essence of what also went on in that conversation, Doctor Roush?

A. No, sir.

Q. Oh, didn't you discuss with him preparing that report discussing these abnormalities?

A. We discussed further studies of his.

Q. Didn't you discuss -- I want a direct response to that question, Doctor Roush. Didn't you discuss with him these abnormalities and that he should write a document referring to or disregarding or pointing out that these

abnormalities are of no consequence?

A. No, sir.

Q. You discussed the abnormalities with him, didn't you, sir?

A. Yes, sir.

Q. And he agreed to write you an additional paper, didn't he, sir?

A. No, sir. He was already preparing it.

Q. He was what?

A. He was preparing that paper before we went. We went there because he was doing it.

Q. What precipitated this preparation of this paper?

A. I don't know why he started it.

Q. Well, Doctor, isn't it, did you have any communication with him after I first announced in this courtroom, after I got this study from you all and announced to you in cross examination of you and others that I had it and that it had a bearing on the health of the workers? Isn't that when you contacted Suskind and the first time after 1980?

A. No, sir.

Q. How long did he tell you he was working on this report, this additional report?

A. I didn't ask him how long he had been working on

it.

Q. What did he indicate to you? What were his exact words as near as you can recall with regard to this so-called additional report?

A. I don't think we brought up how long he had been working on it.

Q. What were his words, sir, with regard to this additional report?

A. He had been working on it.

Q. What were his words? I have been working on it? What did he say to you, sir?

A. I don't recall specifically.

Q. Recall as best you can. Give me your best recollection now, Doctor Roush, what he said.

A. I don't recall him saying anything more than he had been working on it.

Q. Doctor, he must have said something more than that. The conversation came up. He said consider this final report and pay me for it?

A. No, sir.

Q. And you said okay, I will pay you for it. Then somewhere along the line somebody must have said because I know you already said that you knew of my analysis, of the nurse's analysis of it. You already knew that so somewhere

along the line that subject must have come up in the conversation, Doctor Roush.

A. When we were in Cincinnati.

Q. Or at any other time, Doctor Roush?

A. No, sir.

Q. It never did come up in the conversation either then or before or after, is that right, sir?

A. Yes, sir.

Q. This additional report?

A. The additional report, yes.

Q. And its relationship to these abnormalities?

A. No, sir.

Q. Doctor, what did he do? Just come out of the blue then and say well I am working on an additional report without you bringing it up?

A. On the phone out of the blue.

Q. On the phone. Now, Doctor, you told us a minute ago that it was at this meeting that you had with him in Cincinnati?

A. No, sir.

Q. This was on the telephone. Now, was this before or after your meetings in Cincinatti?

A. Before the meetings.

Q. And how much before the meeting was it, sir?

A. I don't recall.

Q. Your best judgement. Was it a month, a week, a year, 3 years?

A. One to two months.

Q. All right. It was since I started putting on the evidence as to the health of your workers in these past months since March, isn't that correct, Doctor Roush?

A. Yes, sir.

Q. Was it before or after you started to take the witness stand?

A. I think he called me after that.

Q. Yes. And, Doctor, all of this business with Doctor Suskind, then, came up after you started testifying as to the health of these people at Nitro and at Sauget, isn't that correct, sir?

A. I believe so.

Q. Yes, indeed.

MR. CARR: I have no more questions of you, Doctor Roush.

THE COURT: Mr. Heineman.

CLARIFICATION EXAMINATION

By

MR. KENNETH R. HEINEMAN.

Q. Doctor Roush, let's talk about these series of

conversations with Doctor Suskind in which there was mention that he had already started working on another report or on an additional report with respect to the Krummrich people. Now, did there come a time when you received a call from the University of Cincinnati recently regarding final payment for the Suskind study and report at Krummrich?

A. Yes, sir.

Q. All right. Now, let me understand something, if I might. You had a contract with the University of Cincinnati, did you not, sir?

A. Yes, sir.

Q. Okay. Now, Mr. Carr keeps talking about you, George Roush, paid Ray Suskind. He keeps mentioning that, doesn't he? But, as a matter of fact, the contract exists between Monsanto Company and the University of Cincinnati, correct?

A. Yes, sir.

Q. Now, Doctor Suskind is paid a salary by the University of Cincinnati, correct?

A. Yes, sir.

Q. And I am sure there are expenses that he incurs in connection with the study of this kind that may be reimbursed by the University of Cincinnati, is that right?

A. Yes, sir.

Q. But the payment for the study is between Monsanto and the University?

A. Yes, sir.

Q. Correct. Who is it that calls you from time to time about the payment under that contract?

A. Mr. Curtain, the financial officer.

Q. Who?

A. Mr. Curtain, the financial officer.

Q. Employed by whom?

A. By the University.

Q. All right. So it isn't Suskind that came and asked you for the payment as Mr. Carr referred to it, is it?

A. No, sir.

Q. It is Mr. Curtain?

A. Yes, sir.

Q. Of the financial Department at the University of Cincinnati?

A. Yes, sir.

Q. Now, what is it under this contract that Monsanto had that gave you at Monsanto the right to withhold some of the payment for that study?

A. The only way we can make sure we are going to get a final report is to withhold 10 percent of the total payment.

Q. Was that understood between Monsanto and the

University of Cincinnati?

MR. CARR: I would object. The best evidence, of course, would be a contract.

Q. At the beginning?

A. Yes, sir.

THE COURT: The question is sustained. Would you rephrase the question, please.

MR. CARR: Do you have a copy of the contract?

MR. HEINEMAN: I am sure we do, somewhere.

MR. CARR: That would be the best evidence, counsel.

Q. Doctor Roush, did you have any conversations with Doctor -- Mr. Curtain is it?

A. Yes.

Q. With Mr. Curtain relating to that payment, that 10 percent withheld payment?

A. Yes, sir.

Q. On how many occasions, sir?

A. Many occasions.

Q. Half a dozen?

A. At least.

Q. Over what period of time?

A. Since 1980.

Q. All right. And what did you tell him?

A. I said we must have the final report before we are

going to pay you.

Q. All right. So he as far as you knew understood that the reason you haven't come up with the other 10 percent of the payment was because you didn't have a final report?

A. That is right.

Q. Now, did you ever discuss that with Doctor Suskind personally that you didn't have a final report from him?

A. On a few occasions.

Q. All right. As many occasions as you discussed it with Mr. Curtain?

A. No, sir.

Q. To your knowledge, sir, was Mr. Curtain in touch with Doctor Suskind with respect to your communication to him about wanting a final report before you would come up with the money?

A. Yes, sir.

Q. Now, when was the most recent time that there was a conversation with Mr. Curtain about coming up with the money?

A. I can't recall. I had a phone call from him in the last -- whle I have been over here that I didn't answer his call about the same time that said call from Suskind asking for the money.

Q. All right. So as I understand it, during the time that you have been over here, either testifying or preparing

to testify, you received a phone message from Mr. Curtain?

A. Right.

Q. You did not return that call?

A. No, sir.

Q. But instead you had a call from Ray Suskind?

A. Yes.

Q. And Suskind asked you for the money?

A. Yes.

Q. Now, this occurred before the meeting that you had with him?

A. Yes, sir.

Q. Now, what did you tell Doctor Suskind on that occasion?

A. That we had to have the final report.

Q. Now, is that the occasion, by this I mean the phone call with Doctor Suskind before you went and had the meeting, is that the occasion when he asked you to consider the September, 1980, document a final report for the purpose of paying him?

A. For the first time he said that.

Q. Now, during that conversation, did he mention that he was doing any additional work on the study?

A. Yes, sir.

Q. All right. Is that what caused the visit? Why did

you go visit him?

A. To find out what he was doing.

Q. Now, so you went to visit him during the time when you were off the stand, is that right, when there was a break in the proceedings?

A. Yes, sir.

Q. You had learned about this work that he had done or he was doing during the time when you were either preparing to testify or testifying, is that right?

A. Yes, sir.

Q. So you couldn't go see him then. So the first chance you got you went to see him and you went with Joe Nassif and Dave Snively, is that right?

A. Yes, sir.

Q. Now, did you discuss with him during that visit what he was working on?

A. Not in any detail.

Q. What was the purpose of the visit other than finding out what it was he was working on?

A. To find the status of it.

Q. To find the status of what, sir?

A. Of the study.

Q. All right. And what did you learn?

A. Not much. What he has done is he has got Vicky

Hertzburg, the computer statistician who did the statistical analysis for the Nitro study, and she is the one who is now putting the data into place and they are doing a re-evaluation of the entire study.

Q. Now, isn't it at that point during the meeting that he discussed that he had already -- excuse me. He told you on the phone call he had already been --

A. Yes, sir.

Q. Working on it. Before the meeting?

A. Yes, sir.

Q. But what you found out in the meeting was what it was he was doing?

A. Right.

Q. He didn't tell you, as I understand it, when he and Vicky had begun this additional work?

A. No, sir.

Q. Now, in connection with the report or the WGK day document that Mr. Carr showed you, that Exhibit 1501?

MR. CARR: 1511, counsel.

MR. HEINEMAN: 1511?

MR. CARR: If you are talking about the last one.

MR. HEINEMAN: Yes, where is that. Is that up here?

A. No, sir.

MR. HEINEMAN: This is the one.

MR. CARR: 1501 is the request from the union for a copy of the report.

Q. 1511 is this portion of this WGK day sheet, is that right?

A. Yes, sir.

Q. Now, Mr. Carr asked you if that was the only communication that you were aware of that any of these workers had received relating to the results of the Suskind study and examination?

A. Yes, sir.

Q. Is that right?

MR. CARR: That isn't what I asked. I asked whether or not that was everything they had about the Suskind report.

Q. Doctor, you remember that Mr. Carr went over with you the fact that Doctor Suskind wrote letters to the people whom he examined?

A. Yes, he did. He wrote letters to 80 of them.

Q. He wrote letters to 80 of these people?

A. Yes, sir.

Q. And he also sent copies of the results of the examinations to their personal physicians?

A. Yes, sir.

Q. And that was understood at the outset, wasn't it?

A. Yes, sir.

Q. That that was going to happen?

A. Yes, sir.

Q. That he was going to report the results of his examinations of these people to their personal physicians and to them individually?

A. Yes, sir.

Q. So at least with respect to the people who were involved, who actually were examined and volunteered and agreed to participate in this study, they received some information from Doctor Suskind with respect to what he found?

A. Yes.

Q. Now, you did not receive any copies?

A. No, sir.

Q. Of that, did you?

A. No, sir.

Q. And you don't know what it was that Doctor Suskind told those people, do you?

A. Only that if they had something they should be told about their health status, that would definitely be included. If it was something that should be followed up, he was going to do that.

Q. What is the basis of that understanding of yours?

A. Because he is a physician who was acting independently in the study of these workers. Completely independent. He talked to the employees so that they knew that that examination was between him and them, not Monsanto and them. He thought that he would get more information from them than they might tell us.

Q. So that was something that was set up at the very outset?

A. Yes, sir.

Q. When the examinations occurred in the first place?

A. Yes, sir.

Q. And that would have been in 1979, October, I guess?

A. Yes.

Q. Now, you were talking this morning about what plant supervisory personnel tell the workers with respect to information they may have. Is there, to your knowledge, a practice that the plant supervisory personnel communicate regularly with the workers?

A. Yes, sir. That is their responsibility.

Q. And what is it that they tell them?

A. They will tell them communication --

MR. CARR: Unless the witness has some first-hand knowledge, I would object to it. I assume he is telling hearsay and I would object unless he has first-hand knowledge

of it.

THE COURT: Can you rephrase the question. Objection is sustained.

Q. Are you aware of the practice of what is communicated between the plant supervisory personnel and the workers?

A. Yes, sir. There is a procedure written that it is their responsibility.

Q. Now, what is it according to that procedure?

MR. CARR: Again, Your Honor. That written procedure would be the best evidence of that and I would object to it. The witness is stating something on the procedure unless he has first-hand knowledge that he was there and he wrote it down.

MR. HEINEMAN: Your Honor, Mr. Carr has been having this witness testimony for 3 days about documents and reports that he had never seen, that he doesn't know anything about and --

MR. CARR: Your Honor, I object to this. Counsel knows as the Court has ruled that there is a proper way to conduct examinations and counsel is not doing it. His objections were overruled when he made those because the procedure that I followed was proper as the Court has held and now counsel is doing something that he knows is

improper. I have the right as counsel knows to cross examine adverse witnesses and refer to anything that he might know of. You in putting on your own witnesses have no right to refer to such documents. You may not cross examine your witness. You may not suggest to him answers. You may not ask leading questions and he is improperly stating objections at this time suggesting that this Court has ruled in one fashion for me and in another fashion for him when this Court has followed the law faithfully.

MR. HEINEMAN: That is not my position at all, Your Honor. My position is that in my opinion, his objection is not well taken and that is what I am objecting to. That is the statement I am making. Not with respect to what this Court's ruling is but with respect to whether his objection is well taken.

THE COURT: I don't think you have laid the proper foundation yet at this point in time. The objection is sustained.

Q. Now, Doctor Suskind -- I got Doctor Suskind on the brain this morning. Doctor Roush, you do not have any personal knowledge, I take it, then, and I think you have previously testified, that you don't have any personal knowledge of what the plant supervisory personnel have told the workers?

A. No, sir.

Q. All right. Now, this document 1511, does this document set forth everything that Doctor Suskind concluded?

A. In the study it is. In his draft report?

Q. Yes.

A. No, sir.

Q. All right. What is it that Doctor Suskind concluded that is not included in that document as best as you can recall it right now?

A. Doctor Suskind concluded that the only significant adverse effects were as listed.

Q. So that this statement in here that said --

MR. CARR: Your Honor, I would ask that the jury be instructed to disregard that because the witness on cross examination was asked to point to the conclusions of the Doctor and he did so and what he is now stating is not a conclusion that Doctor Suskind made in the report and the jury is going to be misled about this statement of Doctor Roush's unless counsel intends to have the witness point out in the report where Doctor Roush made the conclusion -- that Doctor Suskind made the conclusion that Doctor Roush has just said that he did make. Otherwise I will move to ask the jury to disregard it.

THE COURT: Gentlemen, could you approach the bench

for a minute.

(Bench conference had out of the hearing of the jury.)

THE COURT: That answer is really foggy to me as to what is listed where and why and I am going to assume that if it is confusing to me, it probably is to the jury. Before I rule on the objection or if you go further, I would like you to have the witness clarify what is listed where and what he is talking about because that is really sort of an ambiguous type of answer. I don't know if he is referring to this, to the report or saying that is the same or different, what he is talking about.

MR. HEINEMAN: I will ask him what he is talking about.

(The following proceedings were had in the hearing and presence of the jury).

Q. Doctor, would you please explain the last answer you just gave us? Tell us what you are talking about?

A. When Doctor Suskind went back and took -- He did the study and took the results back to Cincinnati and he went through the data, all of the data was there and his purpose was to point out those things in which there is a causal relationship between the workers in the plant and the abnormalities that he found and he recorded those

abnormalities that he thought were related, possibly related to the exposure at the Krummrich Plant.

MR. CARR: I object to that unless the witness is going to relate it to something in this report where he recorded it and where he makes the statement. He is repeating now the same thing in effect that he did before. My objection is that he is saying Doctor Suskind, this could be abnormalities or recorded these findings in his report and in the cross examination that I conducted, he pointed to none except, he can point to none except the relation to chloracne.

MR. HEINEMAN: Your Honor, I think the point that the doctor is trying to make is that Doctor Suskind listed those relationships, those possible relationships that he concluded existed and that he did not list those things which he concluded did not exist.

MR. CARR: That is what counsel is saying, that the report makes no mention, Your Honor. The court has seen the document, the jury has seen the document. The document makes no such mention and I must assume if Doctor Roush is correct, he must be reporting on something that he had a conversation with Suskind recently or with others and I would, therefore, object to that statement. It is obviously hearsay. Doctor Suskind isn't here and it is nowhere in this report that such

a statement occurred.

THE COURT: Objection is sustained.

Q. Doctor, let's talk about the Krummrich study. Now, when Mr. Carr was examining you yesterday, he was asking you if there was any connection between the Krummrich study and the spill reported of certain materials, the 2,4 dichlorophenol spill that occurred in February of 1979. Do you recall that, sir?

A. Yes, sir.

Q. Now, what is it that you know about that February spill?

A. That spill is related to the OSHA inspection in which they found dioxin along the railroad track and whether that spill along the railroad track was a part of the spill that we are talking about in February has never really been established. But when OSHA came as a result of that and said that they had found dioxin in the work environment, and to me a man who is going to be exposed to dioxin if he is going to have an effect, is going to be chloracne. It was a result of the OSHA announcement that we had found dioxin that I wanted to have as clear a definition of the magnitude of the chloracne associated with working with dioxin as I could possibly get. Doctor Suskind is one of the three known experts in the country as Doctor Crow from the U.K. who

recently died. Doctor Taylor from Cleveland and Doctor Suskind. So I had Doctor Suskind come to St. Louis with the primary purpose as a dermatologist to decide whether we had a lot of chloracne or how much and the study he did following that was based on his expert opinion as a dermatologist which would be done in looking at the chloracne.

Q. Now, going back for a moment to this spill, there was a spill of material on a railroad track adjacent to Department 237, is that right?

A. Yes, sir.

Q. Was that cleaned up?

A. The spill was cleaned up, yes, sir.

Q. It was cleaned up right after it happened?

A. Yes, sir.

Q. In February?

A. Yes, sir.

Q. The people who cleaned it up were outfitted in some way?

A. As they clean up all chlorophenol spills.

Q. Now, what were they provided in terms of protective gear?

A. Complete protective gear so they get nothing on their face, they don't breathe it and they don't get any on their skin, hands or feet.

Q. Because of the chlorophenol?

A. That is right and if they get it on them, they are going to get a bad burn. They will get a bad burn just like you can get from a hot stove. It will be a blister and disfiguring and it is painful so we try to keep them from getting any of the chlorophenols on their skin at any time.

Q. Now, that is the protective clothing that you were talking about yesterday that these mean wore when they cleaned up that 2,4 dichlorophenol spill?

A. Yes, sir. That is spelled out in the safety procedure.

Q. Now, that isn't the type of gear that OSHA talked about when they had to put the tape around the department and had the people wear those paper suits and that sort of thing?

A. It was.

Q. That is not the same kind of gear?

A. No, sir.

Q. The paper suit business that OSHA required and it is a non permeable paper, is it not?

A. Yes, disposable.

Q. And disposable. That was done at the time that they reported in June of '79 about their findings of dioxin, is that right?

A. Yes, sir.

Q. Okay. Now, getting back to the way that the Krummrich study itself got started, did you contact Doctor Suskind?

A. Yes, sir.

Q. And you wanted as I understand it to have a world-leading dermatologist examine these people to see if they had chloracne?

A. Yes, sir.

Q. Now, Monsanto gives the people at that plant a physical examination annually, does it not?

A. Yes, sir.

Q. Now, for those that want it. They can refuse, isn't that right?

A. Yes, sir.

Q. But it is offered to them if they want it?

A. Yes, sir.

Q. And in addition to that and in the course of that examination, a physician at the plant does a physical exam of them, is that right?

A. Yes, sir.

Q. They take X rays and that sort of thing?

A. Yes, sir.

Q. And that physician at that time was Doctor Richard Osland?

A. Or else Doctor Paredes worked with him.

Q. Now, I am thinking in 1979?

A. Yes, sir, now.

Q. Doctor Osland and Doctor Paredes were doing those examinations?

A. Yes, sir.

Q. Now, in addition to that, sir, is there such a thing known as the chloracne monitoring program?

A. Yes, sir.

Q. All right. Now, tell us what that is, if you would, please?

A. The people who are exposed to pentachlorophenol are examined on an every 6 month basis and looked for the presence of chloracne and Doctor Osland and Doctor Paredes will treat those if they think it is indicated or if he thinks that it is more than he can handle he will send them off to a dermatologist and usually it will go to Doctor Wallach.

Q. Doctor who?

A. Wallach.

Q. In Belleville here?

A. Yes.

Q. And so Doctor Wallach here treats the people at the plant that have the chloracne?

A. Yes, sir.

Q. And that is paid for by Monsanto?

A. Yes, sir.

Q. Now, this program with respect to the pentachlorophenol workers, how long has that been going on?

A. A long time.

Q. Well, when you say a long time --

A. Longer than 10 or 15 years. I have been with Monsanto for 12 years and it has been much longer. It was ongoing when I came.

Q. All right. Now, Mr. Carr was asking you about the different types of chloracne and the variety in the kind of chloracne that somebody can get. Would you tell us about that, please? What kind of chloracne did you see in the pentachlorophenyl workers at Krummrich?

THE COURT: Before you get into this, is this a good point for a short break?

MR. HEINEMAN: Sure, Judge.

THE COURT: All right. Ladies and gentlemen, we will take a short break at this time. I would remind you as would go for any other breaks that we take that you are not to discuss this matter among yourselves or with anyone outside the panel or as of yet form any opinions or conclusions about the matters on trial. We will be in

recess.

COURT RECESSED:

(The following proceedings were had in the hearing and presence of the jury)

GEROGE ROUSH

having resumed the witness stand, being previously sworn, testified further as follows:

CLARIFICATION EXAMINATION

By

MR. KENNETH R. HEINEMAN.

Q. Doctor Roush, just before the break we were talking about the difference in the severity of chloracne. Would you tell us what those differences are?

A. Chloracne is a condition of the skin that is an effect on the little glands that is largely associated with each hair follicle. There is a little gland that puts out a little bit of oil that keeps the skin oiled and chloracne just as juvenile acne involves that same gland and in chloracne, instead of it being blocked by oil, it is blocked by an overgrowth of the skin itself that grows over it just like oil can block it and when the oil, when that skin grows over that gland, then the cell gets -- that gland gets bigger by virtue of the production of the skin inside the gland. So what makes it get better is the production of skin inside of

that little gland that makes oil. So it doesn't make oil anymore and the difference between that and juvenile acne is that the oil when it blocks off the pore goes on and makes more oil and then bacteria gets down and gets on the oil and that is the reason it gets infected.

In chloracne, there is no inflammation like you get with juvenile acne but it is a disease of the same gland and that is the reason they say that chloracne is much like juvenile acne. Now that is a start. Now, when you get a little bit of chloracne or you get a little bit of exposure to a number of chemicals that produce this reaction including dioxin, the first thing that happens and it is not understood but it usually happens with blackheads along the ridge here, we call the malar ridge on both sides and it is not understood why and I can't give you a good explanation but it is thought that the man does this (indicating) because that is where the glands are but this is where it happens. I can't give you a reason why but it is thought because man puts his hands there and that is the most prominent place and that is where more of the glands are. Then if it gets worse, the blackheads will be found around the ear and around the back of the ear and that is the common places.

And, that is largely what we have at Krummrich. Those people have just the blackheads. Sometimes the next

stage is instead of it having a blackhead and I am not sure why it is but the next stage is the gland will block off, maybe squeezing out the blackhead but then that gland as I said gets bigger by virtue of it going on making more skin underneath inside the gland and that is called chloracne.

Now, if you just have blackheads, we call that mild. If it goes on to the next stage and they get what they call bumps, those bumps, what the bumps are is the actual skin that is inside of that gland. Now, that is the kind of chloracne we see at Krùmmrich. And, it is known and has been known for I don't know 20 or 30 years at least that the workers working with penta do get that kind of chloracne. And nothing else. The dermatological literature is just replete and many reports of that kind of chloracne seem to be people working with pentachlorophenol.

Q. Now, to your knowledge, sir, has there ever been found any 2,3,7,8 TCDD in pentachlorophenol?

A. No, sir.

Q. So that the dioxins that are in penta that cause that kind of chloracne are the higher chlorinated dioxins?

A. Yes, sir.

Q. Hexas and heptas?

A. Right.

Q. Now, there is, is there not, sir, a severe kind of

chloracne?

A. Yes, sir.

Q. All right. Would you describe that for us?

A. In those workers who have been involved in the accidents, in making up 2,4,5-T -- 2,4,5-T is the trichlorophenol that is precursor in making the phenoxy acid, that is a weed killer. So, those workers who are involved in the production of the precursor in making 2,4,5-T, not what we are talking about here, those workers involved in making the trichlorophenol have had a number of serious accidents and I don't know whether it is 10 or 15 episodes around the world in which people have gotten severe chloracne. And severe chloracne is a different breed of cat than what I have just described for you. In those the glands get big instead of being the glands I have describes are the little white heads are one millimeter, 2 millimeter in size. The ones I am talking about now are centimeter size and you have seen people with juvenile chloracne with scars. It is the same kind of thing only even worse. And not they just get it here with more severe exposure, they get it down their back and anyplace that they have got these glands. The interesting thing is you never see chloracne on the arm. You see it about the face and around in the very oily parts of the skin rather than in the lesser ones. But great difference.

The kind of cystic postular type of reactions seen with 2,3,7,8 are not the kind that is seen with exposure to pentachlorophenol where they are being exposed to what we call the higher chlorinated, not 2,3,7,8.

Q. Now, the chloracne that has been observed at the Nitro Plant in West Virginia is the severe kind, isn't it?

A. Well, some of it was that. We had an episode that has been described in the literature. In 1949 we had a bad episode as a matter of fact the first documented accident in which workers have been exposed to the explosion run away of a reaction and they got bad chloracne and they are the ones I have just described to you that have it up and down their back and they really were disfigured. They would have almost every single pore on their skin were plugged and had that white what they call little bumps, because that was making of the herbicide, so each one, they had it bad. After that, after about the first 5 years or less and it is hard to tell when they started going away, but for the last 10 years they did not have any of the bad things that I have been talking about. When the dose was bad, when they got a lot of it they got that bad disease. When they finally got around to finding out what they had to do to clean it up, then they started to get more like the kind of things we saw with pentachlorophenol. 2,3,7,8 is much more production of a bad

reaction to that pili sebaceous gland I have described to you than is the higher associated with the pentachlorophenol.

Q. Now, at the Nitro Plant, you and Mr. Carr had a discussion about whether or not the production there was just another chlorinated phenol. Do you recall that, sir?

A. Yes, sir.

Q. And you denied that as I recall?

A. Yes, sir.

Q. Now, why? Why did you deny that what was going on at Nitro was just another chlorinated phenol?

A. Because the presence of 2,3,7,8 in chlorophenols is dependent on what the precursors are that is required to make the 2,3,7,8 and many of the chlorophenols do not have the chemical reaction take place that produces 2,3,7,8. So, a lot of reactions. You can't generalize it by saying all chlorophenols make 2,3,7,8. Some of them do and some of them do not.

Q. Now, the manufacture of the product at Nitro was in fact begun, was it not, by the hydrolysis of tetrachlorobenzene and not by the direct chlorination of phenol, isn't that correct?

A. Yes, sir.

Q. And that is the process that is going on at Nitro and that is where you believe the 2,3,7,8 was is in the

precursor to 2,4,5-T?

A. Yes, sir.

Q. Now, let me direct your attention, sir, to Plaintiffs' Exhibit 1500 which is the Suskind report with respect to the Krummrich study and I would like to direct your attention, if I may, to Table 3. Do you see that, sir? And it says occurrence of chloracne, doesn't it, sir?

A. Yes, sir.

Q. And it talks about those who reported a history of chloracne out of 106 people?

A. Yes, sir.

Q. It says that 40 people said they had no history of chloracne but 66 people said they did?

A. Yes, sir.

Q. Then it talks about the people with respect to currently, at the time of the examination in October of 1979. At the time that examination took place, it describes the people who actually had the chloracne, correct?

A. Yes, sir.

Q. It says 63 people did not and 43 people did?

A. Yes, sir.

Q. So that of the 66 people or excuse me of the 106 people who were examined at the time, 43 of them had chloracne at that time?

A. Yes, sir.

Q. Now, Doctor Suskind rates the severity, doesn't he?

A. Yes, sir.

Q. Of the chloracne that he saw. 29 people had mild, correct?

A. Yes, sir.

Q. 14 had moderate?

A. Yes, sir.

Q. And nobody had severe, correct?

A. Yes, sir.

Q. Now, what does that tell you, sir, as to whether or not, or does that tell you anything as to whether or not the people who had chloracne when they were examined in October of '79 were exposed to 2,3,7,8 TCDD? What does it tell you, sir?

A. It tells you either that the 2,3,7,8 was very low in concentration or that this had to be due to something else and in this case since we know these are penta workers, this is the kind of chloracne reaction that you see with exposure to the higher chlorinated than non 2,3,7,8 exposure.

Q. Now, you say we know these are the penta workers, is that right? Isn't that what you just said?

A. Yes, sir.

Q. Now, would you look at Table 7 and it says

occurrence of chloracne by department, correct?

A. Yes, sir.

Q. Now, with respect to those people who had worked only in Department 236 where penta was manufactured, where the higher chlorinated dioxins would be, 20 of those had chloracne, correct?

A. Yes, sir.

Q. With respect to those people who had worked both in Department 236 and in Department 237 where the chlorinated phenols are manufactured, how many had chloracne?

A. 22 out of 56.

Q. Now, with respect to those people who worked only in Department 237 where the chlorophenols were manufactured, orthochlorophenol, parachlorophenol and 2,4 dichlorophenol, how many of those people were there who had worked only in that department that consented to the examination and were examined by Doctor Suskind?

A. Questionably 1 out of 6.

Q. So there were 6 in all?

A. Yes.

Q. That were examined that came in for this examination that worked only in Department 237, 5 of them had no chloracne, correct?

A. Yes, sir.

Q. And one had a question mark as to whether or not he had chloracne?

A. Yes, sir.

Q. Correct. Now, the penta department closed in 1978, correct?

A. Yes, sir.

Q. And this study was done in 1979?

A. Yes, sir.

Q. Now, the people that had been in penta when it closed, did they transfer over to Department 237?

A. Some of them might.

Q. So some of the people that were in this middle category of Department 236 and 237 could well have been people that left penta when it closed and came over to the Department 237 to work?

A. Right.

Q. All right. Now, Doctor Suskind took work histories from these people, didn't he, sir?

A. Yes, sir.

Q. And he knew which were the ones who worked only in 237, which were the ones that worked only in 236 and which were the ones that worked in both?

A. Yes, sir.

Q. And he also knew that, he knew which ones worked in

236 and then transferred to 237 and when they did that?

A. Yes, sir.

Q. That is, provided, they accurately stated their work history?

A. Right.

Q. When he interviewed them.

A. Plus he had the work records.

Q. Oh, in addition to that he had work records?

A. Right.

Q. And what would you conclude, sir, from the fact that there isn't any statistically significant addition to the chloracne by those who went from 236 to 237 as opposed to those who worked only in 236?

A. When they worked in both places there was less chloracne in the population than when they just worked in penta. In other words, when they shifted back out, there was less chloracne found in that group when they moved into 237 which says that their exposure was lesser, that there was no exposure.

Q. Now, sir, with absent exposure, can chloracne tend to lessen or go away?

A. Mild chloracne will disappear in most people who have had that condition once they are removed and as a matter of fact, the story we have from the plant is that when they

would transfer into 237, their chloracne got better.

Q. Now, I think, Doctor, that and I know the jury has heard testimony from a Mr. Starzyk whom Mr. Carr examined who had been the foreman in Department 237 who testified that he had had bad chloracne in what he regarded as bad chloracne in Department 236 and that when he transferred to 237 it cleared up so that would substantiate what you are saying, is that right?

A. Yes, sir.

Q. Now, you say that there seems to be less chloracne in those that worked in both departments. I see the number is 22 whereas Department 236 is 20. Now why do you say less?

A. Well, you have to talk about the whole population. There was 44 of those who worked just in the penta-chlorophenol unit and something about half of them had chloracne and when they moved over to 237, those who had been in the penta unit, there is now less chloracne in percentage-wise than there was in 236.

Q. Because there is a total population of 56 who worked in both departments?

A. Right.

Q. Whereas there is a total population of only 44 who worked only in Department 236?

A. That is right.

Q. Now, these people that have the chloracne there, they knew they had it, did they not?

A. Yes, sir.

Q. They were being treated for it?

A. They were seen every 6 months.

Q. And the company was sending them out to Doctor Wallach in Belleville if they needed it?

A. If Doctor Osland thought they needed more than he could give.

Q. So they knew they had chloracne?

A. Yes, sir.

Q. And it was well known there at the plant that the people that worked in the penta department had chloracne?

A. Yes, sir.

Q. Now, in staying with the report, sir, let me direct your attention to page 9, if I may. Now, we were talking before about what Doctor Suskind did with the information that he had obtained. Now, he came out to Krummrich with at least 2 interviewers?

A. Yes.

Q. Is that right? And, he entered into -- well, you told us before about his trying to establish a certain relationship with the workers of confidentiality so that they would be more candid with him, is that right?

A. Yes, sir.

Q. Now, what happened there to your knowledge? I mean in connection with that. What was the communication between them?

A. Doctor Suskind, the same as in Nitro, said to us that in order to get the most out of the employee, he is going to have to have privacy and what he does will be between him and the worker and not Monsanto as a part of it so he used exactly the same procedure at Krummrich as he did at Nitro. So, the histories were taken and were a part of his evaluation of these employees and we were not given access to it because he told the workers he would not let us see them. Now, when he did the studies, as soon as he finished the studies, anything that was abnormal it was his responsibility because I wasn't privy to it to tell the worker if he had something abnormal that should be followed up. In addition to that, those workers who said they wanted a copy of their results to be sent to the family doctor, it was sent to them in addition to those that Suskind thought had to be sent to the doctor because something should be done.

Q. So, he sent the results to the family physician if they requested it?

A. Yes, in addition if he thought there was a followup

required for their health.

Q. So, did there ever come a time when you had the results of these interviews and histories?

A. Not until this lawsuit did I get a copy of the histories.

Q. Not until Doctor Suskind under order of court turned them over to us?

MR. CARR: Doctor Suskind was not ordered by the court. Monsanto was ordered by the court. Doctor Suskind is not subject to the order of the court and the record should be made clear. Monsanto was ordered to produce the records. Monsanto went to Suskind and got the records and produced the records. It was Monsanto that was ordered here and in Nitro to produce those records and I object to the statement of counsel.

MR. HEINEMAN: That is correct. I stand corrected, Your Honor.

THE COURT: The record is corrected. You may proceed.

Q. The order was to Monsanto. And at that time Doctor Suskind made those histories and examination results available to Monsanto's attorneys?

A. Yes, sir.

Q. And you had never seen them prior to that time?

A. No, sir.

Q. Now, in 1979, were there some lab results sent to the medical department at the plant?

A. Yes, sir.

Q. Did you ever see those?

A. No, sir.

Q. Now, was the plant to your knowledge sent the laboratory results of all of the people who had been examined by Doctor Suskind in the study?

A. I don't know.

Q. Now, there were in 1980 there was this report, September of 1980, that was sent to Monsanto, is that correct?

A. Yes, sir.

Q. To your knowledge, was there ever a prior draft of that report ever sent?

A. No, sir.

Q. And so the first that you saw of Doctor Suskind's results was when you saw this report shortly after September 29, 1980?

A. Yes, sir.

Q. Now, if we look at the discussion section of the report which begins on page 8, he tells us there the population that he surveyed, does he not?

A. Yes, sir.

Q. And on the bottom of page 8 he states a conclusion, doesn't he, relating to both the laboratory and the clinical findings, correct?

A. Yes, sir.

Q. What does he mean by clinical findings?

A. The clinical findings includes the history as well as the physical examinations. In a workup of a patient, the doctor examines everything physically and he takes a complete history and those things that are positive, he will then call those are his findings. And, that is what he is referring to when he says the clinical findings.

Q. All right. You say what those things that he reports as positive he reports as findings?

A. Yes.

Q. Now, by positive, does that mean things that are good for you or things that are bad for you or just things?

A. When we say in medical, if in the examination he found that the blood pressure was up, it will be a positive finding. If he found that the man had chloracne, that would be a positive finding. If he saw, found that he had some kind of a deformity of his foot or had a deformity related to a fracture, that would be a positive finding. So all the things that a doctor looks for, if he found something that

was abnormal, he would call that a positive finding.

Q. So that is what a clinical finding is?

A. Yes.

Q. At least as you understand it in this context?

A. That is what he means.

Q. So, he does in the report refer to the laboratory and physical examination findings, does he not?

A. Yes, sir.

Q. He doesn't set them all out specifically, does he, sir?

A. No, sir.

Q. But he does say there appears to be no significant difference in the clinical and laboratory findings when the group exposed solely to the pentachlorophenol process building 236 compared with the group exposed to the combined pentachlorophenol process, ortho and parachlorophenol building 237, correct?

A. Yes, sir.

Q. Then on page 9 he goes on and he discusses more relating to the laboratory data, does he not?

A. Yes, sir.

Q. And he doesn't set forth here all of the laboratory results, does he, sir?

A. No, sir.

Q. But he discusses his findings in connection with the laboratory data, doesn't he?

A. Yes, sir.

Q. And he says in the analysis of laboratory data, possible correlations between the history of chloracne or residual chloracne and levels of test results were examined, correct?

A. Yes, sir.

Q. So he was looking to find whether or not those people that had chloracne as a result of exposure to something, had any different kind of findings or lab results from those who did not have chloracne?

A. Yes, sir.

Q. Correct. He says a small number of evaluated total serum lipids were observed, doesn't he?

A. Yes.

Q. He says there was no correlation between the serum lipids and the presence of chloracne, correct?

A. Yes, sir.

Q. So that those who had chloracne and those who did not have chloracne had essentially the same types of serum lipid results statistically?

A. Yes, sir.

Q. He says there was no correlation between the serum

lipids and the presence of chloracne, while persons with elevated triglycerides were found in both the chloracne and non chloracne groups, there appeared to be no correlation between serum triglycerides in the presence or absence of chloracne. No significant differences in levels of cholesterol, LDL, SGOT, SGPT and GGT were found between the chloracne and non acne groups, correct?

A. Yes, sir.

Q. So he discussed lipids, cholesterol, LDL and he discussed 3 liver enzymes there, didn't he?

A. Yes, sir.

Q. Now, he then went on in the next paragraph to report some statistical correlations that he did find, didn't he, sir?

A. Yes, sir.

Q. And he came to the judgment that the significance of these correlations with respect to the risk of penta-chlorophenol exposure is still to be determined, didn't he?

A. Yes, sir.

Q. Now, what did he say with respect to the frequency of VLDL levels? Would you tell us what he said there?

A. He says that the VLDL were higher in those who had chloracne than in those who did not have chloracne. The history of chloracne and that means that he did, he took

those people who had chloracne and he took those who did not have chloracne and those who had a history of it had higher VLDL than those who did not.

Q. And he said that VLDL consists of about 60 percent triglycerides, correct?

A. Yes, sir.

Q. Then he went on to report another interesting observation, did he not?

A. Yes, sir.

Q. And he says -- what did he say about HDL?

A. Those who had HDL of 45 or more had less residual, means they had less evidence of chloracne than did those who had chloracne.

Q. So that the HDL was higher in those who had no history of chloracne as opposed to those who did?

A. Yes. And that means that includes those who had chloracne and it went away.

Q. All right.

A. The implication of that is that if there is association, it is real, it is not there just because you find it doesn't mean that is the case. If you did it again it may not be that way but if there is an association, if it is real, when the man's chloracne as we described will go away over a period of time, then, if it is real, that will go

away and the way you tell it is after we went away if we re-tested them and if their HDL had gone down or hadn't raised, then that means that there was an association.

Q. Now, he then goes on to say he observed something with respect to smoking. Now, smoking would be something he would get purely from the history?

A. Yes, sir.

Q. So, when he went back to Cincinnati with the results of these laboratory tests and these physical exams and these interviews, he analyzed and made conclusions with respect to the physical findings, the clinical findings, with respect to the laboratory results and with respect to the history that he took?

A. Yes, sir.

Q. And with respect to the history, what did he find with respect to smoking?

A. He found that those people who smoke have more chloracne. What he is trying to say there and he tried to explain it is that it is quite obvious the man who smokes, if he has got any of the pentachlorophenol in his hands and goes up and smokes, that is the way he is probably getting it. At least that is the good explanation for why the people with chloracne is higher in those who smoke.

Q. Is that there is more hand to face?

A. Hand to face.

Q. Movement. Now, what is the difference between, why is it that someone who worked in pentachlorophenol would send tend get it on their hands?

A. Pentachlorophenol is a solid and the solid is made much like a potato chip. It forms a little thin sheet and in the making of these thin sheets, lots of it gets broken off and so the big problem in making penta is that the workers are exposed to the dust of penta and it is relatively easy to get on their skin and they are always working at housekeeping trying to get rid of the dust and if they then keep the dust down, the chloracne would go out. It would go back with renewed energy to get it cleaned up and then the chloracne would go down, it would lose their attention and it would go back up. So it is related to very positive exposure and gross exposure to the dust. Easily related.

Q. So in the penta department, is it a department in which the product is dry?

A. Yes, sir.

Q. It is dusty. It is in the air. Gets on the hands. Doesn't burn?

A. No.

Q. All right. In that --

A. It is irritating but it is the kind of irritation

that you get if some of the things that you cook have an irritating odor or more than that but it is more than just a little bit. If you go there and it was dusty and it was right, you would say some irritation of your nose and your eyes maybe but not of any consequence to those who work there.

Q. All right. Now, in Department 237, you have got liquids, correct?

A. Yes, sir.

Q. You have liquid 2,4 dichlorophenol. You have liquid phenol. You have liquid orthochlorophenol. Liquid parachlorophenol, correct?

A. Yes, sir.

Q. There is no dust?

A. No, sir.

Q. Those liquids are contained in pipes and tanks?

A. Yes, sir.

Q. So that unless there is a leak or a spill, nobody is going to get it on them?

A. No housekeeping problems. You don't have to worry about it getting around.

Q. So that while in the pentachlorophenol department you have got exposure to dust, you don't have that kind of exposure in the chlorophenol Department 237?

A. That is right.

Q. Now, Mr. Carr talked to you about the fact that what Doctor Suskind did here was compare everything to the presence or absence of chloracne, correct?

A. Yes, sir.

Q. He said rather than set out all of the individual laboratory results, what he did was compare it to chloracne. Now, do you know another study where that was done, sir?

A. It was done in the Nitro population by Suskind.

Q. And do you know of another study where that was done?

A. The United Steel Workers in Nitro asked Doctor Selikoff of the Mt. Sinai Hospital, University at Mt. Sinai to go to the Nitro Plant and do a study much as Suskind had done at Nitro. Identical study. And Doctor Moses in her report of this Nitro population in analyzing the results related everything she did to whether there was presence of chloracne or not in the same laboratory studies. The lipids that were done here, the liver profile or the liver test called SGOT, SGPT, GGT, all of those things were done just the same by Doctor Moses at the Mt. Sinai University just as Suskind did in this study. In other words, if we are trying to show whether working with the dioxins causes an effect and we know that chloracne is an effect, they all do the same

thing of saying if you don't have chloracne you have different findings than if you do have chloracne.

Q. Now, did Doctor Moses recognize a relationship between dioxin exposure and chloracne?

A. Yes, sir.

Q. And her study actually she compares with chloracne presence or absent a whole range of effects, does she not?

A. Yes, sir. Much more broader than there was done in this one.

Q. And now when she was retained by the United Steel Workers union to do this study, was she told to your knowledge that it should be just like Suskind's study or was she told to come in and do a study?

A. To do a study.

Q. So that as far as we know, the protocol that she used and the analysis that she did were her idea?

A. Her study came out before Suskind's.

Q. So that when she reported her results, those results were reported before Suskind's results were reported?

A. That is right.

Q. Let me hand you, sir, what has been marked as Defendant's Exhibit 908 and ask you if you can tell me what that is?

A. This is a report of Doctor Marion Moses with a

large number from Mt. Sinai, Doctor Lilis, Doctor Crow, the chloracne expert, the dermatologist I have referred to earlier. Doctor Crow is from the U.K. and Doctor Moses in trying to establish whether they had chloracne in the Nitro population or not. She brought over Doctor Crow from England to decide whether they had chloracne. The rest of the group includes Doctor Thornton, Doctor Fischbein, Doctor Anderson and Doctor Selikoff to who the United Steel Workers went and asked for the study.

Q. Now those are all listed as authors on the study, are they not, sir?

A. Yes, sir.

Q. Now, if you look at -- let me ask you this, sir, before we get into that. Was the Department of Medicine and Environmental Health involved in the organization or protocol used by Doctor Moses in her study?

A. We were involved but not in the protocol.

Q. All right. To what extent? How was the Department of Medicine and Environmental Health involved in the study?

A. They called us and asked us for a listing of those workers who were exposed to 2,4,5-T which is the subject of their study and those workers who had the total population so they could have some comparison between those who worked and those who did not work with the 2,4 trichlorophenoxyacetic

acid.

Q. Now, I am a little confused. Let me go back into that. She asked Monsanto for a list of who worked in 2,4,5-T?

A. Yes, sir.

Q. Or did she ask you to tell her who was exposed to it?

A. Those who worked in 2,4,5-T.

Q. So, she wanted a list from Monsanto as to everybody that worked in 2,4,5-T?

A. Yes, sir.

Q. And then she also got a list of the what, the whole plant population?

A. Yes. I am not sure how long we cooperated. We were in the process when they came to do their study, we were in the process of setting up for Doctor Suskind to do the same study. And Doctor Suskind had asked us to make this definition and we thought that it was unfair for Suskind, for Selikoff to come in at the last minute and say give me the material that you have been putting together for the last year for Doctor Suskind at his request, so we did cooperate but not completely. We did what we could without interferring with what we had promised Suskind.

Q. Now, when you say that you didn't cooperate

completely, now does that mean that Doctor Selikoff and Doctor Moses had to find out the information on their own?

A. Yes, sir.

Q. Now, how did they do that?

A. Through the union records plus talking with the workers.

Q. Did you make any plant records available to them?

A. I don't think so.

Q. So what they did was gone to the union. They went to the workers themselves in order to find out exactly where they worked and what they did?

A. Yes, sir.

Q. And so they were not relying in this study on information from you?

A. That is right.

Q. Now, they examined 226 workers, is that correct?

A. Yes, sir.

Q. And these are the Nitro workers now. This is not Krummrich. This is Nitro, correct?

A. Yes, sir.

Q. And they made some findings. If you direct your attention to the abstract on the first page, it says that they found a significant increased prevalence of abnormal GGT and higher mean GGT in those with chloracne compared with

those without?

A. Yes, sir.

Q. So in the Nitro workers, where they had the severe chloracne?

A. Yes, sir.

Q. Is that correct?

A. Yes, sir.

Q. They found higher GGT among those with chloracne than those who did not have it?

A. That is right.

Q. Now, when Suskind examined the workers at Krummrich, he looked at GGT, too, didn't he?

A. Yes.

Q. But he didn't find a higher GGT among the chloracne workers than those that did not have chloracne, did he, sir?

A. That is right.

Q. Now, she said that there were triglyceride values that were higher in those with chloracne but the difference was not statistically significant, isn't that right, sir?

A. Yes, sir.

Q. Now, tell me if you would what is meant by that?

A. This is a study of looking at just triglycerides. Triglycerides are a fat that is found in the blood and there is an interest in it because whether this is associated with

heart disease or not has not been established. Some say it is and some do not. If you went to the doctor and asked for a workup and he was interested if you had a family history of heart disease, at least, he would be interested in whether you had fats in your blood and he would do triglycerides and cholesterol. So this is a study of triglycerides.

So they analyze the triglycerides in all of the 226 workers and then he compared those who were exposed to the trichlorophenoxyacetic acid. He compared the triglyceride average and compared that with the triglyceride level of those who didn't work and didn't have chloracne with chloracne and without chloracne and then they do a statistical study. Supposing we had 100 in the non chloracne and in the chloracne they had 101. Is that different? Yes, it is different. Does it have any meaning? You have to do a statistic on it and say that is not statistically significant. What they are saying, that is not real. If you did it 100 times in that same population, the next time it may be low or it may be 105 or 110 as opposed to 100. So what I am saying you can't draw any conclusions if it is not statistically significant.

Q. How do they go about finding out whether it is statistically significant? Are there generally agreed to computerized programs and methods for doing that?

A. Yes, sir.

Q. When I say agreed to, agreed to by whom?

A. The statisticians who are -- there is a general rule. When you are doing a study on one type of study, a 2 by 2 table. This is a standard test. If you do a test on a drug. I have got one group of people and another one is not and then would you have those who do not have exposure and you have got the same kind of results. There is a standard test. It is called a 2 by 2 table that was done here and the 2 by 2 table you do what is called a chi squared so each one of these statistical studies have the same kind of what I just said. It is comparing those with and without of an effect, with chloracne or those without chloracne, that have high triglycerides and do not have triglyceride.

Q. What in the world is chi squared?

A. It is a statistical study that is used to evaluate what I said yes or no between populations. High triglycerides and normal triglycerides as opposed to those who do not have chloracne and have high or low triglycerides.

Q. Is it is a mathematical tool?

A. Yes, sir. Statistical tool.

Q. So these conventions as they were, as it were, are agreed on by epidemiologists all over the country?

A. Every person who takes a course in statistics will

learn this chi squared test that is used for evaluation what we call a 2 by 2 table. What do you see with and without chloracne is and example of the thing I am describing as a standardized test for looking at such data and they found no statistical effect means it is not real at least in that study.

Q. That is what is important about an epidemiological study. It tells you what is significant and what isn't so as to try to see if there may be a correlation?

A. That is right.

Q. A cause and effect relationship. An epidemiological study does not establish a cause and effect relationship, does it?

A. No.

Q. But it may demonstrate a correlation that should be investigated?

A. Yes, and if it is not statistically different, then you say that it is obvious there was no correlation on that one. Now if you get a positive, that doesn't mean there is an association. You should repeat it in some other study to find out whether it is real. Because if it is real and associated with chloracne, then everytime you do a study on another population with chloracne it should always be high.

Q. So the same thing ought to show up all the time?

A. Yes, sir.

Q. If it is indeed going to be correlated with exposure to a particular toxin, is that right?

A. That is right.

Q. You ought to see the same thing all the time?

A. Yes, sir.

Q. Now, she did apparently a neurological examination, didn't she?

A. Yes, sir.

Q. And she said that at Nitro, the neurological examination showed a statistically significant higher prevalence abnormal sensory findings in those with chloracne, correct?

A. Yes, sir. That means she did another chi squared test. The standard test to looking for an association between two effects like this.

Q. So, that with those people that had chloracne, she found that they also had a statistically significant number of neurological findings?

A. Yes, sir. But it is very specific which ones she is talking about. There was only one neurologic test that was positive.

Q. All right. What was that, sir?

A. That was sensory change. It does describe abnormal

sensory changes on the physical examination.

Q. So, that is by sensory change. You mean whether you can --

A. They just take a piece of cotton. Maybe you have had a neurologic test and the sensory test, they will take a piece of cotton and test the skin to see if you have lost your sensation or they will take a pin, not hard. In addition to that they will take a pin to see if you have any change. This is done on people who have a variety of neurological diseases.

Q. All right. Now, they found that if there was chloracne present, there was a statistical number of sensory change. People who have that sensory change?

A. Yes, sir.

Q. But where chloracne was not present, then they did not have it, is that right.

Q. Well, not as much.

Q. All right. So there wasn't as much of it?

A. That is right.

Q. As there was in those who had chloracne so they found or she found a positive relationship between the presence of chloracne and that neurological change?

A. Yes, sir.

Q. That one sensory change. Okay. Now, she said that

there was an increased prevalence of -- I have never known how. Is it angina or angina?

A. Angina.

Q. Angina is a pain in the heart, right? Pretty crude.

A. It is a pain associated with heart disease and if the pain in the chest is related to the heart, then we call it angina. If it is pain in the chest that clearly is not associated with the heart, then we call it non anginal pain.

Q. Okay. Now, they found an increased prevalence of angina and reported myocardial infarction in those with chloracne was not significant when age adjusted?

A. Yes, sir.

Q. What does that mean, sir?

A. Well, if you do a study on the population of age 20 and you didn't have any angina, you couldn't draw any conclusion of it. And what they are staying is, when they took these workers and decided and compared them by age rather than just as a group, they compared those, if one has angina and the other one doesn't, you have got to compare them with those at the same age, at the age of 50, so you have another way of looking at this. They divide both populations into age distribution so that you compare apples with apples rather than apples with oranges. They compare

those 40 years old who didn't have chloracne with those of that same age who did have chloracne. And that is different than other studies where there is no age related effect. So, each group was subdivided and corrected for age. Corrected means compared those at the same age group.

Q. Now, why would you do that with angina? Is it because it is an age related disease?

A. Yes, sir. And if you had one group that was age 20 and the other age group that was 60, you would be looking for an age related effect rather than looking for the effect of chloracne on the anginal effect.

Q. In other words, you wouldn't expect to find it in people that are 20 so it isn't fair to compare that group with a group that is 60 where you would expect to find it in the general population?

A. That is right.

Q. All right. Now, when somebody goes into a study like this, Doctor, do they set up their protocol before they ever see any people or take any tests or do any examinations?

A. Yes, sir. Everything you are going to do in an epidemiologic study, every detail has got to be spelled out and written down so that there is no breaking from the procedure that is set up. If you want to add something to it, you really shouldn't call it part of that study. So, it

should be very clearly spelled out exactly what you want to do in the evaluation of those groups and the other part of it is the group that you are going to call the study group has got to be well defined. You can say, for instance, in this one, if they say we are going to study those workers exposed to the trichlorophenoxyacetic acid, how long, are you going to include those who worked one day, one week, one month, one year, at least that long? And if you take those only worked one day, you are not trying to find out whether that material caused an effect or not. You have to include those who have had enough exposure so that you wouldn't miss it. So, you have got to be very careful.

So usually it will describe one month, six months or a year as a minimum amount of exposure before you can go into the exposed group. You don't want to study a group that has only had a few days because you are not studying whether it has effect or not. You have to have enough exposure so if it is there you wouldn't miss it.

So that protocol has to be so specific on what you are going to call going into the exposed group.

Q. And then once the protocol is established and you have got the guidelines and the rules whereby everything is going to fall into place, then the data falls wherever it falls?

A. That is right.

Q. Is that right?

A. Yes, sir.

Q. And you can't start adjusting the criteria after you start getting the data in?

A. No, sir.

Q. So that you set all the rules and then you start doing the interviews, take the physicals, do the lab studies and then you find out where it all comes out and you never know going in how it is going to turn out, do you?

A. You haven't the slightest idea. The doctor who did the examination on each of these 226 and he said I am seeing some people who have had angina and the doctor says well, I wonder if there is an association, whether the chloracne or the exposure was causing it and he will say I can't tell because I am not sure who had exposure or not because the man who does the examination doesn't care who had exposure. He is only trying to find out whether they have got heart disease or not so he knows what each man has got but he can't mentally say I have seen 10 people who have angina in this group and 15 in that group who have had angina because you can't keep all of that in your mind. So all he does he fills out the form and then somebody takes that computer data and puts it into the computer and it comes out saying in this

case increased prevalence of angina and reported myocardial infarction. There was more angina and myocardial infarction than those who had exposure but it was 98 versus 100 in the non exposed group.

Q. So, you are using those numbers you are saying as an example?

A. I am back to the same place. They looked at those and there was instead of expecting 100 they had 105 and they went and put back in that statistically model and says that could happen by chance. If we did it another time it would be the same or lower or something. The difference has no meaning significantly.

Q. And that is determined by the computer program?

A. Right.

Q. Now, so the person that is actually doing the examination doesn't know at the time who the exposed person is and who isn't?

A. No. He should not know.

Q. And so he just gathers the data?

A. Yes.

Q. He just gets the lab results and this person may do a physical exam, that person may do the interviews and so that nobody knows whether or not there is any correlation?

A. In the ideal study, that is the way it is.

Q. Until somebody puts it all together in the computer later on?

A. Yes, sir.

Q. Now, she also says here that there was an increased prevalence of reported sexual dysfunction and decreased libido in those with chloracne compared to those without. And it was statistically significant after age adjustment, is that right?

A. Yes, sir.

Q. So she found that the people that had chloracne from their exposure did have a higher amount of reported sexual dysfunction and decreased libido than those who did not have chloracne, correct?

A. Yes, sir.

Q. And it was statistically significant?

A. Yes, sir, and it was age corrected because it has to be. Because the sex function is related to age and so age adjustment had to be done just as in the myocardial infarction.

Q. But she did say no differences were found between those with and without chloracne, with respect to serum cholesterol, total urinary porphyrins, or in reproductive outcome?

A. Yes, sir.

Q. Correct?

A. Yes, sir.

Q. So, Doctor Moses said when she examined her Nitro population, that there wasn't any difference in urinary porphyrin between those that had chloracne and those that did not?

A. That is right.

Q. Correct. Now, what conclusion would one draw from that statistic?

A. This again was done by comparing those with chloracne with those who did not have chloracne. That is all she did in all of her studies. She said that in those who didn't have chloracne as compared to those who did have chloracne, there was no difference in the urinary porphyrins between those 2 groups. In other words, whether they had chloracne or not had no effect on porphyrins. That means even with a bad chloracne, those with gross disfiguring chloracne after 30 years and they are still there, there are 50 percent of that group that had the, 50 percent of those who ever had chloracne at Nitro still had chloracne 30 years after exposure. And despite that bad effect and still being persistent, they could find no effect on urinary porphyrins.

Q. Now, Mr. Carr was talking to you yesterday about the porphyrins, the porphyrin results in the Krummrich study,

correct, sir?

A. Yes, sir.

Q. Now, he wanted to know, as I recall, whether or not Doctor Suskind ever said that those porphyrin results which he set out in that second draft should not be considered because they were not 24 hour porphyrins. Do you remember that?

A. Yes.

Q. Now, as I recall, sir, there were 2 drafts that have been in evidence, is that right?

A. Yes, sir.

Q. Now, those drafts relate to the Nitro study by Doctor Suskind, is that right?

A. Yes, sir.

Q. And one, I am trying to get the exhibit number here. Now, Plaintiffs' Exhibit 1479 is a letter to Doctor Suskind from you, correct?

A. Yes, sir.

Q. Attaching your comments on the first draft of the Nitro health or morbidity study that Doctor Suskind did, is that right?

A. Yes, sir.

Q. Now, Plaintiffs' Exhibit 1483, as I understand it, is a copy of the second draft?

A. Yes, sir.

Q. By Doctor Suskind?

A. Yes, sir.

Q. Is that right? Now, to your knowledge, sir, did you ever see subsequent to this document 1483, a copy of what Doctor Suskind submitted for publication?

A. No, sir.

Q. So that whatever happened, after you saw this, he wrote up whatever it was that was published?

A. Yes, sir.

Q. Now, in that process, that was a peer reviewed publication, correct?

A. Yes, sir.

Q. Now, that means that he was submitting it to the Journal of the American Medical Association?

A. Yes, sir.

Q. And what would they do with it once he submitted it?

A. Well, the American Medical Association would find some expert in some phase of this study to whom they would send the last -- that what Suskind had submitted and they would go through it and decide whether it was too long or too short or some of the conclusions weren't valid or whatever. So, there is sometimes there is 2, sometimes there is 3,

sometimes there is 5 reviewers who will go over and decide whether what is in there is correctly stated or whether it can be substantiated or not. So the attempt is to try to make what goes into the literature be as correct as possible.

Q. Now, on a peer reviewed journal, they take whatever the person submits and they send it out to reviewers anywhere from 1, 2 to 5 and those people look at it for its entire content?

A. Yes.

Q. To make sure it is scientificly valid?

A. Yes. Grammatically. Everything about it is subject for editorial comment.

Q. They may pick out words, they may say it is too long, too wordy?

A. Too many charts, not enough charts, anything.

Q. They may make all kinds of corrections like that but they also look at the conclusions that are reached. They are picked because of their scientific knowledge in the field that the paper covers?

A. That they can evaluate what is written.

Q. Okay. Now, they submit their remarks to the publisher in this case, the Journal of the American Medical Association, correct?

A. Yes, sir.

Q. Now, are those remarks communicated to the person that submitted the article?

A. Yes.

Q. So that he can change it if he wants?

A. Otherwise he wouldn't get it published.

Q. So if he doesn't change it to the way these remarks come out, they may not publish it?

A. It depends. The editor has a right to decide. Maybe Suskind had something valid that the editor, the one who had read it may not have had in his possession. So, it is, there is a review that goes on with the editor being the final decision maker.

Q. Now, they don't identify to the submitter of the paper the people, the identity of the people who did the review, do they?

A. No, sir.

Q. So what he gets back are anonymous comments?

A. Yes.

Q. On his paper?

A. Yes.

Q. And then he makes adjustments or elects not to and then resubmits it and the Journal of the American Medical Association either publishes it or they don't?

A. That is right.

Q. That process took place without you knowing anything about it, is that right?

A. I know it had been submitted but I didn't know what took place. Besides the fact that it had been submitted.

Q. And you never saw any of the comments, did you?

A. No, sir.

Q. You never saw what was submitted?

A. No, sir.

Q. You don't know whether it was changed?

A. No, sir.

Q. Or if it was, the extent to which it was changed?

A. No, sir.

Q. All you do is see it after it is published?

A. Yes, sir.

Q. You know that what was published was different from this?

A. Yes, sir.

Q. It could be, could it not?

MR. CARR: Your Honor, I object to the speculation that counsel is now going to engage in. The witness has said that he has no knowledge whatsoever.

THE COURT: Objection sustained.

Q. Well, you don't know, sir, do you? You don't know whether or not any reviewer gave the doctor a comment that

would cause a change?

A. No, sir.

MR. HEINEMAN: Your Honor, I see it is almost 12 o'clock, if this would be a good point with the court.

THE COURT: Fine. Okay. Ladies and gentlemen, we will break for lunch at this time. We will resume again at one o'clock. The admonishments that I have given you earlier will apply during this lunch break also. Court is in recess for lunch.

COURT RECESSED:

(The following proceedings were had in the hearing and presence of the jury)

GEORGE ROUSH

having resumed the witness stand, being previously sworn, testified further as follows:

CLARIFICATION EXAMINATION

By

MR. KENNETH R. HEINEMAN.

Q. Doctor Roush, back when you first began to testify in this case and I think May 29th or 30th or something like that, Mr. Carr questioned you about your background, your professional training and that sort of thing and I would like to ask you a few questions about that. My recollection is that you got your Doctor of Medicine degree from Washington

University in St. Louis in 1951?

A. Yes, sir.

Q. Is that right?

A. Yes, sir.

Q. And thereafter what did you do?

A. I went up to Milwaukee for an internship. Had a rotating internship at Milwaukee County Hospital, the teaching hospital for Marquet University. At that time was Marquet and after one year at Milwaukee, I went to Pittsburgh and had a year of academic training in occupational medicine which includes instruction in occupational medicine, industrial hygene, toxicology, epidemiology, biostatistics, public health practice, to name a few. The following year -- and I got an MPH degree, Master of Public Health from the University of Pittsburgh with a specialty in occupational medicine.

The subsequent year I spent with a fellowship from the National Heart Institute and I was doing experimental work on the effect of heart failure on cardiac metabolism in the normal and failing heart using the dog. I spent a year doing this. And following that year, this is now in 1954, 1954 to 1955, I was at the National Cancer Institute in chemotherapy for cancer and I spent a year in that training.

Q. Sir, I would like to ask you about that National

Cancer Institute training, if I might. You were studying the treatment of cancer with chemotherapy?

A. Yes, sir.

Q. Is that right? Chemotherapy uses highly potent and toxic drugs, does it not?

A. Very toxic drugs.

Q. What was it that you were doing in your research with respect to those toxic drugs?

A. The National Cancer Institute would bring people into the clinical center so that they could explore and evaluate new drugs in the treatment of all types of cancer and leukemia and they would use that so that they could provide guidance to physicians on whether there is a better treatment than those drugs that were being used up until that time.

Q. And your work was to monitor the effects of these drugs?

A. Those patients that were admitted to the hospital with diagnosed leukemia including infants, earliest child I took care of was a 6 year old baby with leukemia. We evaluated leukemia and what we would do is we would give a drug and we would do a surveillance procedure much as was used in our evaluation of chloracne, whether there are adverse effects that are seen with chloracne. Only we are

using very toxic materials so that when we would give one of these chemicals, at that time we would put it in the syringe, have an IV flowing into the patient, put on gloves to protect myself and not inject it into the patient but inject it into the IV tubing so that none of it would get on the patient because they could get a bad blister, a bad blister if one drop of that material would get on the skin. So we were dealing with extremely dangerous materials and we were looking to see if there was any adverse effect of the drug. That is a difficult decision to make even with those sick patients because they were so sick from their cancer and leukemia and if you are going to have -- you see a man who is very sick with cancer and we give them this chemical and he would start complaining of his ears, we couldn't decide, we had to decide whether that pain in his ear was related to the drug or was related to the disease process. So, that evaluation is a very difficult clinical decision to decide whether any effect is related to the man itself with what he has or whether it is related to something that has to be imposed on him.

Q. But that was done under the auspices of the National Cancer Institute?

A. Yes, sir.

Q. And that was done in 1954 and 1955?

A. Right. And those were well defined protocols on what the treatment was going to be done. How they would look for it and what adverse effects they would be looking for.

Q. Now, thereafter, sir, did you remain at the University of Pittsburgh?

A. No. This was at the Cancer Institute in Bethesda, Maryland. The National Cancer Institute is a part of the clinical center of the National Institute of Health at Bethesda, Maryland. After a year doing surveillance of cancer patients, I went off and took a year in internal medicine residency at the Staten Island Marine Hospital in Staten Island, New York. After that year I went to the University of Pittsburgh and took another year of residency in internal medicine and that took me up to 1956.

Q. All right. Now, there came a time when you joined the faculty at the University of Pittsburgh, isn't that right?

A. Following my completion of that year I joined the faculty at the University of Pittsburgh as an assistant professor in occupational medicine and clinical instructor in internal medicine.

Q. And how long did you hold that position, sir?

A. Until 1962.

Q. That was about 5 years?

A. Yes, sir.

Q. And there came a time when you became board certified in occupational medicine?

A. Yes, sir.

Q. And when was that?

A. 1965.

Q. Now, at some point you became connected with the Kettering Institute at the University of Cincinnati?

A. Yes, sir.

Q. Now, when did that occur, sir?

A. 1962.

Q. All right. So after you left the University of Pittsburgh you went to Kettering Institute?

A. I took a year off to go to the University of Louisville where I was doing cardiac catheterization.

Q. And I believe you said that Doctor Suskind was not with that organization when you were there?

A. No, sir. Doctor Kelow was the director of the laboratory at that time.

Q. All right. So it is accurate that Doctor Suskind was not there?

A. That is right.

Q. Now, what did you do at Kettering, sir?

A. I was responsible for teaching the physicians who

were in their training for occupational medicine. I was responsible for their clinical training in occupational medicine. That means I taught them how to do surveillance of workers with exposure to whatever the toxin that might be in the environment.

Q. And so you did that in your teaching. That was the clinical work. Did you thereafter have any work in connection with porphyrins?

A. As a part of my responsibility as clinical director, we were required to look at the analyses for urine, for a number of chemicals that someone may ingest, someone took aspirin, someone took sleeping pills. We would look at the data, the analytical results to decide whether the amount of material present in their blood, urine, or vomitous and decide whether the clinical status of that patient was or was not consistent with the level of whatever the chemical was that we measured. Now, included in that was porphyrin analysis. And for the City of Cincinnati, the Kettering Laboratory were doing the urine porphyrins and so every report that came back as I would interpret whether the porphyrin results were normal or abnormal and if it was abnormal, what it was consistent with. Whether it was acute intermittent porphyria or one of the other definite porphyrias that are well recognized. So we did that on a

regular basis. Then because we were at the University of Cincinnati, the Kettering Laboratory was founded for the study of the effect of lead on man and so they had recognized the ability of lead in blood and so almost the entire industry in the United States would send their blood samples to the Kettering Laboratory to see whether they had more lead in their blood than would be expected or whether it was high enough so that man could be sick so we had to evaluate that.

Since lead also -- not only does it accumulate in the blood, but one of the earliest effects of lead is to change the porphyrin levels. So for this 5 or 6 years I spent at the Kettering Lab, we regularly had to report back on the porphyrins in the workers who were exposed to lead if they were submitted as well. So we would draw correlations between the lead in blood and the urinary porphyrins and what happens is, in lead exposure, the coproporphyrins go up. So much so historically what would happen is those who couldn't do the analysis for porphyrins would take them up and have all the workers exposed to lead, they would have a bottle or tube with the urine in it and all you had to do was put a florescent light behind it and any one of those men who had an excess of porphyrins would show what with the florescence of this tube and just based on 1, 2, 3, 4, plus, they could decide by looking at those which one of those had to be taken

off from exposure so there is a very good correlation between the urinary porphyrins and the degree of man's exposure to lead.

So those two experiences are one that is described what I have done on porphyrins.

Q. The porphyrin has to do with hemoglobin formation, is that right?

A. Yes, sir. We all make hemoglobin and there is a series of steps that are required to take a very simple substance in the blood and we convert that into what is called heme and heme is a chemical to which we have iron attached and that is what carries the oxygen. The iron in the heme is what enables us to live because the oxygen is being carried to our body by this heme to which the oxygen was tied. In the process of making that, you start out with a chemical called delta aminolevulenic acid. Next step is porphobilinogen and the next step is uroporphyrin and down 4 steps later is called coproporphyrin and all of those steps are required to go through to make heme that becomes hemoglobin. Hemoglobin is what we have to keep us from being anemic and so in lead exposure, lead blocks the making of coproporphyrin. It also causes a block or it stimulates the production of that delta aminolevulenic acid and it also causes a block in keeping from that delta aminolevulenic acid

to going to the next step so this well described places where porphyrins can be effected by chemicals. And the lead that has been so widely established, it is well defined where the adverse effect is.

Q. Doctor, I am interested in that portion that you have just said relating to there being a specific place where a chemical has an effect on the porphyrins. Do I understand you to say that any particular chemical will affect the porphyrin chain at one specific spot or am I misunderstanding you?

A. No, sir. You are exactly right. I have described, they are well defined for lead and there is a number of different places where lead acts so that is well described. Now, in the disease that is called acute intermittent porphyria is a disease that is genetic and those people that have this genetic defect will get quite, along quite well. And then they will take some drug or some chemical and the one we talk about is Pehnobarbital. It is a drug. And the Phenobarbital has been used very broadly in medicine without any adverse effects at low levels but you give a person who has a genetic defect of acute intermittent porphyria and their uroporphyrins come up and they become acutely ill and may die from that effect so you have to keep them alive long enough to stop giving them the drug and then over a period of

days to weeks to even months because there are some neurologic effects. It will take that long for it to wear off. The drug will come out and then their porphyrins will fall back to a normal level and they become normal again.

Q. Now, so that the Phenobarbital will intercept this chain of biochemical event where there is a change from one type of porphyrin to another at a particular spot?

A. Yes, sir. When they would send the urine to me for analysis at Cincinnati and say do an analysis for uroporphyrins or for porphyrins and we would get back, if the man had an elevation of uroporphyrin and he had the syndrome I have just described to you, then I would say yes, his uroporphyrins are related to his acute intermittent porphyria. If his coproporphyrins were up, it could not be related to his finding of acute intermittent porphyria.

Q. So that a chemical, as I understand what you are saying, would not have a variety of effects so that in one instance uro may be up and in another copro may be up and another it may be heptacarboxylic and another it may be hexacarboxylic. Rather, a chemical will have an effect?

A. Yes, sir, and if he doesn't have it, it wouldn't be that disease.

Q. Now, when you left Kettering, you then went on I think you told Mr. Carr to Tulane University Medical School?

A. Yes, sir.

Q. And that was in 1968?

A. Yes, sir.

Q. And what were you doing there, sir?

A. I was Professor of Medicine and I taught both internal medicine as well as environmental medicine.

Q. And for how long did you do that, sir?

A. Until 1973.

Q. At which time you joined the Monsanto Company Department of Medicine and Environmental Health?

A. When I went there it was called the Department of Medicine. Subsequently it was changed to Medicine and Environmental Health.

Q. And you became director of that department in what year?

A. 1974.

Q. Now, I would like to take you back, if I may, to Defendant's Exhibit Number 908 which is the Marion Moses study and I would like to talk about her examination of porphyrins.

A. Yes, sir.

Q. Do you have that before you?

A. Yes, sir.

Q. Would you explain to the jury what Doctor Moses did

with respect to the porphyrin analyses that she did?

A. She collected urine from each one of these people who are part of her study and she did not collect 24 hour urines, she used spot samples for her analysis.

Q. All right. Now, was she able to do anything with those spot samples?

A. To begin with, a spot sample of urine will have the different constituents in it dependent on how much water a man has drunk. If you drink a fair amount of water when you are hot, the urine will have diluted and look like water. Collected overnight, the urine will have a very distinct color, a very yellowish color which is more concentrated. That degree of concentration reflects all of the things that are found in that urine and the concentration of the proteins, the sugar if there is any in it or any of the other constituents, all of the electrolytes will be excreting urea nitrogen in our urine, we are excreting electrolytes in our urine. All of those things are put out in a rather constant stream but the concentration is dependent on how much water there is and the amount of water that is there is independent of how many electrolytes, urea nitrogen or the other things we are talking and that includes porphyrins. The porphyrins that appear in the urine will be dependent on how diluted the urine is. So, in order to correct for the different

concentrations that obviously are there, Doctor Moses took those numbers and corrected them to try to bring them into a closer, more concentrated and understandable concentration.

Q. Now, there was a good deal of conversation between you and Mr. Carr yesterday with respect to spot urine or spot porphyrin analyses versus 24 hour porphyrin urine specimens. Now, is it a fact, sir, that you can make a determination with respect to a spot porphyrin, I am not using the right term. With a one shot urine sample that isn't a 24 hour sample? You can do something with that but you have to do certain adjustments to it, is that what you are saying?

A. Yes, sir.

Q. All right. Now, is that what Doctor Moses did here?

A. Yes. She stated so.

Q. Now, what is the adjustment that has to be done?

A. You have to correct it for the creatinine that appears in the urine. The amount of creatinine that all of us put out in our urine is dependent only on one thing, our muscle mass. Our muscle is continually breaking down and the breakdown of product that appears in all of our urine everyday is called creatinine and it is related to the muscle mass. If you have got lots of muscle mass, you put out a lot more creatinine. If you have less muscle mass, you put out

less. So, the creatinine that you put out everyday is dependent on muscle mass and we have to estimate that because we can't measure it directly. A woman puts out less creatinine than does man. All right. Based only on that, that the amount of creatinine is relatively constant for each one of us, that number is a set and was well recognized and how you get to that is from 20 to 26 milligrams of creatinine is put out by each one of us for every kilogram of body weight. So, the way what you do is there is a creatinine that is listed in these results. That creatinine that is listed in the urine is the amount that appeared in that spot sample. So what you have to do, this is very complicated but you take that what was observed in the urine and these spot samples and you divide it into how much you should be putting out per day and if your urine is very dilute and there wasn't very much creatinine in that urine, then it is a very small part of the amount that you excrete per day and so you have to multiply by that amount that is down. That gives you the correction for the creatinine. Then you take that creatinine corrected and multiply it times the level of porphyrin that appeared in that spot sample and that is called the corrected porphyrin based on creatinine. That is pretty complicated but those are the steps you have to go through before you can say that you corrected for it.

Now, even when you do that, you have to recognize as I have told you it was a range from 20 to 26 for most of us in the amount of milligrams because all it does is it is an estimate, a better estimate than is a spot sample. It is not nearly as good as a 24 hour urine for porphyrin.

Q. All right. So the best thing you can do to measure porphyrins is to have a 24 hour urine sample?

A. Yes, sir.

Q. The one thing you can't do is to analyze or diagnose porphyrins based only on the micrograms per liter spot sample?

A. You can't use that. You can't use the spot sample results.

Q. Alone?

A. By itself.

Q. So, if you don't have a 24 hour urine sample, then the only way to make any judgment about the porphyrins is to take the micrograms per liter spot sample and perform this mathematical treatment of it?

A. Yes. And if you do, and try to compare it with the actual measured 24 hour, you compare that mathematical thing I have just said using a spot sample and compare it with the 24 hour, it will approximate it but wouldn't be the same as.

Q. So, it wouldn't be as good as a 24 hour urine

sample?

A. No, sir.

Q. And it will be approximately --

A. Yes.

Q. What the 24 hour will show. All right. And, Doctor Moses reached conclusions in this article and in this study about porphyrins by performing the correction for creatinine?

A. Yes.

Q. All right. Now, it is possible, is it not, that Doctor Suskind could perform the same kind of mathematical correction on the porphyrins if he thought it was important to do that, isn't it, or is this the data there in the record?

A. I was trying to think. Creatinines are here.

Q. Well, let me ask you about that. If the creatinines are there, do you have to have a normal range, reference range, for creatinines from the laboratory in order to do that? Do you have to be able to tell exactly what the creatinine level is in order to do that?

A. You can't talk about normal and abnormal unless you do some statistical manipulation of results themselves. In trying to establish your own range and what would be called out of a range just by virtue of somebody being in the top

two and a half to five percent. But I know of nothing where I have seen published a normal range for corrected urine porphyrins.

Q. All right. What I am getting at, in order to do the creatinine correction that you are talking about, what do you need to be able to find in the laboratory report with respect to creatinines?

A. The creatinine is in there. And all you need to do is to compare that with the expected creatinine clearance from each person and that will give you a number. Supposing the amount of creatinine that you put out each day is 4, and the concentration, the amount that is in the spot urine was one, then that means that you had to have 4 times the amount of creatinine as there was in that little sample. So you say it was low by a factor of 4. You take that 4 and multiply it times the observed porphyrin level to find the corrected porphyrin.

Q. It is that, it is just that simple. All you take is that ratio?

A. Yes.

Q. Now, Doctor Moses' study was published when, sir?

A. In 1984.

Q. Did it precede the publication of Doctor Suskind's study?

A. I think so.

Q. Now, in these documents that we were looking at just before lunch, Doctor Moses' study was done in 1979?

A. Yes, sir, just before the Suskind study.

Q. And Doctor Suskind's study was done in 1979?

A. Yes, sir.

Q. They were both published in 1984?

A. Yes, sir.

Q. Now, with respect to what -- before Doctor Suskind's Nitro study was published, this is the health, the morbidity study that we are talking about?

A. Yes, sir.

Q. You had received an Exhibit 1479 which is right here, sir. You had received a draft, is that correct?

A. Yes, sir.

Q. Now, when you got that draft, you made comments on it and you sent those comments back to Doctor Suskind?

A. Yes, sir.

Q. Correct. One of the comments that you made related to porphyrins, isn't that right, sir?

A. Yes, sir.

Q. And what comments did you make at that time?

A. On page 3 it states urinalysis included routine examination as well as coproporphyrin and uroporphyrins. And

my comment was the porphyrin findings were not reviewed in the report. All I was saying, if you did them, put them in the report. That is what I was telling him.

Q. So your comment was that if you are going to discuss porphyrins, then include them?

A. That is right.

Q. Put the figures in?

A. Yes, sir.

Q. Now, in 1982, I think you said, you received a second draft which is Plaintiffs' Exhibit 1483, is that right, sir?

A. Yes, sir.

Q. And Mr. Carr was asking you about the porphyrin values stated in that report, was he not?

A. Yes, sir.

Q. And there was a certain page at which those porphyrin results were set out, is that correct?

A. Yes, sir.

Q. Now, I am not finding them. Was there a blowup of 1483A? It was table 35 on page 77 of that document but the jury I believe has 1483A which is the page you and Mr. Carr were referring to. Isn't that right, sir?

A. I don't know whether they got a copy of it or not.

MR. CARR: They got a copy of it.

Q. And that document sets forth certain statistics, does it not?

A. Yes, sir.

Q. Now, does it state the lab results themselves?

A. No, sir.

Q. Okay. The laboratory results were contained in these respective reports here which are Plaintiffs' Exhibit 1504, correct?

A. No. These are for Krummrich.

Q. I am sorry. The laboratory results were set forth in the actual lab data itself. I mean there isn't any lab data set forth here, is that right?

A. No, sir.

Q. And have you seen those laboratory results on the Nitro morbidity?

A. Some of them. I have looked at some of them.

Q. Some of them. Now, do those laboratories list those porphyrin results as being abnormal?

A. No, sir.

Q. What they do tell you is that they can't really say they have got spot urine samples, right?

MR. CARR: Counsel, unless you know that to be a fact, don't suggest it to the witness. I object to it.

MR. HEINEMAN: I will ask him.

THE COURT: I didn't hear the last part.

MR. CARR: There isn't any such thing. They are the same kind of reports that we have in the Krummrich study. They don't say anything at all like Mr. Heineman has suggested to the witness and I object to the form of the question.

THE COURT: Could the two of you approach the bench with one of the lab reports, please.

MR. CARR: We don't have one here from the morbidity study, Your Honor. What we have here is the lab report from the Krummrich study, not the Nitro study.

MR. HEINEMAN: Well, I will accept that. If it is set forth as Mr. Carr claims, the same as they are in the Krummrich study, fine.

MR. CARR: I don't claim that, counsel. That is a fact.

MR. HEINEMAN: You don't claim it to be a fact?

MR. CARR: I don't claim it, sir. It is a fact.

MR. HEINEMAN: It is a fact, I see.

THE COURT: Okay. Could you approach the bench with one of the Krummrich studies.

(Bench conference had out of the hearing of the jury.)

MR. HEINEMAN: Here is what we are referring to

right here.

THE COURT: What specifically are you referring to?

MR. HEINEMAN: All I want him to talk about is what the results, how are the results of the correspondence, let me start over again. All I want to ask him is how the results of the porphyrin analyses are stated in the laboratory results in the Nitro study. If they are the same as this, if this is the way they are set forth, fine. He can use this as an example.

MR. CARR: That wasn't your question, counsel. You were suggesting the answer to the witness that isn't so unless you know that it is so unless you have the report here that says that the laboratory so described their results.

MR. HEINEMAN: I am suggesting what the witness testified to yesterday as to what they showed. That is my recollection of what he said.

THE COURT: I think the question that you objected to is not the same as you just told me. Do you have any objection to what he just stated?

MR. CARR: I don't object to him asking the witness what the lab report actually states. I do object to him suggesting something that isn't a fact.

THE COURT: Fine. I will allow you to ask that

question.

MR. HEINEMAN: All right.

(The following proceedings were had in the hearing and presence of the jury).

Q. Doctor, the Krummrich results, laboratory results are set forth in Plaintiffs' Exhibit 1504, is that right?

A. Yes, sir.

Q. Okay. Now, what is it that the, what do the Krummrich Laboratory reports say about porphyrin levels?

A. It states the analysis results reported in the METPATH data is the uroporphyrins and the coproporphyrins are listed in the micrograms per liter of urine.

Q. Is there a reference range listed with them?

A. No, sir.

Q. Does METPATH have a reference range for porphyrins stated in terms of micrograms per liter?

A. They didn't include it.

Q. To your knowledge, does METPATH have any normal reference range for porphyrins other than that which Mr. Carr showed you which is Exhibit 1509?

A. This is the only limit that I know of that METPATH has and they list the normal range for creatinine, coproporphyrin and uroporphyrins in terms of micrograms excreted per 24 hours.

Q. So they give it only in terms of a 24 hour sample in their normal reference range?

A. Yes, sir.

MR. CARR: I suggested to the court that we did not have a METPATH result for the Nitro study. That is incorrect. The people that have cancers and there are exhibits in evidence from Nitro that make up these charts that we have, we do have and have put into evidence. They are complete laboratory reports so we do have the METPATH Laboratory and porphyrin for some of the Nitro workers who were part of the morbidity study. If the court would like to see that exhibit to see that they are the same as the Krummrich study. We would be glad to show the court that we did have it.

THE COURT: The two of you agree that they are the same, though, is that correct?

MR. CARR: I don't know whether counsel agrees or not but he said I claimed it but I stated it was a fact.

THE COURT: Do you agree that they are the same?

MR. HEINEMAN: I don't know whether they are or not. I would have to look at them myself.

MR. CARR: You have seen them, counsel. I gave you a copy of them.

MR. HEINEMAN: You did?

MR. CARR: I gave you a copy of those workers at Nitro that had cancer, if you recall. They were listed on the board there. There were 28 cancers that Suskind only reported 14 of.

MR. HEINEMAN: That is right. You did indeed.

MR. CARR: The clerk has a set, counsel, and I have a set.

MR. HEINEMAN: Which Exhibit Number is that?

MR. CARR: This exhibit over here if you get close to it, 1473, or thereabouts, would be it. 1473 is probably it.

MR. HEINEMAN: 1468. They look to be about the same. Close enough that I can't tell the difference.

THE COURT: Fine.

Q. Now, the figures there, the results that are established there are set forth in micrograms per liter, correct?

A. Correct.

Q. In the Krummrich results?

A. Yes.

Q. And they do not list a normal reference range beside that, isn't that correct?

A. No, sir.

Q. And they have an asterisk next to each of those

results, do they not, on porphyrins?

A. Yes, sir.

Q. And the asterisk is essentially like a footnote?

A. Yes.

Q. And then they explain what the asterisk means?

A. Yes, sir.

Q. And what do they say?

A. Where it lists the coproporphyrin, I can't read it well but it is urine, it has an asterisk and an 01 which the coproporphyrin and for 01 below it it says no total volume given, results expressed per liter. For uroporphyrins, that is with an asterisk and the number 2. Below it it states for number 2, no total volume given, results expressed per liter. And for number 3 which refers to the creatinine, urine creatinine, they say for 3, they have got another asterisk, another note below. No total volume given, results expressed per liter.

Q. Now, did Doctor Suskind rely upon those porphyrin results when he wrote his report?

A. Which report?

Q. Well, let me, I am switching back to Nitro on you. I am sorry. Let me go back to Nitro. If the Nitro results are expressed in the same way, did Doctor Suskind rely on those porphyrin results when he wrote his report on the Nitro

morbidity study?

A. In his draft report or the final report?

Q. Well, let's take the draft report.

A. In the draft report, he reports the urine porphyrin and coproporphyrin in micrograms per liter.

Q. All right. That is in the second draft, correct?

A. Yes, sir.

Q. Let me direct your attention to the first draft that he sent you. And that is Exhibit 1479 where you made the comments and sent it back. I direct your attention to page 3 of Exhibit 1479. If you look at page 3, sir, there is that, in the second paragraph, there is the sentence that you just read a few minutes earlier about what you made comment on?

A. Yes, sir.

Q. The sentence states, urinalysis included routine examination as well as coproporphyrins and uroporphyrins with an asterisk, correct?

A. Yes, sir.

Q. And that is the sentence about which you said the findings aren't in here, correct?

A. Yes, sir.

Q. Porphyrin findings not reviewed in text or table?

A. Charts. Same thing.

Q. What does he say at the bottom of the page where that asterisk is?

A. Values for urine coproporphyrin and uroporphyrins were determined by a single void sample rather than the required 10 ml. aliquot of a 24 hour volume. Hence, levels outside the normal range cannot be regarded as significant.

Q. So that is what he said in the first draft that he sent you?

A. Yes, sir.

Q. Clearly indicating that he did not rely on those porphyrin results?

A. Yes, sir.

Q. You asked him what are the porphyrin findings, correct?

A. Right.

Q. And then the second draft came and that contained the chart which is 1453A, 1483A, that contained the chart page 77 that had porphyrins on there, right?

A. Yes.

Q. Then in the final report which was published, I would like to direct your attention to this, sir. On page 77 there which would be 1483A, there is an asterisk there as well, isn't there?

A. Yes, sir.

Q. And a footnote at the bottom of the page and it says what?

A. The values for coproporphyrin and uroporphyrin were from a single void sample.

Q. And he points that out to whoever is reading this chart, correct?

A. Yes, sir.

Q. On table 35. Now, in the final report which was published, the paper as he published it, what did he do, do you recall, sir?

A. He left out porphyrins.

Q. They were left out?

A. Yes.

Q. Here we have Plaintiffs' Exhibit 1467 and ask you, sir, is that the final morbidity study as it was published by Doctor Suskind and Vicky Hertzburg?

A. Yes, sir.

Q. And what does he say about porphyrins there?

A. On page 273 he says urines included routine examination as well as determination of coproporphyrins and uroporphyrin values. Then he has in a parenthetic statement saying values were determined by single void sample, hence, the measurements cannot be regarded as valid.

Q. So that is different from the footnote at the

bottom of page 3 in the first draft that he sent you, isn't it?

A. Yes, sir.

Q. In this one he said hence levels outside of the normal range cannot be regarded as significant and in that one he says they are not valid?

A. Yes, sir.

Q. Now, sir, was that language listed in the final report, Plaintiffs' Exhibit 1467, that was suggested to Doctor Suskind by you?

A. No, sir.

Q. To your knowledge, was it suggested to him by anyone at Monsanto Company?

A. No, sir.

Q. Now, Doctor, with respect to the actual Krummrich results, you mentioned to Mr. Carr when he was asking you about the Krummrich study, that 44 people had worked only in the penta department?

A. Yes, sir.

Q. Now, that is reflected in table 7 in the Suskind report, is it not?

A. I don't recall.

Q. It is Exhibit 1500, sir?

A. Table 7. Yes, sir.

Q. Okay. Table 7 is the one that demonstrates what? How many people had chloracne depending upon which department they were in, is that right?

A. Yes, sir.

Q. And that demonstrates a total of 44 people in that study who worked only in Department 236 with penta?

A. Yes, sir.

Q. In addition to that, sir, Mr. Carr in connection with the Krummrich Plant health study asked you about the history portion that each person filled out. And he directed your attention to, I think, 6 or 7 questions with respect to their present condition. Do you recall that?

A. Yes, sir.

Q. Now, would you take the first one of those Krummrich study results and turn to that page that reflects those 6 or 7 questions?

A. Yes, sir.

Q. One of those questions has to do with fatigue, is that right?

A. Yes, sir.

Q. And what is the question that is asked?

A. Are you tired most of the time.

Q. Now, if you look at Plaintiffs' Exhibit I think it is 1506. Is that before you there? That is the summary that

Mr. Carr had prepared.

A. No, sir, that is not here.

Q. I am sorry, it is 1507. Do you see that, sir?

A. Yes, sir.

Q. That is the summary that Mr. Carr told you that he prepared or he had prepared, is that right?

A. Yes, sir.

Q. And he represented to you and he represented to the court that it was accurate?

A. Yes, sir.

Q. Is that right. Now, Doctor, he lists on that chart several people that have chloracne?

A. Yes, sir.

Q. Is that right?

A. Yes, sir.

Q. Do you know whether or not the number of people he has listed as having chloracne is correct?

A. There is 30 or 31 here.

Q. All right.

A. The Suskind report we just went over. There were 42 people that were listed. You have to look at the column the other way.

Q. The Suskind report states that?

A. 43 have chloracne.

Q. That is 42 and one questionable?

A. Right. But they list it as 43.

Q. Have chloracne?

A. Yes, sir.

Q. And this document lists 31 that have it?

A. Yes.

Q. So, apparently Doctor Suskind believes that there are 11 more chloracne cases, at least 11 more among those Krummrich workers than this document would demonstrate?

A. Yes, sir.

Q. Now, with respect to the questions that were asked, you were talking about headaches. Would you read to the jury what the questions are that are asked each of these Krummrich workers about their headaches?

A. Do you have headaches? That is one question. Then after that another question is, do you have headaches daily? Do you have headaches weekly? And do you have headaches less than weekly?

Q. So, there is the general question do you have headaches and then under that there are 3 specific questions about headaches, about how frequently you have them?

A. Yes, sir.

Q. Whether it is daily, weekly or less than weekly?

A. Yes, sir.

Q. Is that right?

A. Yes, sir.

Q. Now, as I understand what Mr. Carr was talking with you about yesterday, everybody that checked the headache box was listed as having a symptom for headache, is that your understanding?

A. Yes, sir.

Q. Regardless of which of those boxes were checked?

A. Yes, sir.

Q. So that someone could have headaches a couple of times a year and be included in Exhibit 1507 as having symptoms of headaches?

A. Yes, sir.

Q. Do you have a record up there for a lady named Beth Fay?

A. Yes, sir.

Q. What does she say in her record or what does the interviewer have written down that she said about her headaches?

A. Do you have headaches? Yes. Do you have headaches less than weekly? The answer is yes.

Q. Anything else written there about her headaches?

A. No, sir.

Q. All right. She has it checked as less than weekly,

correct?

A. Yes, sir.

Q. And does she have -- well you can't tell. It is just all symptoms, right?

A. That is right.

Q. Beth Fay. Now, what did -- let me direct your attention to the place where she was examined. On page 15 of Beth Fay's papers here, this chart, there is a page that has at the top of it abnormal findings from history, correct?

A. Yes, sir.

Q. It says yes mark is checked. Yes, an abnormal finding from history and it says there tension headaches most of her life, doesn't it?

A. Yes, sir.

Q. And under diagnosis on that same page it says tension headaches, right?

A. Yes, sir.

Q. And do you know Beth Fay?

A. I have met her.

Q. How old is she?

A. I don't know.

Q. Well, she wasn't born in '79, was she?

A. No.

Q. So, for all you know, Beth Fay may be included

there as having a headache when she has had tension headaches most of her life, is that right?

A. It is listed there as most of her life.

Q. But I mean she may have been included in Exhibit 1507, this chart?

A. Yes, sir.

Q. It says she was born in 1957 in that document. Now, you mentioned something about headaches. Do you consider a large number of these people having headaches to be a significant symptom reported?

A. Not if you don't put any limitations on the definition of headache.

Q. You mentioned some statistics about how headaches occur in the normal population, didn't you?

A. I did find that headaches have been reported up to 80 percent of the population, the normal population. Just so-called people off the street will say they have headaches like this or more.

Q. Now, they will report, they will have them, they will just report they have headaches?

A. Right. It maybe weekly or it could be monthly or they have had headaches sometime or other.

Q. And if this group, if it turns out that 80 percent of this group reports headaches even though some of them may

be less than once a week, once a year or they have had them all their life, you wouldn't find that -- if there is as much as 80 percent of people said they had headaches, you wouldn't find that abnormal?

A. I couldn't.

Q. Now, some of the people reported insomnia, is that right?

A. Yes, sir.

Q. Now, what was the question that was asked of them, sir?

A. Do you have trouble sleeping?

Q. And there is either a yes or a no?

A. Yes, sir.

Q. And I believe Mr. Carr told you that 19 percent of the people in this report of his had it or reported it?

A. I think it was about 20 percent. I don't remember the exact number but it was around 20 percent.

Q. You suggested some statistics with respect to how it is found in the normal population reports of insomnia, did you not?

A. Yes, sir.

Q. What is that?

A. In the article discussing insomnia, the statement is made that so many people complain of difficulty sleeping

that it is almost a normal phenomenon rather than an abnormal phenomenon. Then it goes on to discuss the statistics of it where they have asked people similar to this this question and something of the order of 20 percent of the population will say that they have difficulty sleeping because it is a question have you ever had sleeping problems like headaches or do you have enough problems so that you either seek medication or you go talk to someone about it. 20 percent is what they say is expected based on a sampling such as this.

MR. CARR: So the record is correct, Your Honor, it was the witness that stated the figure and we have not attemptted to breakdown who had what symptom or percentages. I made no such statement that it was 20 percent.

MR. HEINEMAN: Do I understand you to say you don't know how many of these symptom marks relate to insomnia.

MR. CARR: That is correct. Nor do I know how many relate to headaches, fatigue, neural behavior problems and I have given you all the information that I have attempted to take from the reports.

MR. HEINEMAN: And these check marks speak for themselves?

MR. CARR: They do.

Q. Doctor, one of the questions there relates to appetite, is that correct, sir?

A. Yes, sir.

Q. What is the question that is asked?

A. Do you have a good appetite?

Q. And, you can either answer that yes or no, correct?

A. Yes, sir.

Q. Now, you said to Mr. Carr something about that a bunch of the people who said, who denied good appetite were overweight, is that right?

A. Yes, sir.

Q. Now, I assume that you had to look at those records in order to determine that, did you?

A. Yes, sir.

Q. Now, Doctor, why would you go beyond the mere answer given to a question like that to see if there are other factors that might relate to that answer?

A. Well, a good example is do you have a good appetite and to say no, I don't have an appetite and the man is overweight, he may feel like he has got a bad appetite but it isn't reflected as a decrease in caloric intake. Similarly, if a man says I am tired most of the time and if you say to him how long have you been tired and he says I have been tired all my life and I would say what do you do when you are tired and he says I don't do anything and if he says I am tired and I would say you have had this many years. Have you

ever sought any help from a doctor because of it and he says no. I say that doesn't mean very much. Similarly, if you have had trouble sleeping and you say do you ever take anything for it and he said no. In medicine we say that probably isn't very much. If he says if he has had difficulty sleeping, have you gone to a doctor about it and he says no, it isn't much of a problem. So, you really can't take any of these examples here by themselves with more followup before you can put any significance on these representations.

Q. Now, one of the people -- would you look at the record there for a Mr. Bellm, B-e-l-l-m?

A. Yes, sir.

Q. What did Mr. Bellm say with respect to the question of whether he had a good appetite?

A. Do you have a good appetite? No.

Q. All right. Can you find out what his height and weight are?

A. He is 5 feet 9 inches tall and his weight is 190 pounds.

Q. Now is 190 pounds overweight for being 5 foot 9?

A. By most standards it would be. I don't have the thing here but that would certainly be on the high side of normal.

Q. At any rate, if he has a bad appetite, he is not losing much at the dinner table?

A. That is right. But if we had that, I would say what did you weigh 10 years ago, so you really can't take any of these numbers, any of these yes or no answers by themselves.

Q. Now, in that same document, sir, if you look at page 14 of the questionnaire on Mr. Bellm, it says he has a history of gout, doesn't it?

A. Yes, sir.

Q. What is gout?

A. Gout is a metabolic disease which means that it has something to do with how we metabolize and what things we produce and how much we produce of them and it is associated with an excess production of uric acid. Either that, it is either an excess production of it or there is a difficulty in excreting in the urine. And so this uric acid in your blood is elevated but the characteristics of it as we all remember Captain Kid and the Captain had gout and he had that painful toe that he had to keep up. It is a painful association related to the deposition of crystals of uric acid in the joint space causing terrible pain and causing terrible swelling because of the presence of the uric acid.

Q. Does it have anything to do with what you eat?

A. A man who is overweight is the one who is going to get gout in most circumstances but not always. But there is an association between overweight and gout.

Q. Now, sir, if you look at Mr. Brunner?

THE COURT: Before you start another one, is this a good point for a short break?

MR. HEINEMAN: It would be fine, Judge.

THE COURT: Ladies and gentlemen, we will take a short break at this time. I would remind you the admonishments that I gave you earlier will apply during this break also. Court is in recess.

COURT RECESSED:

(The following proceedings were had in the hearing and presence of the jury)

GEORGE ROUSH

having resumed the witness stand, being previously sworn, testified further as follows:

CLARIFICATION EXAMINATION

By

MR. KENNETH R. HEINEMAN.

Q. Doctor, do you have the chart on Mr. Brunner?

A. Yes, sir.

Q. Would you turn to page 11?

A. Yes, sir.

Q. And the question do you have a good appetite. He answers no, correct?

A. Yes, sir.

Q. He checked all of those symptoms no, didn't he, sir?

A. Yes, sir.

Q. Now, Mr. Brunner is not listed on Exhibit 1507 as having a symptom, correct?

A. No, he does not.

Q. Now, if you look back at Mr. Bellm, that we were just talking about before?

A. Yes, sir.

Q. Bellm checked all of the symptom answers no, did he not, sir?

A. Yes, sir.

Q. But he was listed as having a symptom, correct, on 1507?

A. Yes, sir.

Q. And one can assume that is because a no answer to do you have a good appetite could be checked as a symptom, correct?

A. Yes.

Q. Now, with Mr. Brunner, he answered no to all the questions just as Mr. Bellm did of those 7 questions relating

to symptoms, correct?

A. Yes, sir.

Q. And he was not listed as having a symptom on 1507, correct?

A. Yes, sir.

Q. So either an answer of no to question number 7, do you have a good appetite, is a symptom or it isn't. It can't be both ways, correct?

A. Yes, sir.

Q. Now, Mr. Brunner, if you look at page 14, excuse me, 13, how tall is he, sir?

A. 5 feet 11.

Q. And his weight?

A. 243 pounds.

Q. So, one might believe in reviewing the entire document that while he may at the time believe he does not have a good appetite, he apparently does?

A. Yes, sir.

Q. Isn't that right?

A. Yes, sir.

Q. So that while you would look beyond merely lifting the check mark off the document but get the results from the entire document, correct?

A. Yes, sir.

Q. And when Doctor Suskind was analyzing the results of these data back in Cincinnati, he would have access to this entire questionnaire, would he not?

A. Yes, sir.

Q. And he would make judgments about whether certain statements in here would be significant or not?

A. Yes, sir.

Q. Based upon the entire record?

A. Yes, sir.

Q. Now, Mr. Carr told you, sir, did he not, that all of the answers for questions 3 through 9 that reflected symptoms were recorded in that first box on page 1507, correct?

A. I am sorry, 1507?

Q. 1507 is the chart.

A. I am sorry, ask the question again.

Q. Didn't he tell you, sir, that the symptom column there --

A. Yes, sir.

Q. Reflected all of the answers to questions 3 through 9 of each of these people whose names are listed there, correct?

A. Yes, sir.

Q. And we know that in the case certainly of Mr.

Brunner, that is not accurate?

A. That is right.

Q. Now, do you have Mr. Copeland's record there, sir? Do you have it there, sir?

A. They are not very clear. Is Copeland 114?

Q. Yes, sir.

A. Yes, I have it.

Q. And on page 11, he answers no to all the questions?

A. Yes, sir.

Mr. CARR: That is not exactly clear, counsel. If you want, unless you have got a better copy than mine.

Mr. HEINEMAN: It looks like it on ours.

Mr. CARR: That is not an X. It appears to be a 9 but I can't make it out from mine. Call it what you want. We will take care of it.

Q. The form that you have there, sir, for Mr. Copeland on number 11, if you look at question number 7, do you have a good appetite, is there any mark at all in the yes box?

A. No, sir.

Q. Is there a mark in the no box?

A. Yes, sir.

Q. And so he has marked a no on all these questions?

A. Yes, sir.

Q. And he has marked no on whether you have a good

appetite?

A. Yes, sir.

Q. Which should be a symptom, correct?

A. Yes, sir.

Q. And he is not listed on 1507 as having a symptom?

A. No, sir.

Q. And, sir, he is, if you look at page 13, how tall is he?

A. 5-11.

Q. And how many does he weigh?

A. 189 pounds.

Q. Would that be indicative, sir, of a loss of appetite?

A. That is a normal weight, on the high side of normal.

Q. Now, would you look, sir, at Mr. Deford?

A. Yes, sir.

Q. Now he answered on page 11 all of the symptom questions no, did he not?

A. Yes, sir.

Q. He also denied having a good appetite?

A. Yes, sir.

Q. Correct?

A. Yes, sir.

Q. And that was a symptom for Mr. Bellm, was it not?
A. Yes, sir.
Q. And if you look at the chart number 1507 for Deford, there is no symptom listed there, is there, sir?
A. No, sir.
Q. His height on page 13?
A. Is 5 feet 5 inches.
Q. His weight 131?
A. Yes, sir.
Q. Is that a normal weight for being 5 feet 5?
A. It depends on his body build but it is within the range of normal.
Q. Now, would you look at Mr. Feazel?
A. Yes, sir.
Q. F-e-a-z-e-l?
A. Yes, sir.
Q. And you look at page 11?
A. Yes, sir.
Q. He answers one of the symptom questions yes and that is do you lose your temper easily?
A. Yes, sir.
Q. And he answers do you have a good appetite no, correct?
A. Yes, sir.

Q. He answers all of the other symptom questions no?
A. Yes, sir.
Q. And on the chart he has 2 marks under symptoms, correct?
A. Yes, sir.
Q. So obviously on this man a denial of a good appetite is listed as a symptom?
A. Yes, sir.
Q. As well as losing temper easily?
A. Yes, sir.
Q. And if you look at page 13, sir, he is 5 foot 7?
A. Yes, sir.
Q. And a half?
A. Yes, sir.
Q. And he weighs 169 pounds?
A. Yes, sir.
Q. Is that a normal weight for being 5-7 and a half?
A. Yes, sir. It is on the high side of normal for 5-7.
Q. Now, sir, would you look at Mr. Grimmett please?
A. Grimmett?
Q. Grimmett.
A. Yes, sir.
Q. Now, Mr. Grimmett, if you look at page 11?

A. Yes, sir.

Q. He says with respect to question number 3, it asks do you have headaches. He says yes, does he not, sir?

A. Yes, sir.

Q. He says are they daily? No. Correct?

A. Yes, sir.

Q. Weekly? No. Correct?

A. Yes, sir.

Q. Less than weekly? No.

A. Yes, sir.

Q. Would that seem kind of inconsistent?

A. Yes, sir.

Q. Unless he means they occur much less frequently than weekly but at any rate, sir, he has a yes answer for headaches, a yes answer for trouble sleeping, a yes answer for tired most of the time, a yes answer for do you need more sleep than usual and a no answer for do you have a good appetite, correct?

A. Yes, sir.

Q. And he has got 4 symptom checks?

A. Yes, sir.

Q. You don't know which of those symptoms was disregarded or ignored by the person who prepared this Plaintiffs' Exhibit 1507, correct?

A. Yes, sir.

Q. By the way, Mr. Grimmett on page 13, how tall is he, sir?

A. He is 6 feet 5.

Q. And how much does he weigh?

A. 175 pounds.

Q. That is pretty thin for 6 foot 5?

A. He is slightly built. Probably.

Q. Now, is there anything else that you can look at? That alone might indicate indeed that he might have a lack of appetite, isn't that right?

A. Yes, sir.

Q. Is there anything else you could look at such as the laboratory results which would give you any indication as to whether indeed he has a lack of appetite?

A. You would look at the laboratory result and see if there is any explanation there.

Q. Now, what are his lipids, sir?

A. His lipids, his triglycerides were about normal. His cholesterol was quite normal. His LDL was normal, and his VLDL was normal.

Q. So his lipids are normal. That is the amount of fat in his blood?

A. Yes, sir.

Q. What does that tell you, if anything, about whether or not he has good appetite?

A. You can't draw a great deal of conclusion from it. He is able to maintain his lipids in the normal range which suggests that he is getting enough calories including his fat and he may be chewing up his fat for calories and that is the reason he is not overweight.

Q. Now, we don't know, do we, sir, whether this man who may indeed have a low appetite, have a decreased appetite, whether that symptom was the one left off Plaintiffs' Exhibit 1507, do we, sir?

A. Yes. Yes, sir.

Q. Do we have one there, sir, on a Mr. Hewitt?

A. Yes, sir.

Q. Now, if we turn to page 11, we see that Mr. Hewitt gives negative answers to all of the 7 symptom questions including denying that he has a good appetite?

A. Yes, sir.

Q. And in this occasion there is no check for symptom under Hewitt, is there, sir?

A. No, sir.

Q. And, if we look at page 13, we see that he is 6 feet 4 inches tall?

A. Yes, sir.

Q. Weighs 215 pounds?

A. Yes, sir.

Q. Would that be normal?

A. Yep. It would be on the high side of normal.

Q. I am sorry to hear you say that, sir, because I weigh a great deal more than 215 pounds.

A. Yes, sir.

Q. And 6 feet 4?

A. Yes, sir.

Q. And the results are obvious, I am sorry to say. But 215 would be on the high side of normal for 6 feet 4?

A. Yes, sir.

Q. And if Doctor Suskind were appraising this man's situation with respect to the symptoms that he claims regardless of whether or not it has been put on Plaintiffs' Exhibit 1507, he could look at the denial of a good appetite and the height and weight and see that it seems unlikely that although this man may feel that he has a loss of appetite, it is unlikely that in fact he is losing any calories, is that right?

A. Yes, sir.

Q. Now, how about Mr. Hornbeck, sir?

A. Yes, sir.

Q. Now, with Mr. Hornbeck, if we look at page 11, we

have some difficult decisions to make here, do we not, sir?

A. Yes, sir.

Q. He answers headaches yes but does not tell how frequently they occur. He answers do you have trouble sleeping. Yes. And he puts a circle around it, correct?

A. Yes, sir.

Q. Are you tired most of the time? His answer is yes?

A. Yes, sir.

Q. Number 6. Do you need more sleep than usual? Neither one is answered but a question mark is put there?

A. Yes, sir.

Q. Number 7. Do you have a good appetite? Answer, both yes and no?

A. Yes, sir.

Q. Do you lose your temper easily? Answer both yes and no?

A. Yes, sir.

Q. And number 9. Do you feel angry often? Answer, no. Correct?

A. Yes, sir.

Q. Now, are there any of those symptoms which you could unequivocally answer yes if you were preparing Exhibit 1507?

A. I don't think so.

Q. Well, he did say yes to trouble sleeping?

A. Yes.

Q. And he put a circle around it?

A. Yes, sir.

Q. And he did say yes to are you tired most of the time?

A. Yes, sir.

Q. So you could put down 2, couldn't you, sir?

A. Well, not with a circle around do you have trouble sleeping. I don't know what he means by that.

Q. Now, if you look at Exhibit 1507 for Mr. Hornbeck, we see that 4 symptoms are listed?

A. Yes, sir.

Q. For him, is that right?

A. Yes, sir.

Q. Do you have any idea from looking at the Hornbeck questionnaire which those 4 could conceivably be?

A. I would say he probably does have headaches but I am not sure what it means. I don't know whether he has trouble sleeping or not. I don't know whether he needs the sleep or not. And those 2 somehow should be looked at together. And appetite I can't tell and --

Q. Can't tell on appetite. Can't tell on losing temper and feeling angry often is no?

A. That is right.

Q. So you can't conceivably tell what 4 symptoms could be checked in Plaintiffs' Exhibit 1507 based upon what you see before you on page 11, is that right?

A. No, sir.

Q. By the way, sir, Mr. Hornbeck is 5 foot 3?

A. Yes, sir.

Q. And weighs 268 pounds?

A. Yes, sir.

Q. Now, next we have, I would like to direct your attention to Mr. Hundelk?

A. Yes, sir.

Q. Now, Mr. Hundelk on page 11 reports headaches weekly?

A. Yes, sir.

Q. Which would lead you to believe if you were analyzing this information for a report that he gets the headache once a week?

A. Yes, sir.

Q. Is that unusual, sir?

A. No, sir.

Q. He answers no to trouble sleeping. He answers yes to being tired most of the time but he answers no to needing more sleep than usual. So though he says in these answers

that he is tired most of the time, he doesn't think he needs more sleep than usual, correct?

A. Yes, sir.

Q. He says no to whether he has a good appetite, correct?

A. Yes, sir.

Q. And he is 6 feet one and a half and weighs 242 pounds, correct?

A. Yes, sir.

Q. You would consider that to be overweight?

A. Yes, sir.

Q. Now, as to losing his temper easily and feeling angry often, he answers yes to both of those with the notation that it is recent on both of them, correct?

A. Yes, sir.

Q. And he has a total there I guess of 5 symptoms checked?

A. Yes, sir.

Q. And on Exhibit 1507 they list 3?

Mr. CARR: Counsel, for your information, we did not duplicate, put the neural behavior as one. One or both of those neural behavior answers were just one check.

Mr. HEINEMAN: Which ones are you talking about, Mr. Carr?

Mr. CARR: The neural behavior. The temper easily and angry often. The symptoms we list would categorize it.

Mr. HEINEMAN: So number 8 and 9 would be one check?

Mr. CARR: Yes.

Mr. HEINEMAN: If they were either or both.

Mr. CARR: 2 problems with the temper or feeling angry but there would only be one check on the chart for it.

Mr. HEINEMAN: Well that would leave us with four checks, correct, four symptoms checked.

Mr. CARR: I am not looking at the chart. I am doing something else and I just heard you talking about the number of checks and I thought you should know that.

Mr. HEINEMAN: I see.

Mr. CARR: Because if you look at the chart we put neural behavior problems. Do you see that in 1507? We don't put temper easily or anger. If you see that, you can see that.

Q. Now, when Mr. Carr was asking you questions about these symptoms, sir, did he tell you at that time that there was one check for questions 8 and 9?

Mr. CARR: Counsel, if you were here, you would have heard that. I did indeed ask him about both of those being neural behavior problems. We agreed they were. If you were

here, you heard me explain that to the witness.

Mr. HEINEMAN: I was here and I certainly didn't hear that.

Q. Sir, did you hear him say that there was one check given in the symptom column for both questions 8 and 9?

A. No, sir.

Mr. CARR: Counsel, I didn't say that to the witness. What I did was have the witness agree that losing the temper easily and feeling angry often was indications of neural behavior problems. You can see on the chart 1507, it does not put in there do you lose your temper easily, do you feel angry often. They are just the category neural behavior problems.

Mr. HEINEMAN: I see that. And you are saying the witness agreed that those 2 are neural behavior problems?

Mr. CARR: Yes, the witness did agree with that.

Mr. HEINEMAN: I don't remember that either.

Q. Now, if we give one check for both 8 and 9, we still have 4 symptoms there, do we not, sir?

A. Yes, sir.

Q. And Mr. Hundelk has 3 listed on the chart?

A. Yes, sir.

Q. You don't know by that which, if any, of these symptoms answered here were ignored or overlooked by the

person that prepared Exhibit 1507?

A. Yes, sir.

Q. Now, if we look at Mr. Isaac, sir?

A. Yes, sir.

Q. Do you have that there?

A. Yes, sir.

Q. Let me direct your attention, sir, to page 11 of his questionnaire. He answers that he does have headaches, less than weekly. He answers yes to both of those, correct?

A. Yes, sir.

Q. So he has a headache less than once a week, doesn't he?

A. Yes, sir.

Q. That could be anywhere from one every other week, once every 10 days, once a month, once a year, couldn't it?

A. Yes, sir.

Q. Is there anything unusual about someone who has a headache less than once a week?

A. No, sir.

Q. Is that something that is found in the general population?

A. Yes, sir.

Q. Now, he answered 3 other symptom questions yes, did he not?

A. Yes, sir.

Q. And he answered, do you have a good appetite. No. So he denied having a good appetite, correct?

A. Yes, sir.

Q. So even if you assume that the 2 yes answers for 8 and 9 constitute only one check, that is do you lose your temper easily and do you feel angry often, that is only one check, he still should have 4 checks, right?

A. Yes, sir.

Q. Now, he has 3 on Exhibit 1507, correct?

A. Yes, sir.

Q. So we don't know whether on this occasion, whoever compiled Exhibit 1507 felt that having headaches less than weekly was not a symptom or was a symptom or we don't know which of the others was considered to be a symptom or not a symptom or just merely overlooked inadvertently, correct?

A. Yes, sir.

Q. Now, sir, if you look at page 13, he is 5 foot 9, isn't he?

A. Yes, sir.

Q. Weighs 181 pounds?

A. Yes, sir.

Q. Would you consider that to be overweight, sir?

A. He is on the high side of normal.

Q. High side of normal. So that if Doctor Suskind not having the benefit of Plaintiffs' Exhibit 1507 were evaluating this information based on this questionnaire, he would have reason to think, perhaps, that a denial of appetite which indeed the man may feel at the time that his appetite isn't all that he would like it to be, is certainly not causing him any problem, is that right?

A. Yes, sir.

Q. Now, if we go to Mr. Jenkins, please, sir?

A. There are two Jenkins.

Q. I am thinking about the one that is Mr. Henry J. Jenkins.

A. Yes, sir.

Q. Now Mr. Henry Jenkins answered no on all of the symptoms, correct?

A. Yes, sir.

Q. The negative answer to number 7 would give him a symptom, correct?

A. Yes, sir.

Q. There is nothing listed in the symptoms for Mr. Jenkins?

A. No, sir.

Q. On Exhibit 1507?

A. Yes, sir.

Q. He is, if you turn to page 13, how tall is he, sir?
A. 6 feet.
Q. And how much does he weigh?
A. 249 pounds.
Q. And would that be overweight for 6 feet tall?
A. Yes, sir.
Q. So that again Doctor Suskind in evaluating whether or not indeed this man had a good appetite would be able to refer to that height and weight as well, would he not?
A. Yes, sir.
Q. Now, next, sir, would you please look at Mr. Kadell?
A. Yes, sir.
Q. Turn to page 11, the only symptom there is the loss, is the denial of the -- the only symptom there is the denial of a good appetite?
A. Yes, sir.
Q. He has no symptom checked on Exhibit 1507?
A. No, sir.
Q. And his weight, height and weight are what, sir?
A. He is 6 feet 5 inches and weighs 236 pounds.
Q. Would that be within normal range for a man 6-5 that weighed --
A. It is on the high side of normal but on the high

side of normal but not much.

Q. So that Doctor Suskind again would be able to refer to that height and weight in determining whether or not this man really has an appetite problem?

A. Yes, sir.

Q. Even though he may feel that he has one?

A. Right.

Q. And finally, Mr. Delbert G. Kirk, sir?

A. Yes, sir.

Q. The on page 11, he answers no to all of the questions at the top of the page, correct?

A. Yes, sir.

Q. And he has no symptoms listed on Exhibit 1507?

A. No, sir.

Q. And he is 5 feet 9 and weighs 194 pounds, correct?

A. Yes, sir.

Q. So he is certainly on at least the high side of normal, probably overweight?

A. Probably overweight.

Q. Now, sir, with respect to this loss of appetite, would you report that as a symptom under the circumstances of having access to the heights and weights?

A. No, sir.

Q. Now, do you feel that in order to determine whether

or not indeed there is a symptom, one would have to do more than just pull an answer out of a box but would have to look at the entire questionnaire?

A. Yes, sir.

Q. So that one could make a judgment?

A. Yes, sir.

Q. As to whether or not indeed there is a symptom or a problem here?

A. Yes, sir.

Q. Now, one of the things that is stated or listed as questions in these questionaires is whether somebody gets angry and whether somebody loses their temper, correct?

A. Yes, sir.

Q. And you and Mr. Carr had some discussion about that as to whether it was logical that one could get both angry and lose their temper or one might get angry and not lose his temper. Do you remember that discussion, sir?

A. Yes, sir.

Q. And that apparently is only counted as one symptom, is that right?

A. Yes, sir.

Q. Which would lead one to believe that whoever compiled these symptoms believes that there is a definite connection between those two, is that right?

A. Yes, sir.

Q. That indeed they don't reflect 2 different symptoms?

A. Yes, sir.

Q. Now, were there any -- these people when you reviewed these records, were there any of these people that said they don't ever get angry and they don't ever lose their temper?

A. Yes, sir.

Q. Would you consider a representation like that would need a little followup?

A. Yes, sir.

Q. Do you know anybody in your experience as a physician or as a toxicologist --

Mr. CARR: Excuse me, counsel. Are you suggesting that there is a questionnaire asked do you ever lose your temper? There isn't such a question asked and you asked the witness if it indicated there and I thought you were going to correct it but since you haven't, there is no question asked like that.

Mr. HEINEMAN: Yes, it is. It says do you lose your temper easily.

Mr. CARR: And do you feel angry often.

A. Yes, sir.

Q. And there would be people that would say they never feel angry often and they don't lose their temper easily?

A. Yes, sir.

Q. And how many people were there that said that?

A. I am sorry?

Q. How many people were there that said no to both of those questions?

A. I don't know.

Q. Do you know how many said yes to both of those questions?

A. Yes. 5.

Q. So there were 5 people out of how many?

A. 105, 106.

Q. 108 according to Mr. Carr?

A. Yes.

Q. 5 people that said that they lose their temper easily and they feel angry often?

A. Yes, sir.

Q. And everybody else said no to either one or both of those questions?

A. Yes, sir.

Q. Now, would you consider that to be something that should be reported as a symptom of some problem?

A. No, sir.

Q. Now, based upon the fact, sir, of what we have seen with respect to Exhibit 1507 --

A. That is there.

Q. 1507 is this summary prepared by Mr. Carr?

A. Right.

Q. Or at his direction. Based upon what we have seen with respect to the accuracy of the reporting of symptoms, what we have seen with respect to how the headaches can be reported, what we have seen with respect to chloracne?

A. Yes, sir.

Q. That there are 11 people whom Doctor Suskind recognizes as having chloracne which are not listed here?

A. Yes, sir.

Q. And the fact that there are listed here non corrected porphyrins?

A. Yes, sir.

Q. Abnormalities. Would you consider sending this document to anybody as being a representation of what the health status is of the Krummrich workers?

A. No, sir.

Q. Why wouldn't you do that, sir?

A. Because it doesn't represent their health status.

Q. Now, based upon what you have read in Doctor Suskind's report which is 1500, Plaintiffs' Exhibit 1500, he

obviously didn't consider these symptoms and porphyrins to be significant enough to report, did he?

Mr. CARR: I object, Your Honor, unless there is a statement in that exhibit to that effect. It is asking the witness to speculate. We have been through this a couple of times.

THE COURT: Objection is sustained. The question does call for speculation.

Q. Does Doctor Suskind, sir, mention anything about these symptoms in his report?

A. No, sir.

Q. And we have already gone over what he said about the porphyrins?

A. Yes, sir.

Q. That they are not valid?

A. Yes, sir.

Mr. HEINEMAN: Your Honor, may counsel approach the bench?

THE COURT: Sure.

(Bench conference had out of the hearing of the jury.)

Mr. HEINEMAN: Your Honor, this is the very kind of thing that I was talking about in terms of admitting this exhibit at the time that it was admitted and I believe that

the testimony of this witness demonstrates that there are many inaccuracies in this document and I would request the Court at this time to strike it as an exhibit, to have it withdrawn and to get it back from the jury and instruct the jury to disregard it because of its inaccuracy. That it has, we have demonstrated it does not have probative value and its only purpose, therefore, would be to prejudice and inflame the jury and they should not have it and should not consider it.

THE COURT: Mr. Carr.

Mr. CARR: I would suggest, Your Honor, that he is a little premature. We haven't put our witness on, yet. I have represented to the court that we can support this document and simply because he has led this witness into answers that he wants from this witness doesn't mean this document does not have probative value and I would request that the Court postpone its ruling on this request until such time as we have put our witness on and heard her explanation for why she put these checks in these abnormal categories and the chloracne and the porphyrins and the symptoms.

THE COURT: I will reserve ruling until after the witness has been under direct and cross examination.

Mr. HEINEMAN: Of the next witness?

THE COURT: Of the witness that he referred to

earlier.

Mr. HEINEMAN: All right.

(The following proceedings were had in the hearing and presence of the jury).

Q. Now, Doctor, in the course of your examination by Mr. Carr, he discussed with you the question of what you did at the time you were informed of the Sturgeon incident and what Monsanto's actions were after that incident occurred, is that right?

A. Yes, sir.

Q. And do you remember him saying to you, sir, or asking you to agree that the only thing that you did was to have a meeting to discuss in July of '79, to discuss the stench and to decide whether to pave over Sturgeon?

A. Yes, sir.

Q. Do you remember that, sir?

A. Yes, sir.

Q. Well, the fact of the matter is, sir, that there were other things that occurred in 1979 at Monsanto in connection with that spill, isn't that right?

A. Yes, sir.

Q. And indeed there are documents in evidence that demonstrate that, are there not, sir?

A. Yes, sir.

Q. For example, if I could have Defendant's Exhibit 870, please.

Mr. HEINEMAN: Excuse me, Your Honor. I just note that there is a blowup of this exhibit, too, and I would like to get it out if I may. Did I hear someone say these were in numeric order?

THE COURT: You didn't hear me say that.

Mr. HEINEMAN: Sorry, Judge. I don't mean to hold you up but I am trying to find this thing.

Q. Let me show you this document, sir, that is Plaintiffs' Exhibit 1264 which is in evidence. These are handwritten notes of a meeting. Do you remember being in a meeting on February 9, 1979?

A. Not on this date but I knew I was in a number of meetings.

Q. I was talking about a meeting that occurred at the time the results were obtained from Doctor Kaley with respect to the tests done on the reserve sample?

A. Yes, sir.

Q. Do you recall a meeting in which those results were discussed?

A. Yes, sir.

Q. And you see this document says 37 ppb dioxin?

A. Yes, sir.

Q. Do you remember that? Do you remember that being reported in the meeting that you attended?

A. Yes, sir.

Q. Now, the attendees at the meeting are listed here in the upper right-hand corner, are they not? The first name on the list is you, Roush?

A. Yes, sir.

Q. The next one is Paget?

A. Yes, sir.

Q. Next one is DeGarmo?

A. Yes, sir.

Q. I can't really tell for sure who the third one is. The fourth one is Callis?

A. Yes, sir.

Q. The next one is Metcalf?

A. Yes, sir.

Q. The next one, can you tell who that is by looking at it?

A. Not from here.

Q. Okay. How about PSP, Phocian Park?

A. Yes, sir.

Q. Now, this document says, sir, does it not, EPA Region 7 asked for analysis of spilled material to determine concentration of blank dioxin present by telephone from Harry

Gilmer, correct?

A. Yes, sir.

Q. Now, it says at the bottom, the last paragraph says, metcalf will telephone Harry Gilmer, tell him our analysis is complete. We found 37 parts per billion in the material?

A. Yes, sir.

Q. Correct. Was there a decision made at that meeting as to what the EPA would be told with respect to that 37 parts per billion?

A. They were going to be told that we had found the dioxin present.

Q. Now, the 37 parts per billion that were found was actually an average of 3 samples, wasn't it?

A. I don't recall.

Q. I am sorry?

A. I don't recall.

Q. All right. And the results that you were aware of, did they, sir, identify 2,3,7,8 as the specific isomer, is that correct?

A. No, sir.

Q. The results that were capable of being produced at that time could only identify tetra isomers?

A. Yes, sir.

Q. And could not be isomer specific for 2,3,7,8?

A. No, sir.

Q. And do you know what the EPA was told with respect to whether it was 2,3,7,8?

A. They were not told it was 2,3,7,8.

Q. All right. Were they told anything with respect to what they should assume?

A. We told them to assume that it was 2,3,7,8.

Q. Now, who did that?

A. That was my position what should be done.

Q. Now, that was discussed in this meeting?

A. I don't recall whether it was that specific meeting or not.

Q. All right. You had a series of meetings about this event?

A. Yes, sir.

Q. That were going on at or about this time? You will have to answer aloud.

A. Yes, sir.

Q. And you had the opinion that the EPA should be told to assume?

A. Yes, sir.

Q. That it was all 2,3,7,8?

A. Yes, sir.

Q. Do you know if in fact that was communicated to them?

A. I think it was.

Q. Well, what makes you think that, sir?

A. Because we had agreed that, first of all, we didn't think that 2,3,7,8 would be a part of that 37 parts per billion. Our impression was that the method what we used in making our chlorophenols would not result in 2,3,7,8 being there. Despite that, we thought that we could assume that that was 37 parts per billion could be there and was my opinion that 37 parts per billion would not be unsafe even if it were all 2,3,7,8.

Q. It was your opinion, sir, that 37 parts per billion would not be unsafe?

A. Yes, sir.

Q. In the product?

A. Yes, sir.

Q. Now, at that time, sir, did you make any assumptions as to whether or not the product would be absorbed into the soil?

A. Yes, sir. We thought it could be absorbed into the soil.

Q. What did you think? In other words, what you knew at that time was that there had been a spill?

A. Yes, sir.

Q. Correct. You knew that the tank car had been emptied of its content?

A. Yes, sir.

Q. And the material had spilled into the track?

A. Yes, sir.

Q. And what did you assume would happen with respect to that 37 parts per billion once it got into the soil?

A. I wasn't sure how much would get into the soil because based on our handling of chlorophenol spills, it was my impression that most of it would be cleaned up, if not all of it, and you can't say all of it for practical purposes they get up all of that material and not leave it behind.

Q. Was it your understanding, sir, that the material would be cleaned up?

Mr. CARR: I object to the leading question at this point but it is getting into the area where the witness isn't testifying and Mr. Heineman is and I would object to the leading and suggestive form of the question.

THE COURT: Could you rephrase the quesiton. That objection is well taken.

Q. Doctor, you know in fact or do you know that there were communications by letter between Monsanto and the EPA?

A. Yes, sir. I remember that.

Mr. HEINEMAN: Your Honor, it is 4 o'clock. I don't know if you want to break now.

THE COURT: Finish up the next couple of questions.

Mr. HEINEMAN: Okay.

Q. Now --

THE COURT: Let's break at this point then. Ladies and gentlemen, we will start tomorrow morning at nine o'clock and adjourn at this time for the day. I would remind you besides the regular admonishments during any break that over this overnight break you are not to read, listen to or watch anything about this case in particular or subject matter in general in any of the media. Thank you for your attention and cooperation. Court is adjourned for the day.

COURT ADJOURNED FOR THE DAY:

STATE OF ILLINOIS)
)
TWENTIETH JUDICIAL CIRCUIT) SS
)
COUNTY OF ST. CLAIR)

I, Kimberly Ganz, one of the Official Court Reporters, do hereby certify that the foregoing transcript is a true and correct transcript of the proceedings had in the above-entitled cause.

Dated this 19 day of July, 1985.

Kimberly Ganz

KIMBERLY GANZ

STATE OF ILLINOIS)
)
TWENTIETH JUDICIAL CIRCUIT) SS
)
COUNTY OF ST. CLAIR)

I, RICHARD P. GOLDENHERSH, one of the Judges in and for the Twentieth Judicial Circuit, do hereby certify that the foregoing transcript is a true and correct transcript of the proceedings had in the above-entitled cause.

Dated this 19 day of July, 1985.

Richard P. Goldenhersh

HON. RICHARD P. GOLDENHERSH

INDEX

EXHIBITS

PLAINTIFF'S EXHIBIT NO.	IDENTIFIED	ADMITTED
1510A	2	3
1511		6
DEFENDANT'S		
908	69	