

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

3 FRANCES E. KEMNER, et al.,)
4 Plaintiffs,)
5 vs.) NO. 80-L-970
6 MONSANTO COMPANY, et al.,)
7 Defendants.)

8 Before the HON. RICHARD P. GOLDENHERSH, Judge
9
10
11

12 REPORT OF PROCEEDINGS

13 JURY TRIAL

14 June 3, 1985
15

16 APPEARANCES:

17 MR. REX CARR AND MR. JERRY SEIGFREID
18 Attorneys at Law on Behalf of the Plaintiffs

19 MR. KENNETH R. HEINEMAN and MR. JOSEPH NASSIF
20 Attorneys at Law on Behalf of Defendant Monsanto
21

22 MARSHA SCHNIPPER
23 Official Court Reporter
24

I N D E X

DR. GEORGE ROUSH

Cross Examination

2, 46, 74, 121, 149

E X H I B I T S

INTRODUCED

ADMITTED

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1 BE IT REMEMBERED AND CERTIFIED that heretofore, on
2 to-wit: June 3, 1985, being one of the regular judicial days
3 of this Court, the matter as hereinbefore set forth came on
4 for hearing before the HON. RICHARD P. GOLDENHERSH, Circuit
5 Judge in and for the Twentieth Judicial Circuit, State of
6 Illinois, St. Clair County Building, Belleville, Illinois,
7 St. Clair County, Illinois, and the following was had of record,
8 to-wit:

9 * * * * *

10 DR. GEORGE ROUSH,

11 resuming the witness stand, having been previously sworn,
12 testified as follows:

13 CROSS-EXAMINATION (Continued)

14 BY MR. CARR:

15 Q Doctor, I show you now what's been marked 1438-A,
16 1440-B, and 1440-A, and ask if you recognize those as blowups
17 of those pages that we discussed marked those same exhibit
18 numbers last week. This will be 1440-B now and 1438.

19 A Right.

20 MR. CARR: Your Honor, I'll offer these three exhibits.
21 I had them here last week, but didn't -- forgot to put
22 them on the board. You want to see them, counsel?

23 (At this time the court reporter marked 1442 and
24 1442-A for identification.)

1 MR. HEINEMAN: Excuse me, Mr. Carr. I think this one
2 may be marked wrong. I think this should be 1438-B.

3 MR. CARR: Okay. Could I have 1438-B instead of
4 1440? The exhibit now marked -- Mr. Heineman graciously
5 let me know that 1438-B should be on this one instead of
6 1440-B.

7 THE COURT: Yes, fine. Okay. With the correction,
8 any objections?

9 MR. HEINEMAN: No objection, Your Honor.

10 THE COURT: They're admitted without objection.

11 Thank you.

12 Q And, Doctor, I have now handed you an exhibit marked
13 1442. Do you recognize that as minutes from the Biohazards
14 committee, don't you, sir?

15 A Yes, sir.

16 Q And 1442-A is a page for it's an excerpt -- it's
17 excerpts from that document?

18 A Yes, sir.

19 MR. CARR: Offer 1442 and 1442-A if it please the
20 Court.

21 THE COURT: Any objections?

22 MR. CARR: Oh, I'm sorry, he hasn't seen a copy yet.

23 MR. HEINEMAN: Yes, 1442-A is a blowup of which?

24 MR. CARR: I think it's two paragraphs from it,

1 ~~Heineman~~ counsel, the third paragraph on the first page and the
2 third paragraph on the second page constitutes 1442-A.

3 MR. HEINEMAN: Your Honor, I have no objection to
4 Plaintiff's Exhibit 1442. My only concern about 1442-A
5 as it presently stands, it would seem that the two para-
6 graphs appear to follow each other, where, of course, in
7 the document they do not.

8 MR. CARR: The jury will be given the entire document,
9 Your Honor, and I certainly agree that they do not follow
10 each other.

11 THE COURT: Fine. With that notation then they are
12 both admitted.

13 (At this time the exhibit was passed to the jury.)

14 Q Doctor, while the jury is being passed that, I'd like
15 to direct your attention to 1442-B again. Working on these
16 extrapolations by Krump, that two to seven picograms per
17 kilogram per day is about one-tenth the minimum exposure
18 calculated for one part per billion in soil, actually that
19 one-tenth would be one hundred parts per trillion, would it
20 not, one-tenth of one part per billion?

21 A Say that again. What would it be?

22 Q One hundred parts per trillion, one-tenth of one
23 part per billion?

24 A Yes, sir, you are right.

1 Q There is a thousand parts per trillion?

2 A Yes, you are right.

3 Q All right. And that makes it easier for us to
4 understand it in the terms that we've been discussing before
5 that he is saying the -- actually the extrapolation of the
6 two to seven picograms per kilogram per day that Krump makes
7 referring to the toxicity studies in this -- in these minutes
8 actually boils down to one hundred parts per trillion, doesn't
9 it, sir? Isn't that what he's saying?

10 A Yes, based on that data.

11 Q And not one part -- well, it's one-tenth of one
12 part per billion, correct? Now, Doctor, if I could refer to
13 the Exhibit 1442-A, and you have the entire exhibit so it
14 might be easier for you to refer to that. This paragraph that
15 is first on the board talks about, again talks about the
16 effect in the immune system, and it points out that the B
17 lymphocytes is responsible for antibody production, but that
18 the T lymphocytes -- now the T lymphocytes would include what
19 we know as the OKT 10, T4, and T8 cells, isn't that correct,
20 sir?

21 A I don't know that.

22 Q You don't know that?

23 A No.

24 Q Do you have -- have you done any work in Immunology,

1 Dr. Roush?

2 A No, I have not.

3 Q Well, if we have had testimony that to the effect
4 that as I have told you that the T lymphocytes would include
5 in the subsets the OKT 10 and the OKT 4 and the OKT 8 --

6 A It actually contains more than that. I know that.
7 There is about ten at least now.

8 Q Yes, I understand that. I don't mean to say that
9 that's all that it contains, but we've had exhibits that have
10 been introduced into evidence that refers to the natural killer
11 cells, that would be the Leu 11 and the OKT 10 cells and the
12 OKT 4 and T8 and ratios thereof, and that's the reason I was
13 directing your attention to this, that this does include
14 those lymphocytes. This statement in this paragraph refers to
15 those lymphocytes among others.

16 A Again I am not an expert, but I have read and I don't
17 think OKT 10 is no longer listed in my current textbook.

18 Q Well, your current textbook may not be up-to-date,
19 but take it from the testimony that's in this case, if you
20 would, Dr. Roush, since you don't know about Immunology, that
21 we have had a considerable amount of testimony on these OKT 10
22 and other lymphocyte subsets, would you, sir?

23 A Yes.

24 Q Because I am not going to ask you about the

1 significance of those things. I don't intend to since you
2 are not an expert in this area. I just simply want to point
3 out that this reference is a reference to that kind of
4 T lymphocyte, is it not, sir?

5 A Yes.

6 Q And it points out that the immune system has been
7 studied so that there are some markers for all components of
8 the system. Do you see that, sir?

9 A Yes.

10 Q And when the immunologists refer to the OKT 10 and
11 the OKT 4 and the OKT 8, they are actually referring to the
12 same thing that's mentioned here, that is, markers, aren't
13 they, sir, or do you know that, sir?

14 A The problem you have got is these are -- there are
15 at least ten of them. To talk about three of them, I don't
16 understand why we talk about three.

17 Q Well, Doctor, it was those three for your information
18 that was found to be abnormal in a significant number of the
19 Sturgeon plaintiffs. That's the reason I am directing the
20 question in that area. I don't intend to talk about any of
21 them, but this serves to point out to you and to the Court that
22 you did know back in October 25, 1982, that your Biohazards
23 committee did know that there was work taking place -- Dr.
24 Flaherty called it reviewed advances in the understanding of

1 the function of the immune system, that there was work taking
2 place, significant work, that -- well, it says here the immune
3 system in both mice and men has been studied to the point
4 where there are some markers for all components of this system
5 from the milar stem cell to all immuno-confidence cells. It
6 says that, doesn't it, sir?

7 MR. HEINEMAN: Excuse me, Dr. Roush. Your Honor,
8 I'd like to object to the form of the question insofar as
9 its premise was stated and that is Mr. Carr said that the
10 T-4, T-8 and T-10 were found to be abnormal in a significant
11 number of plaintiffs, and I object to that as not reflecting
12 accurately the state of the evidence. He should qualify
13 that by saying that it was Dr. Carnow's opinion in
14 interpreting some of those results that there were abnormal
15 findings in those areas, and I further object to the use
16 of the word significant as being a matter of qualitative
17 interpretation and not a fact to be assumed by the witness.

18 MR. CARR: Your Honor, if I might respond to that,
19 it was the report of the Midwest Laboratory that was used
20 by Monsanto to analyze the lymphocyte subsets that reported
21 these findings and reported those findings as abnormal.
22 It was not Dr. Carnow. Dr. Zahalsky interpreted those
23 abnormalities reported by Monsanto's laboratory, and it
24 was Dr. Zahalsky that said they were significant, and it

1 was Dr. Carnow that said they were significant. There is
2 that evidence in the case and counsel is -- I didn't mean
3 to imply that all of the plaintiffs had abnormalities in
4 all of those lymphocyte subsets. Some of the plaintiffs
5 have abnormalities in one subset and some have in others
6 and some have abnormalities in more than one, so I don't
7 want -- I want the record to be clear but I didn't mean to
8 imply that all of the -- to the witness or to the Court
9 that all of these were abnormal in all of the plaintiffs,
10 but other than that I will stand on the characterization
11 that I have given to the jury -- to the witness as
12 supported by the evidence in this case.

13 MR. HEINEMAN: Your Honor, my only objection is that
14 it is reported -- this witness is being asked to assume
15 it as a fact when what it is is an opinion offered by
16 witnesses for the plaintiff.

17 MR. CARR: Your Honor, it is not an opinion. It is
18 a reported fact by a laboratory used by Monsanto that
19 these lymphocytes were abnormal. That is not an opinion
20 of the witness. It is indeed the opinion of Dr. Zahalsky
21 and Dr. Carnow that those abnormalities are significant,
22 but the report is a report of fact as counsel well knows.

23 THE COURT: Objection is overruled. You may proceed.

24 Q And, Doctor, your Biohazards committee was keeping

1 abreast of the latest developments in studies of the immune
2 system in 1982, were they not, sir, as indicated by this exhibit?

3 A Yes, sir.

4 Q And, Doctor, on the next page, and that is the second
5 paragraph of 1442-A, this discusses -- the committee discusses
6 the importance of these findings --

7 A Are you talking about the paragraph that begins with
8 "In further discussions"?

9 Q Yes, that's correct. They talk about the -- that
10 the -- it's been recognized that in studies in animals, long
11 term cancer studies, that the animals have increased rates of
12 infection, and the question is posed to the Biohazards committee
13 as to whether or not the cancer effect, that is, animals that
14 have -- since they have cancer and there is a corollary
15 depressed or rather increased rate of infection the question
16 is posed by your Biohazards committee as to whether or not
17 this effect could be concomitant depression of the immune
18 system, do they not, sir?

19 A Yes.

20 Q And what they are asking actually, what you on
21 that committee were posing a query there wanting to know
22 whether or not the fact that there was cancer caused in
23 animals, whether or not this could be an effect of a depressed
24 immune system, isn't that correct, Dr. Roush?

1 A That's one possibility raised by the question, but
2 only one.

3 Q Yes, that's all that I am asking you about at this
4 point, Dr. Roush, is that your committee at least thought that
5 this data, these studies suggested that if the immune system
6 is depressed by some material, that that could lead to and
7 would lead to increased rates of infection and could also lead
8 to formation of cancer; isn't that the thrust of the question
9 posed by your committee?

10 A If -- I don't think they have gone that far. I
11 think the fact that these animals have infection, it may be
12 related to an immune response. That's all, that's as far as
13 you can go.

14 Q And that's all your committee posed the question for?

15 A Right.

16 Q Was that the two could be the malfunctioning of the
17 immune system, could be connected with the formation of cancer.
18 Isn't that the only question that they are posing by this query?

19 A No.

20 Q No, they are posing more than that?

21 A Yes, sir.

22 Q What are they also suggesting or asking?

23 A They are asking -- since there are infections that
24 happen in animals on study for possible carcinogenesis because

1 they get infections the question is is that related to an
2 immune breakdown, and that has nothing to do with cancer,
3 because when -- in doing a cancer study this happens before the
4 animals get cancer.

5 Q Yes, the immune system is affected first, then they
6 get the cancer, and that's the question being asked by the
7 committee, asking is there a connection -- the committee is
8 saying that this study where you have been giving -- or not
9 you, but scientists have been giving toxic substances by food
10 or by injection or whatever to animals in order to see if they
11 induce cancer it has been noted that in those animals where
12 cancer is due -- or produced, that first their immune system
13 is affected and they have thereby increased rates of infection;
14 isn't that what this is saying, Dr. Roush?

15 A The opposite is true is that they are saying that
16 it's been observed that animals get infection and the question
17 is is whether this is due to an immune response or some other
18 response in these animals undergoing carcinogenesis testing.

19 Q Yes.

20 A And that doesn't mean -- that has -- there is no
21 implication that there is a relationship to whether they get
22 a cancer or not.

23 Q Doctor, the fact that when they have been working
24 on these animals in long-term carcinogenesis -- carcinogenesis

1 means genesis, the start of cancer or starting cancer, isn't
2 that what that --

3 A Its results and formation of cancer.

4 Q In long-term studies of animals where they have been
5 trying to find out what forms cancer, they have noted increased
6 rates of infection, have they not, sir?

7 A Under certain circumstances.

8 Q That's what I am asking you.

9 A Yes.

10 Q Now because these animals in those studies where
11 they are trying to invoke or study the formation of cancer,
12 because somebody has noted that there is also an increased rate
13 of infection, your committee is simply saying that this effect,
14 could this effect be due to the fact that the immune system is
15 depressed at the same time, and that's all they are asking,
16 isn't that correct?

17 A Yes.

18 Q All right. And that's the only point, Dr. Roush,
19 that I wanted to make at that time, that somebody at least
20 thought there might be a connection, and it's not proven by
21 any means.

22 A They haven't gone that far. All they -- they haven't
23 gone as far as you are saying.

24 Q All they are doing is posing the question, Doctor --

1 A No, they are not.

2 Q They are not even posing the question?

3 A No, sir.

4 Q Isn't that what that is on that second page?

5 A No, sir.

6 Q Could this effect be due to concomitant depression
7 of the immune system?

8 A Could the infection be due to it, that's right,
9 that's all.

10 Q Doctor, what they are saying is the immune system
11 is depressed, aren't they, sir?

12 A They are saying it might be.

13 Q All right. And they are saying the immune system is
14 depressed and there's an increased rate of infection. It says
15 that, don't they, sir?

16 A Yes.

17 Q And they also are starting cancer, aren't they, sir,
18 in these animals?

19 A Yes.

20 Q All right. Now, that's all that I wanted to point
21 out, Dr. Roush. I don't want to make anything more with you
22 than simply that. All right.

23 (At this time Plaintiff's Exhibit 1443 and 1443-A
24 were marked for identification.)

1 Q Doctor, I show you now --

2 MR. CARR: I don't know whether I am going to foul up
3 our system or not, Your Honor. I got the page that is
4 blown up, both of those being marked 1443-A.

5 THE COURT: Yes, that's fine.

6 Q All right. Doctor, I hand you now 1443 and ask you
7 if that's the minutes of the Biohazard committee for October 17,
8 1983, and 1443-A, which is a page thereof?

9 A Yes.

10 MR. CARR: Offer 1443 and 1443-A if it please the
11 Court.

12 THE COURT: Do you have any objection?

13 MR. HEINEMAN: Oh, I am just looking at the last
14 paragraph, Your Honor. I see some from the second page
15 has been put on the bottom of the first of 1443-A. I
16 have no objection.

17 THE COURT: Admitted without objection. Thank you.

18 MR. CARR: Yes, and for the record, Your Honor, the
19 last line-and-a-half on 1443-A is the first line-and-a-half
20 that's on Page 2 of 1443.

21 THE COURT: Fine. So noted.

22 Q Doctor, 1443 and 1443-A are the minutes of a meeting
23 that took place on October 17, 1983, at which meeting a Dr.
24 Poland, from the University of Wisconsin, who was from the

1 McCardle Institute for Cancer Research conducted a seminar for
2 the members of the Biohazards committee, isn't that correct, sir?

3 A Yes, sir.

4 Q And he discussed at that time work that he had been
5 doing with tetrachlorodibenzo-p-dioxin, did he not, sir?

6 A Yes, sir.

7 Q And he discussed the effects that he found in
8 cytoplasm of liver and other tissues, didn't he, sir?

9 A He's talking about the cytosol receptor.

10 Q Yes.

11 A That's what he's talking about.

12 Q And he makes a point that the capacity of that
13 receptor to bind TCDD was about the same order in all species
14 studied, doesn't he, sir?

15 A Yes.

16 Q And he points out that it's closely linked to the
17 activation of AHH, doesn't he, sir?

18 A Yes, sir.

19 Q And that's a kind of an enzyme?

20 A Yes.

21 Q And, of course, we've had studies that show how
22 important and testimony that show how important enzymes and
23 the functioning of enzymes including the aryl hydrocarbon
24 hydroxylases is in functioning of all animal systems including

1 the systems in human beings. Do you recognize that, don't
2 you, sir?

3 A No, I don't.

4 Q You don't recognize that?

5 A No.

6 Q Was it because my question included some things that
7 you recognize and other things that you did not recognize?

8 A No, the implication of the arylmatic hydrocarbon
9 hydroxylases in man has not been established.

10 Q Well, it's been established in all species that Dr.
11 Poland has studied, has it not?

12 A Yes, but he has -- this has been done in animals,
13 and they have looked at aryl hydrocarbon hydroxylases in man
14 and the only place they ever talk about it having any
15 implication is in men who smoke cigarettes and gets lung cancer.

16 Q Well, for that man, at least, it would surely have
17 importance, wouldn't it, sir?

18 A I don't -- they were unable to tell whether there
19 was a good relationship between the two. All they're saying
20 is that's the only place that there's any inkling of a
21 relationship between AHH and disease in man.

22 Q Well, if there is a connection and if TCDD is a
23 promoter, as some have said, while you don't agree with that
24 at Monsanto apparently, to the person that smokes, who is also

1 exposed to TCDD it would certainly have the possibility of
2 affecting his AAH, would it not, sir?

3 A Yes.

4 Q And, Doctor, the -- Dr. Poland there also pointed
5 out something that a particular kind of hairless mouse,
6 apparently along with other animals, do not show a response
7 to the skin that is chloracne, even though it has a receptor
8 and it demonstrates induction of AHH, isn't that correct, sir?

9 A Yes.

10 Q Now, the toxic response is that Dr. Poland pointed
11 out for the TCDD application and crude change -- atrophic
12 changes in the thymus -- that means it got smaller, correct,
13 sir?

14 A Yes, sir.

15 Q And bone marrow, testicle, hyperplastic responses
16 in the liver, bile ducts, gastrointestinal tracts, skin, and
17 bladder, isn't that correct, sir?

18 A Yes.

19 Q And he also points out that where, just where human
20 beings stand in this spectrum of sensitivity is not clear,
21 because no one has yet measured the affinity of cytosolic
22 receptors for TCDD in man, correct, sir?

23 A Yes.

24 Q Now, what that means, Doctor, and to make it clear,

1 the significance of what you testified to earlier on this
2 point, actually it hasn't been studied in man?

3 A What hasn't?

4 Q We don't know where man stands in the -- in this
5 cytosolic receptivity, do we, sir?

6 A We don't know whether there's a cytosol receptor
7 in man or not.

8 Q Well, so actually what he's saying is he's found
9 this in all other animals, every animal that he has tested
10 he has found this, these proliferative responses with TCDD.
11 We don't know whether man does or does not respond, because
12 nobody has studied it; isn't that what he's saying?

13 A No, I don't think he's saying that at all. He says
14 because of his work with the hairless mouse he doesn't know
15 what the cause of the toxic effects because they didn't respond,
16 and there's some other gene that's causing the effects rather
17 than this cytosol receptor and going through the activation of
18 enzymes. He is really decrying the implication and the
19 importance of enzymes inactivation in his statement here.

20 Q Doctor, he points out, does he not, as he pointed
21 out to you that these -- whether it's from the AAH or the
22 cytosolic receptive work that the toxicity in different
23 species may be responsible, and it may be the result of
24 activation of other genes, doesn't he, sir?

1 A Yes.

2 Q So whether it's caused by the induction of AAH or
3 activation of it or whether it's caused by the activation of
4 other genes, what he does know is that it does occur in all
5 these animals?

6 A What occurs?

7 Q These atrophic changes in the thymus, the bone
8 marrow, the testicles, hyperplastic responses in the liver,
9 bile ducts, gastrointestinal tract, skin and bladder.

10 A We've known that from toxicology studies long before
11 this came along.

12 Q Doctor, I am not quarreling with that.

13 A But this is unrelated to the cytosol receptor, and
14 that's what his whole subject was.

15 Q This whole subject is trying to find out, trying to
16 point out to the Biohazards committee that he has done addi-
17 tional work in this area and that he has found that the
18 capacity of the receptor to bind -- to bind TCDD is of the
19 same order in all species, doesn't he, sir?

20 A Yes.

21 Q Now, he didn't say excepting man, he said all
22 species, didn't he, sir?

23 A But it hasn't been tested in man.

24 Q Excuse me, Dr. Roush. Did he not say all species?

1 A In all species tested, I think.

2 Q All right. He didn't say, he didn't use the word
3 tested, but I'll accept that for now. But the point is,
4 Doctor, is that here is something that has this tremendous
5 effect in all species and nobody knows what it's going to do
6 or does in man. It may activate these other genes, it may
7 activate the AAH factor in man, and we simply don't know.

8 A What's this tremendous effect that he's talking about?

9 Q Sir?

10 A What's the tremendous effect that he's talking about?

11 Q The ability of the liver to bind, it has these
12 receptors for this TCDD.

13 A That's true, but the implication of that he doesn't
14 know.

15 Q Now, Doctor, that is my point, and that's the point
16 that he was making to the Biohazards committee. It occurs in
17 animals it has -- it has significant toxic responses in
18 animals, and he points out the -- that the studies that have --
19 that the activation of genes in animals by TCDD has occurred in
20 animals, he points that out, and he points out, he makes a
21 conclusion and that's the last sentence that is on this -- in
22 this paragraph. This plus the studies of reactions of tissues
23 to TCDD in tissue culture are important research needs.

24 A No, sir.

1 Q Doctor, 1444-A and B, if you would look at those,
2 are pages taken from 1444, are they not? The one that says
3 the first item on the agenda is 1444-A. And, Doctor, the
4 blowup -- well, you won't need that, because it speaks for
5 itself.

6 MR. CARR: Your Honor, I'll offer these into
7 evidence if I haven't already.

8 THE COURT: Any objections?

9 MR. HEINEMAN: Your Honor, I have no objection to
10 1444. I have no objection to 1444-A. My only objection
11 to 1444-B is that it places together paragraphs that are
12 widely separated from one another in the actual document
13 and to that extent it would be misleading. Other than
14 that I have no objection.

15 THE COURT: Okay. The separation between the
16 paragraphs is noted in the record. With that notation,
17 they are admitted.

18 Q Doctor, these minutes of this meeting reflect a
19 visit by Dr. Renate Kimbrough of the CDC, doesn't it, sir?

20 A She came to St. Louis. She didn't come to the
21 Biohazards committee. That was a part of the symposium that
22 was held in St. Louis.

23 Q And you attended that meeting and you discussed
24 with the committee what Dr. Kimbrough discussed at that seminar?

1 A Yes, sir.

2 Q And you pointed out that Dr. Kimbrough discussed
3 at that meeting the disease known as porphyria cutanea tarda,
4 didn't you, sir?

5 A Yes, sir.

6 Q And she apparently pointed out according to your
7 report that the ratio of coproporphyrins to uroporphyrins is
8 inverted in that disease due to the inhibition of the
9 uroporphyrin decarboxylase that could be associated with
10 dioxin exposure, didn't she, sir?

11 A Yes.

12 Q Now, are you familiar with the findings of the
13 inverted ratios of copro to uro, not just -- in the plaintiffs
14 in this case, sir?

15 A No, sir. I know the story about inversion and the
16 implications of it, but I haven't been involved in these
17 specifics in these cases.

18 Q Well, as far back here as nearly two years did --
19 no, over two years ago, January, of 1983, Dr. Kimbrough
20 pointed out that in a particular form of porphyria at least
21 the ratio of copro to uroporphyrin can be inverted, doesn't she,
22 sir?

23 A Yes.

24 Q And was it -- the next paragraph there where it says

1 it was pointed out that dioxin is a potent inducer and so
2 forth, is that a statement -- because the record is not clear
3 or the Biohazards committee is not clear -- is that a statement
4 that Dr. Kimbrough or is that something that you pointed out
5 or --

6 A I don't recall.

7 Q Somebody apparently pointed --

8 A It was said. I was reporting what took place, and
9 I am not sure whether Kimbrough said that. There was a whole
10 afternoon symposium, and I may have neglected to say who was
11 talking on that paragraph.

12 Q Well, at least it was important to you. You noted
13 that the dioxin was considered a potent inducer of cytochrome
14 P450, a liver enzyme, which has the ability to detoxify drugs,
15 is that correct, sir?

16 A Yes, sir.

17 Q And somebody apparently made the point that this
18 may increase drug tolerance in individuals?

19 A Yes.

20 Q And you also -- it also pointed out that immune
21 suppression by dioxin was discussed at that meeting?

22 A Yes, sir.

23 Q Who was it that said -- was this your judgment
24 notwithstanding the fact that they discussed immune suppression

1 is caused by dioxin, was it your judgment that there was no
2 evidence of such in effect in human subjects after dioxin
3 exposure?

4 A No, I was reporting what they said, the statement
5 that was made.

6 Q Well, NIOSH had a representative that also pointed
7 out that, however, soft tissue sarcomas have been reported in
8 plants in the United States manufacturing chlorinated phenols?

9 A Yes, sir.

10 Q Is that correct, sir?

11 A Yes, sir.

12 Q And of course, Monsanto's Krummrich plant and
13 Monsanto's nitro plant have in the past manufactured chlorinated
14 phenols, haven't they, sir?

15 A Yes, sir.

16 Q Doctor, the next exhibit, 1444-B, discusses the need
17 for work to be done to investigate whether or not the animal
18 studies can be extrapolated to man, do you not, sir? Isn't
19 that pointed out?

20 A Yes.

21 Q And he or someone -- I guess Dr. Wilson -- made the
22 point that this chemical institute could be the ideal laboratory
23 to engage in this type of research?

24 A Yes, sir.

1 Q And as a matter of fact, it was kept on the agenda
2 to be discussed as a priority issue at your next meeting, that
3 is, whether or not to get the chemical institute to undertake
4 this work, isn't that correct, sir?

5 A Yes, sir.

6 Q And in point of fact, as we have seen from other
7 minutes I think that were subsequent to this one that we have
8 already used, they did undertake to do such work, didn't they,
9 sir?

10 A Yes, sir.

11 Q And did Monsanto pay for all of the cost of that work,
12 sir?

13 A No, sir.

14 Q How much of the cost was paid by Monsanto?

15 A The way the payment is made to CIT is we are
16 assessed an amount based on our sales, a percent of sales, and
17 that just goes to their general budget, and then what they do
18 specifically comes out of that general budget.

19 Q All right. Then if I understand what you are telling
20 me correctly, the chemical institute at the suggestion of
21 Monsanto undertook this research, but Monsanto was not assessed
22 anything extra or special for that simply because it was
23 Monsanto's suggestion, isn't that correct?

24 A They did not do it because it was of purpose to us.

1 It was of general interest to the whole membership.

2 Q Doctor, I'm sure that must be the case, but what I
3 am asking you, they undertook it because you at Monsanto
4 suggested that it should be done, isn't that correct, sir?

5 A I can't answer that, but that was the basis for it.
6 We put in our recommendation. Whether that was the only thing
7 or what -- how it related --

8 Q Now, I am not even suggesting it was the only thing
9 and I am not implying that there is anything improper about
10 Monsanto doing this. I think it's a very good idea that it's
11 done. I am not suggesting that -- Monsanto is an important
12 member of that institute, it has the right to make suggestions
13 as to its -- as to the people there that the chemical institute
14 should be done, it pays for a significant part of the expense
15 of that work and there is no reason why it could not, should
16 not have the right to make suggestions as to it. It's
17 perfectly proper, nothing wrong with, and I am not implying
18 anything wrong. All I am saying is that it was at your
19 suggestion that the work was undertaken, isn't that correct,
20 sir?

21 A I don't know that.

22 Q Well, it was undertaken after you made the recom-
23 mendation, wasn't it, sir?

24 A That's right.

1 Q All right. And they voted on it at a meeting and
2 you had a representative at that vote --

3 A No.

4 Q You got somebody on the board of directors, haven't
5 you, sir?

6 A Yes, but that isn't the way it takes place. They
7 have a scientific advisory committee there that makes the
8 decision of those suggestions that are worthy of followup,
9 and the science advisory committee headed by Professor of
10 Pathology from North Carolina, Dr. Grisham, he and his
11 committee decides which one of the suggestions are most
12 appropriate to be followed by CIT.

13 Q Well, and they determined that your suggestion was
14 the one that should be followed?

15 A That makes sense.

16 Q Sir?

17 A Yes, sir.

18 Q All right. Doctor, on the point of that meeting
19 that discussed the porphyria that Dr. Kimbrough discussed,
20 whether or not dioxin causes porphyria is an important subject
21 for Monsanto to be engaged in and to have knowledge about
22 because of the fact that it does make and has made these
23 chlorinated phenols in the past, isn't that correct, sir?

24 A Yes.

1 (At this time Plaintiff's Exhibit 1445 was marked
2 for identification.)

3 Q I hand you now what's been marked Plaintiff's
4 Exhibit 1445 and ask you if you recognize that as a report in
5 the archives of dermatology that was in your files, a part of
6 your files at least that was produced to the plaintiff in this
7 case.

8 MR. HEINEMAN: Does that have a number?

9 THE COURT: 1445.

10 MR. CARR: You can see at the bottom of the page
11 your CO number, CO3765.

12 MR. HEINEMAN: I'm talking about the exhibit number.

13 MR. CARR: Your Honor, I'll offer 1445 if it's
14 appropriate. I don't know that the witness responded to
15 my question.

16 THE COURT: I didn't hear a response. Doctor?

17 MR. HEINEMAN: I didn't hear the question.

18 THE COURT: There was one.

19 A I didn't hear the question.

20 Q Oh, the question was do you recognize that as an
21 article that was part of your files, Dr. Roush.

22 THE COURT: It's Monday morning.

23 A I can't say that, but I know I read it.

24 Q Well, and you know it came from Monsanto; it has

1 your number at the bottom of the page. Do you see that, sir?

2 A Yes, sir.

3 MR. CARR: Offer 1445 into evidence if it please the
4 Court.

5 MR. HEINEMAN: Your Honor, I would object to this
6 document. It's not a document prepared by or at the
7 request of Monsanto Company. It's something we just
8 happen to have in our files prepared by somebody else.
9 It's hearsay, and I object to it on that basis. No
10 foundation's been laid for its admission.

11 Q Let me ask you this question. The archives of
12 dermatology is an authoritative publication in the field of
13 dermatology, is it not, sir?

14 A Yes, sir.

15 Q Sir?

16 A Yes, sir.

17 MR. CARR: Now I will offer it again, Your Honor.

18 MR. HEINEMAN: Same objection.

19 THE COURT: Overruled. It's admitted over objection.

20 Q Doctor, this publication came out in 1964, did it
21 not, sir, some twenty-one years ago? Do you see at the
22 bottom --

23 A Yes, sir. Right.

24 Q -- second page there is a date there of June, '64?

1 A Right.

2 Q Isn't that correct, sir?

3 A Yes, sir.

4 Q And at this point in time actually this article
5 was probably the first article in the literature that
6 discussed whether or not you could get porphyria by being
7 exposed to certain chemicals, is that correct, sir?

8 A I can't vouch for that, but it's one of the early
9 reports, at least.

10 Q Well, the second column about the eighth line down
11 in the second column it says "Porphyria cutanea tarda has
12 never before been described as related to chloracne nor has it
13 been ascribed to industrial exposure in the United States"?

14 A Right, it sure does.

15 Q So actually in the -- this is a study of apparently
16 twenty-nine patients who worked in the chemical factory that
17 made 2,4-dichlorophenol (2,4-d) and 2,4,5-trichlorophenol,
18 (2,4,5-t), and this apparently is a factory at Newark, New
19 Jersey. Do you know whose factory that would be, Dr. Roush?
20 Is that Diamond Shamrock there?

21 A I think that's right.

22 Q And these persons, the twenty-nine at least, had
23 features of chloracne, and of these twenty-nine they found
24 eleven cases where the uroporphyrins were elevated according

1 to this article, is that correct, sir?

2 A They were positive I think rather than elevated.

3 They were --

4 Q Well, the very first paragraph, the second, the
5 second and last sentence in the very first paragraph of the
6 abstract portion it says, does it not, "In eleven cases
7 urinary uroporphyrins were elevated" end of quote?

8 A Yes, sir.

9 Q The very first page. Do you see that, Dr. Roush?

10 A Yes, sir.

11 Q All right. And the investigation then went on to
12 find out the varying degrees of severity of this porphyria,
13 don't they, sir?

14 A Yes.

15 Q And on the third page where they refer to the lab --
16 the first two pages refer to physical findings; the third page,
17 if you will note, sir, refers to -- it says in the first
18 column, second paragraph on that page, "Laboratory studies
19 reveals increased urinary uroporphyrins, coproporphyrins and
20 uroporphyrinogen excretion, doesn't it, sir?

21 A Yes.

22 Q And then there's a table there that -- for the
23 twenty-six persons there they point out the findings relating
24 the chloracne to the hyperpigmentation to the hair and to the

1 uroporphyrins at to whether or not they had or what kind of
2 contact they had with the chemical, isn't that right, sir?

3 A Yes, sir.

4 Q Then on the next page under the -- in the column
5 that's headed screening tests in the middle of the page the
6 authors say that twenty-six additional men working at this
7 chemical factory were studied on an ambulatory basis in
8 addition to routine urinalysis. Each urine specimen was
9 tested for uroporphyrin by the Watson-Schwartz method. Eight
10 of the twenty-six manifested significant increased excretion of
11 urinary uroporphyrins, isn't that correct, sir?

12 A Yes, sir.

13 Q And adding the three cases that they were
14 discussing to the -- that they had been discussing to these
15 there is eleven cases then of porphyria cutanea tarda of
16 varying degrees or something like thirty-seven percent, isn't
17 that correct, sir?

18 A Yes, sir.

19 Q Now, on the next page the authors make conclusions
20 along with statements of fact, and one of the statements of
21 fact is that what these men were working with was the basic
22 chemicals and the finished product, 2,4-d and 2,4,5-t. Do
23 you see that, sir, at the top of that first column?

24 A Yes.

1 Q And the authors point out that porphyria has been
2 previously described in cases from ingestion of hexachloro-
3 benzene and that that lends support to the concept of porphyria
4 cutanea tarda is not necessarily genetically produced unless
5 the genetic defect is an extremely common one. Do you see
6 that, sir?

7 A Yes.

8 Q Of course, you know that Dr. Ellefson and many others
9 have stated that porphyria can be caused by exposure to various
10 industrial toxins, but this study here, and this is an
11 accepted fact today, but this study here in 1964 was the first
12 one to point that out for all of us to see, isn't that correct,
13 sir?

14 A Yes, sir.

15 Q Now, the authors go on to say in this very first
16 study that the severity of chloracne does not usually corres-
17 pond to the degree of exposure to chemicals, don't they, sir?

18 A I don't -- haven't read that.

19 Q You haven't read that yet?

20 A No. Where is that?

21 Q That's right below the -- it's on the left page of
22 the exhibit in the first column starting in the paragraph in
23 the middle of the page.

24 (Pause)

1 A Now the question?

2 Q Do you see that they make certain conclusions from
3 this study, one of which is that the severity of chloracne
4 does not usually correspond to the degree of exposure to
5 chemicals. Do you see that, sir?

6 A Yes.

7 Q Now, that, of course, suggests, does it not, that
8 you can have a severe case of chloracne and not necessarily
9 have a porphyrin abnormality and that you could have less
10 severe chloracne and have a more severe case of porphyria?

11 A Based on the data here that would suggest that.

12 Q And that's something that was known as far back as
13 1964, wasn't it, sir?

14 A Yes, sir.

15 Q And they also point out that the severity of
16 porphyria does not usually correspond to the degree of chemical
17 exposure. That's dealing with dose then, isn't it, saying
18 that some people have a genetic system or makeup which they
19 react more to the chemical in the form of porphyrin, they get
20 more porphyria or a more severe case of porphyria from the
21 same exposure that others might get a less severe case of
22 porphyria, don't they, sir?

23 A Based on the levels of exposures they have there?

24 Q Yes. Isn't that correct, sir?

1 A Yes.

2 Q Again that points out that different humans react
3 in different ways to the same chemical, isn't that correct, sir?

4 A It's -- that's generally correct, but they did not
5 analyze for dioxin, so it's difficult to put that in context
6 in this case. Any one of those chemicals could have had more
7 or another one could have had less and exposure less, but the
8 concentration could have been higher.

9 Q Well, it's based on what they --

10 A They couldn't interpret that. They weren't doing
11 analyses at that time.

12 Q Doctor, I am not -- all I am suggesting to you is
13 that they have shown that the people working with the same
14 product in the same time in the same area that some get more
15 porphyria, and it doesn't correspond to the degree of chemical
16 exposure. Isn't that what they are pointing out?

17 A You cannot interpret that based on the data that we
18 have available, because that was before they knew about dioxin
19 content and weren't doing it, so a man could have very little
20 exposure to something that was more heavily contaminated than
21 another one who was exposed to a lot of a chemical without
22 dioxin content.

23 Q Doctor, this table -- you know that 2,4,5-t contains
24 dioxin, and we know now that 2,4-dichlorophenol contains dioxin,

1 don't we, sir?

2 A But they --

3 Q And these men were working with both those products
4 as well as the intermediate products, weren't they, sir?

5 A Yes, but a man can be working with one of these
6 materials and go without any chloracne and without any porphyria
7 and then there could be a contamination of it with more dioxin
8 and at that time he will come up with porphyria, and so it's
9 unrelated to the dose, but it's related to the degree of
10 contamination. The degree of contamination is what counts,
11 not their exposure as listed.

12 Q Doctor, the degree of contamination is their exposure.

13 A Yes, but you can't --

14 Q If two people are exposed to 2,4,5-t, the same
15 2,4,5-t, one person can get chloracne and another person cannot,
16 is that correct, sir? You know that today, don't you, sir?

17 A Yes, sir.

18 Q And they're exposed to this same chemical at the
19 same time that has the same contamination. You know that
20 today, don't you, sir?

21 A Yes, but it's a matter of degree we're talking about.

22 Q Doctor, you can have two people both exposed to the
23 same chemical at the same time; one can get a more severe case
24 of chloracne and the other can get no chlor -- get a mild case

1 of chloracne and the third person can get no chloracne at all,
2 isn't that correct, sir?

3 A I can't say that.

4 Q You don't know that from your studies at Nitro and
5 at Krummrich?

6 A No, sir.

7 Q You don't know that from what Suskind has told you
8 in his morbidity study, the ones at Nitro and the one that he
9 did at Krummrich?

10 A We were unable to talk about the dose of dioxin those
11 people were getting when they got the chloracne.

12 Q What you are saying is is that you don't know that
13 the workers are working with the same stuff every day, Dr.
14 Roush; is that what you are now saying?

15 A Not with the same degree of contamination from day
16 to day.

17 Q Doctor, these employees at Nitro and at Krummrich
18 all work on an eight-hour-day basis with the same chemical,
19 don't they, sir?

20 A Yes.

21 Q They're also workers every day?

22 A Yes.

23 Q And those workers that work side-by-side every day
24 in the same department, some have no chloracne, some have mild

1 chloracne, and some have severe chloracne. So that's right.

2 Q And they're all working with the same material on
3 the same daily basis, aren't they, sir?

4 A And they're all getting --

5 Q And they have the same exposure, don't they, sir?

6 A No, sir.

7 Q No, sir?

8 A They're getting a different dose.

9 Q Doctor, what makes you -- how on earth can you say
10 that they're getting a different dose when they're working
11 eight hours in the same department, aren't they, sir?

12 A Yes, but there is many things about work practices
13 that makes for difference in dose.

14 Q Doctor, don't you know that you can have people
15 working together at the same time side by side; one will get
16 chloracne and one won't?

17 A Yes.

18 Q They're getting the same dose, aren't they, sir?

19 A No, sir.

20 Q How do you know that, sir?

21 A There have been studies with many chemicals that we
22 can measure the body burdens in which we have tested and shown
23 that that --

24 Q Doctor, I am talking about your people --

1 MR. HEINEMAN: Do you mind letting the man answer
2 the question. I object. He is trying to answer. He
3 asked him a question --

4 MR. CARR: Go ahead, Doctor, finish your answer.

5 A There are all kinds of examples of people that have
6 been biomonitoring for one or another kind of chemical in which
7 there is a gross difference in the body burden with the same
8 degree of exposure. The best example is with lead. You can
9 have ten people all exposed to lead all doing exactly the same
10 job and the amount of lead that will be present on their
11 monitor can vary by four-fold all doing the same job. And
12 the man who is working with radiation, all doing the same job,
13 exactly the same, the man with the radiation badge would be
14 gross difference in the degree of contamination of the badge
15 with radiation. This is another one only this is worse
16 because the degree of contamination can vary so much.

17 Q Now, Doctor, the work that you are talking about is
18 people not working side by side with this radiation. You are
19 talking about a general population that work in one establish-
20 ment dealing with radiation.

21 A Yes, sir.

22 Q You are not talking about people that are working
23 side by side in the same --

24 A Yes, I am.

1 Q -- in the same department?

2 A Yes, I am.

3 Q Doctor, I suggest you should cite the article for
4 me that says that.

5 A I can't. I don't have it with me, but it's true.

6 Q Doctor, you forgive me, but the people that you have
7 working for you at Monsanto --

8 A Yes, sir.

9 Q -- on the same shift and doing exactly the same work,
10 they are exposed to the same chemical, aren't they, sir?

11 A Yes, sir.

12 Q And you know the body reacts differently in different
13 people; you know that, don't you, sir?

14 A Yes, sir.

15 Q And one person can get a dose that will cause him
16 chloracne and that same dose won't cause chloracne in others;
17 you know that, don't you, sir?

18 A I don't know that.

19 Q You don't know that?

20 A The best example of the dose was the study that was
21 done by the dermatologists who were doing the intentional
22 exposure of prisoners, and he exposed them with up to sixteen
23 micrograms on the skin, and none of them got chloracne and then
24 with gradually increasing concentrations up till he got to

1 seven thousand micrograms, eighty percent of them all had the
2 same reaction about the same degree.

3 Q Doctor, thank you, because you made the point.
4 Eighty percent of them had the same reaction, but twenty per-
5 cent did not.

6 A When they get up --

7 Q Is that right, sir? They had exactly the same dose
8 at the same time, measured content; twenty percent of those
9 prisoners that had this done to them didn't have a response.
10 Didn't you just say that, sir? Dr. Roush, didn't you just say
11 that?

12 A Yes, sir. Yes, sir.

13 Q And that is the point that I have been trying to
14 point to make here, Doctor. Different people react in different
15 ways.

16 A That's true.

17 Q As far as those eighty percent, they had different
18 and varying degrees of reaction themselves within the eighty
19 percent, didn't they, sir?

20 A Of course, yes, sir.

21 Q Now, and that again makes my point. You have
22 different makeup of different people, they react differently
23 to the same dose, don't they, sir?

24 A Yes, sir.

1 Q And that's what they -- this -- to get back to that
2 point is what this paper pointed out as far back as 1964,
3 that the severity of the chloracne does not usually correspond
4 to the degree of exposure to chemicals; the severity of
5 porphyria does not usually correspond to the degree of chemical
6 exposure; the severity of chloracne does not usually correspond
7 to the presence of porphyria; therefore, it would appear that
8 there is some individual whose susceptibility to these
9 diseases, is that correct?

10 A Yes, sir.

11 Q That is exactly what the prisoner study pointed out
12 as well, isn't it, sir?

13 A Yes, sir. The only difference is the importance of
14 dose versus susceptibility and susceptibility is relatively
15 small compared to the importance of dose.

16 Q Well, Doctor, you were saying before you gave the
17 prisoner example that there was no way of knowing that the --
18 there was any difference because of a dose because the dose
19 varied, but your prisoner studies points it out that there is
20 different reactions to the same dose, didn't it, sir?

21 A Yes, sir.

22 Q Doctor, there is also a point made here by these
23 studies that those people who have had prior liver damage
24 through alcoholism or some other cause are also pre-disposed to

1 porphyria --

2 A Ninety percent of all --

3 Q Could you answer that question, sir?

4 A Yes, sir.

5 Q All right. That's all that I want to point out is
6 that these people pointed out here that the extent of the
7 liver damage, that you go in if you've got a damaged liver or
8 you have a -- through alcoholism, that you are likely to get
9 porphyria when you are thereafter exposed to one of these
10 chemicals that cause porphyria, isn't that correct, sir?

11 A Yes, sir.

12 Q And, Doctor, in 1964 this -- these doctors from the
13 Beth Israel Hospital in Newark, New Jersey pointed out that
14 the -- it may be assumed that the basis of the disturbed
15 porphyrin metabolism is the hepatotoxic effects of one or more
16 of the chemicals in the factory environment. They say that,
17 don't they, sir?

18 A Yes, sir.

19 Q And they also point out that there is a synergistic
20 effect of other known liver toxins that can't be overlooked,
21 don't they, sir?

22 A Yes, sir.

23 THE COURT: Mr. Carr, before you get into the second
24 article, another article --

1 MR. CARR: Yes, Your Honor.

2 THE COURT: Ladies and gentlemen, we will take a
3 break at this time. I will remind you, and this will go
4 for any other breaks during the day that you are not to
5 discuss this matter among yourselves or with anyone else
6 outside the jury panel or as of yet form any opinions or
7 conclusions about the matters on trial. Court will be in
8 a short recess.

9 (At this time a short recess was taken.)

10 DR. GEORGE ROUSH,

11 previously sworn and testified further as follows:

12
13 CROSS-EXAMINATION (Continued)

14 BY MR. CARR:

15 (At this time Plaintiff's Exhibit 1446 was marked
16 for identification by the reporter.)

17 Q Doctor, I will hand you now what's been marked
18 Plaintiff's Exhibit 1446 and ask you to look at that, and if
19 you would. You recognize 1446 as the document prepared by a
20 William R. Brooks of Monsanto?

21 A Yes, sir.

22 Q And who is William R. Brooks?

23 A I don't know.

24 Q You've never met him?

1 A I don't recall.

2 Q So where is he? Is he located at Nitro, West
3 Virginia?

4 A I don't know.

5 Q He's prepared a -- the first, oh, ten, twelve pages
6 of this exhibit deals with the Suskind's morbidity study at
7 Nitro, does it not, that was conducted in 1979?

8 A I haven't looked at it, but that's what the title is.

9 Q No, the title is actually porphyria by William R.
10 Brooks, but --

11 A I am talking about on the first page it says review
12 of health study conducted by University of Cincinnati.

13 Q Well, who is Dr. A. S Ford to whom it's addressed?

14 A I know him. He works in our section on environmental
15 policy.

16 Q That's in the Department of Medicine?

17 A No, we are part of the part of the environmental
18 policy staff. That's above us.

19 Q That Dr. Wilson is the information director of?

20 A Yes.

21 Q Planning and information director?

22 A Yes, sir.

23 Q All right.

24 MR. CARR: Your Honor, before I ask any further

1 questions, I'd like to offer 1446 into evidence.

2 THE COURT: Any objections?

3 MR. HEINEMAN: Yes, Your Honor. I don't think a
4 foundation has been laid for its submission and it's
5 hearsay.

6 THE COURT: It's admitted over objection. You may
7 proceed.

8 Q Doctor, the first page that's titled -- that has as
9 its subject review of health study conducted by University of
10 Cincinnati in June, of '79, directing your attention to that,
11 actually the second page of the document.

12 A Yes, sir.

13 Q You see that, sir?

14 A Yes, sir.

15 Q He points out that he has reviewed these plant
16 documents at the request of Dr. Ford concerning this health
17 study that was conducted at that time and that this document
18 is a -- serves to -- is to serve as a summary of how that health
19 study was so conducted, is that correct, sir?

20 A Yes, sir.

21 Q And he refers to a Jan Yung of the St. Louis personnel.
22 Who is Jan Yung?

23 A She's one of our assistants in epidemiology. She
24 doesn't have a degree. She's a clerk-type.

1 Q All right. And it was pointed out here that to
2 determine the cohort that she is the one that investigated
3 the personal records and Workmen's Compensation records and
4 plant medical records to determine among the plant employees,
5 retirees, and terminated employees as to who was exposed to
6 2,4,5-t?

7 A Yes, sir.

8 Q Now, Dr. Roush, in performing a study of this sort
9 that was being undertaken in '79 by Suskind for Monsanto you
10 have a so-called control group which theoretically is not
11 exposed to the toxics that you were -- the substance that you
12 are studying, isn't that correct, sir?

13 A Yes, sir.

14 Q And now this control group was taken from Monsanto
15 employees, weren't they, sir?

16 A Yes, sir.

17 Q They weren't taken from persons who had not worked
18 in a chemical plant and who were just -- who had no opportunity
19 for exposure to the chemical, isn't that correct, sir?

20 A That's right.

21 Q And Miss Yung and others working with her sent to
22 Dr. Suskind those persons who were in their judgment exposed to
23 2,4,5-t as to be the study group and sent to Dr. Suskind a
24 list of those persons who they said were not exposed to 2,4,5-t.

1 isn't that correct, sir?

2 A Yes, sir.

3 Q Now, the ultimate end of the study is to compare
4 the health and the health effects of those who have been
5 exposed, who are listed as exposed to the corollary group to
6 those who are listed as unexposed, isn't that correct, sir?

7 A Yes, sir.

8 Q Now if, in fact, if Yung said to Dr. Suskind, say,
9 fifty percent of the people that were in the so-called control
10 group or the unexposed group had in fact at one time or another
11 been exposed to 2,4,5-t, that could serve to skew the study
12 and in fact make the study meaningless, isn't that correct, sir?

13 A It's possible.

14 Q Well, it's more than possible. If you have as a
15 control group mostly people who have not had any exposure to
16 the TCDD and 2,4,5-t and if that person has, for instance,
17 in abnormal porphyrin tests, if half the people in the
18 unexposed group have abnormal porphyrins and half the people
19 in the exposed group have abnormal porphyrins, then you can
20 lead to the conclusion, can you not, sir, that 2,4,5-t does
21 not affect the porphyrins if they both have the same
22 abnormalities, isn't that correct, sir?

23 A Yes.

24 Q But if, in fact, half of your so-called unexposed

1 group had been exposed to the 2,4,5-t, then you -- and if you
2 removed that half from the control group and if they were the
3 ones that had the abnormal porphyrins, you could end up with a
4 study that seventy-five percent of the exposed group have
5 abnormal porphyrins and none of the unexposed group have
6 abnormal porphyrins. Then that could be and would be indeed
7 a significant finding, wouldn't it, sir?

8 A Yes.

9 Q So actually the ability to determine who is going
10 to be in what list of employees is absolutely vital to the
11 integrity of the study, isn't it, sir?

12 A Not completely.

13 Q If I give you a list of people that are supposed
14 to be unexposed and their health is to be compared to people
15 who are exposed and I know that I am giving you a number of
16 people who have been exposed, doesn't that absolutely deal with
17 a very -- deal a death blow to the very foundation of the study,
18 Doctor?

19 A No, sir. It influences it.

20 Q Well, it influences it. It can influence it
21 significantly, can't it, sir?

22 A It all depends on if we have got adult response
23 level within the exposed group. If we're talking about the
24 people who are in the unexposed group who have got chance

1 exposure almost zero and try to compare that with the workers
2 in the exposed group that do not have much in the way of the
3 fact that they didn't have chloracne versus those who had
4 chloracne, there's a gross difference between those.

5 Q Doctor, you are jumping to an entirely different
6 point all together. What I am saying is if you are putting
7 out a study that purports to examine the health effects of
8 those persons who have been exposed to 2,4,5-t, that study
9 becomes invalid if you put in the exposed -- in the unexposed
10 group rather, a significant number of people who have in fact
11 been exposed, isn't that correct, sir?

12 A Only partially so.

13 Q Well, partially is enough. If I give you hypotheti-
14 cally, Doctor, and without you agreeing to it, that exposure
15 to TCDD can cause porphyria, and if you have half the people
16 in your exposed group who have porphyria and half the people
17 who in the unexposed group have porphyria, then my thesis is
18 not proven, is it, sir? You have to say yes or no.

19 A Yes, sir.

20 Q Now, if I get that result of each group having the
21 same percentage of abnormal porphyrins, if I get that result
22 by putting in the unexposed group people half of whom have in
23 fact been exposed to TCDD and those people also have porphyria,
24 then that -- those people should be put in the exposed group,

1 should they not, sir, if they have in fact been exposed to
2 TCDD?

3 A Ideally that's right.

4 Q Yes. Now, if they are put in the exposed group, we
5 then have seventy-five percent of the exposed group that have
6 porphyria and nobody in the unexposed group that has porphyria,
7 so if you are comparing health effects, seventy-five percent
8 of those exposed with porphyria and none who have not been
9 exposed with porphyria, that becomes then a significant finding,
10 doesn't it, sir?

11 A Yes, sir.

12 Q And the ability to define and to give you the names
13 of the people who have been exposed and the names of the people
14 who are supposedly unexposed is -- has the ability to control
15 the outcome of the study, doesn't it, sir?

16 A To influence it.

17 Q Well, more than that. If I gave -- it's a hypo-
18 theoretical that I gave you that was true, it absolutely controls
19 it, doesn't it, sir? You come up with a study from fifty/fifty,
20 half with porphyria with exposed, half with porphyria
21 unexposed, a non-significant relationship between porphyria
22 and the toxic substance, but simply by changing, by taking
23 those who are truly exposed out of the unexposed group and
24 putting them in the exposed group, I come up with a result

1 seventy-five percent with porphyria in the exposed group and
2 zero percent with porphyria in the unexposed group. I have
3 indeed made significant and absolutely devastating changes,
4 haven't I, sir?

5 A If the dose that you -- of those in the unexposed
6 that you moved into the exposed was equal to the dose in the
7 exposed, then you would.

8 Q Not even if it's -- see, Dr. Roush, the thing that
9 you are concerned about, if you can show that low doses can
10 cause porphyria, doses can cause porphyria that can't cause
11 chloracne, then it becomes doubly important, doesn't it, sir?
12 You proved two things by this study, that low dose exposure
13 to TCDD can cause porphyria. That's what you proved by that,
14 don't you, sir?

15 A Also you are saying is that a big dose doesn't make
16 it any worse.

17 Q Well, it may make it worse. The Israel, the Newark,
18 New Jersey study shows that it does make it worse.

19 A That's only one of the two studies --

20 Q Doctor, but the point that I am making is you make
21 a study invalid, and the person that has the ability has the
22 power to define, to give you, the scientists, -- if I come to
23 you, Dr. Roush, and say these hundred people in this list have
24 had exposure and these hundred people in List B have had no

1 exposure, and if I bollixed up those lists, I can indeed
2 control the outcome, can't I, sir?

3 A If dose doesn't count.

4 Q If the amount of the exposure doesn't count?

5 A That's what you are saying, that the dose doesn't
6 count.

7 Q And now, Doctor, Monsanto gave to Suskind, he was
8 provided a list of current and retired employees that may be
9 suitable for use as controls, was he not, sir?

10 A Yes, sir.

11 Q And this list did not come from Nitro, did it, sir?
12 It came from St. Louis, Missouri, didn't it?

13 A Jan Yung from St. Louis went to Nitro to work out
14 that cohort.

15 Q Doesn't this report that you have in your hand say
16 quote "This list was not originated at the Nitro plant but
17 came from St. Louis, probably Jan Yung"; isn't that exactly
18 what it says?

19 A Yes, but that's not --

20 Q Isn't that exactly what it says, Dr. Roush?

21 A Yes.

22 Q And Dr. Suskind, in fact, at the time he did this
23 study, he wanted complete control over who was to be invited,
24 didn't he, sir?

1 A Yes.

2 Q But he wasn't given that control, was he, sir?

3 A We supplied the names, yes.

4 Q Yes. You controlled those people who were going to
5 be invited to this study, didn't you, sir?

6 A Yes.

7 Q And by having the ability -- and what it would boil
8 down to, the validity of the study then depends upon the
9 integrity of those persons at St. Louis, Missouri, of those
10 Monsanto employees who prepared the list, isn't that correct,
11 sir?

12 A No, sir.

13 Q Oh, we don't depend on that, that's not -- cannot
14 St. Louis, Missouri supply to Dr. Suskind and give him in an
15 unexposed list of people of a hundred, can't they give him in
16 fact fifty of those people who were indeed exposed?

17 A That could happen.

18 Q Yes, so then it depends upon the integrity of the
19 persons in St. Louis preparing the list?

20 A No, sir.

21 Q Doesn't it, sir?

22 A No, sir.

23 Q Now, Doctor, if it could happen, and I think you've
24 agreed that the validity of the study can be bollixed or

1 changed or voided all together by putting exposed people
2 in the unexposed group, then it follows, does it not, Dr.
3 Roush, that the validity of the study is controlled by those
4 people who made the list, and those people happen to be
5 Monsanto employees at St. Louis, Missouri?

6 A No, sir.

7 Q You believe that does not follow?

8 A No, sir.

9 Q Dr. Roush, have you agreed that the study can be
10 made invalid or changed significantly by counting people as
11 exposed who in fact were unexposed?

12 A Yes, sir.

13 Q And vice-versa?

14 A If you leave out dose.

15 Q If you leave out dose. That's what I am talking about.

16 A Yes, sir, but that isn't what happened. What
17 happened is this list that Jan Yung put together was given
18 to Suskind.

19 Q Yes.

20 A And then when he did his examination he did a
21 careful occupational work exposure for each one of the
22 participants, and he modified those in each group based on his
23 own interpretation of their exposure, not ours.

24 Q Didn't you give him records to assist him in making

1 that determination?

2 A All that was a starting point.

3 Q My question is did you not give him records that he
4 used to interpret whether they were exposed or not exposed?

5 A We gave him the list and then he --

6 Q Doctor, you know in point of fact that many of those
7 people who were put in the unexposed group of people were
8 described as utility workers or maintenance workers; you know
9 that, don't you, sir?

10 A I don't know that.

11 Q Well, we will demonstrate that when we get to that
12 point. Have you ever made your own study -- before we get to
13 that, Doctor, you know that a maintenance worker can go to all
14 parts of the plant to maintain machinery; you know that, don't
15 you, sir?

16 A Yes, sir.

17 Q And the utility worker, a utility worker is one that
18 can be used in one department one day and in another department
19 another day; you know that, too, don't you, sir?

20 A Yes, sir.

21 Q And if you put utility workers, if you put maintenance
22 workers in the unexposed group, those people may in fact and
23 have in fact if they worked in all the departments at Nitro,
24 have in fact been exposed to TCDD, haven't they, sir?

1 A To some degree, yes, some of them.

2 Q And it would not be appropriate to put those people
3 in an unexposed group, would they, sir?

4 A It's a matter of degree.

5 Q Indeed it's a matter of degree. If you have an
6 exposure to TCDD, you are exposed, aren't you, sir?

7 A It's a matter of degree.

8 Q Is the answer to my question, yes, you are exposed,
9 but you don't know the degree that you are exposed, that it's
10 not a severe exposure, that it's a low dose or mild exposure,
11 is that your answer to my question?

12 A What they did is --

13 Q Dr. Roush, could you direct your attention to the
14 question that I am asking, please.

15 A I'm sorry.

16 Q Are you saying that if you are exposed to any dose,
17 you are exposed, but it's just a question of how much your
18 exposure amounts to; isn't that what you are saying?

19 A Yes.

20 Q Yes. So a utility worker that was assigned to work
21 some -- for a few days or a few weeks in a 2,4,5-t producing
22 area was in fact exposed, wasn't he, sir?

23 A Yes.

24 Q A maintenance worker that worked in a 2,4,5-t

1 producing area was in fact exposed, wasn't he, sir?

2 A Yes.

3 Q A janitor's foreman who supervised the janitors
4 working in all parts of the manufacturing plant if he did his
5 job properly and looked to the work of the workers under him,
6 he was exposed, wasn't he, sir?

7 A Possibly.

8 Q Well, how could it be possibly if he went into the
9 department to see the janitors clean up in the 2,4,5-t
10 department, he was exposed, wasn't he, sir?

11 A Yes.

12 Q An hourly employee who works in the office that
13 goes out in the plant from time to time to get data or to get
14 material or to discuss something with people working in the
15 plant, he is exposed, isn't he, sir, if he goes to the 2,4,5-t
16 department?

17 A To some degree.

18 Q Anybody that works at the Nitro plant that had
19 occasion to pass through the 2,4,5-t producing department,
20 whether he was assigned there or not, had some degree of
21 exposure, didn't he, sir?

22 A Yes.

23 Q And, Doctor, if those people were put, were told,
24 if Jan Yung put those people into the unexposed group, that

1 was not the fact, was it, sir, that they were unexposed?

2 A That's right, not totally unexposed.

3 Q Yes. And the ability then to control who was on the
4 list and to define who is on the list is an important ability,
5 isn't it, sir?

6 A Yes, sir.

7 Q Now, Doctor, I'd like to ask you some questions
8 about the attached study by Brooks as attached to this analysis
9 of the Suskind Health Study. Well, maybe before I get to that
10 I'd like to ask you a -- there is a -- on about the 7th page --
11 well, it has at the bottom of it, it has the Number C09859.
12 You see that, sir?

13 A Yes, sir.

14 Q There is a discussion there of intermittent exposed
15 retired salaried people. Do you see that, sir?

16 A Yes, sir.

17 Q Of those that participated with complaints of --
18 there were six employees and five had chloracne, isn't that
19 correct, sir, eighty-three percent?

20 A I can't tell that.

21 Q Sir?

22 A I don't know what those numbers mean. I haven't
23 read this.

24 Q You haven't seen this before?

1 A No, sir.

2 Q Before I gave it to you?

3 A No, sir.

4 Q Well, Doctor, this is dated August 8, 1984. You see
5 that, don't you, sir?

6 A Yes, sir.

7 Q And this is a review of a house study that was
8 conducted by Suskind that -- that you had said earlier the
9 health study is an important piece of evidence upon which
10 Monsanto and you have made your judgments as to the effect of
11 TCDD on human health, isn't that correct, sir?

12 A Yes, sir.

13 Q And this analysis has a relationship to that study
14 and to the credence to be given to that study, doesn't it, sir?

15 A Yes, sir.

16 Q Especially when it points out who controls the
17 exposed and unexposed group and especially when it points
18 out who had chloracne and who didn't have chloracne, isn't
19 that correct, sir?

20 A Yes, sir.

21 Q And you haven't studied it, sir, you haven't read it?

22 A This report?

23 Q Yes.

24 A This doesn't influence the report to me.

1 Q Doctor, I'm sorry?

2 A This doesn't influence the report to me.

3 Q Doctor, it cannot influence the report to you if you
4 haven't read it, if you haven't studied it.

5 A I read the report.

6 Q Sir?

7 A I have read the report.

8 Q And this is an analysis that tells you how the
9 control list was made.

10 A No, it doesn't.

11 Q Doctor, we just got through -- we just got through
12 going into that.

13 A Yes, sir.

14 Q It points out who made up the list, doesn't it, sir?

15 A That is not who made up the list. This is a
16 preliminary list.

17 Q Doctor, the only thing that Dr. Suskind did was to
18 take that list and analyze it along with the questionnaire that
19 was given and answered by the workers, isn't that right?

20 A Yes, sir. Yes, sir, and he modified this.

21 Q Doctor, it is entirely possible, is it not, that
22 you at Monsanto went through the list and knew fifty people
23 that had exposure but did not send those fifty names to Dr.
24 Suskind, isn't that possible, sir?

1 A Yes, sir.

2 Q It is possible that you had two hundred workers at
3 Nitro who had exposure to significant amounts of TCDD and
4 you didn't send those names to Dr. Suskind, isn't that correct,
5 sir?

6 A It's possible.

7 Q And, Doctor, if you know of people who have been
8 exposed and you didn't send those people to Dr. Suskind, he
9 could never look at their health effect, could he, sir?

10 A No.

11 Q If you haven't sent the list to him and they are
12 not invited to the study --

13 A That's right.

14 Q And you sent out invitations to employees that you
15 selected to participate, didn't you, sir?

16 A Yes, sir.

17 Q And some of those people participated and some did
18 not participate, isn't that correct?

19 A Yes, sir.

20 Q And by sending out those invitations you controlled
21 those -- the people who would ultimately be a part of this
22 study, didn't you, sir?

23 A To a degree.

24 Q Yes. If you didn't invite them, they would have

1 never come in. If you did invite them, they may well have
2 come in, isn't that correct, sir?

3 A Yes, sir.

4 Q And that is an important way to control the outcome
5 of a study, isn't it, sir?

6 A To influence it.

7 Q To influence it. And if you influenced the outcome,
8 then you've influenced the significance and importance of
9 that study, haven't you, sir?

10 A It all depends on what Suskind does with what we
11 give him.

12 Q Oh, but it depends on more than that. It depends
13 on whether or not you send him the exposed people to start
14 with. It depends on whether or not you have him enough
15 information that he could determine whether they were exposed
16 or unexposed. It depends on a lot of things that you have
17 complete control over, doesn't it, sir?

18 A To a degree, yes.

19 Q And, Doctor, those things being important why didn't
20 you look at this report by Dr. Brooks?

21 A This took place after the study was completed.

22 Q Yes, I understand that, Doctor.

23 A I was a part of it and I went to talk to Suskind
24 about his groups and how he defined his cohort before he did

1 his study and after he did his study.

2 Q Doctor, I understand that, but now the study is done,
3 it was published in May, of 1984, it was published for the
4 entire world to see what Dr. Suskind says are the health
5 effects from long-term exposure to TCDD, isn't that right, sir?

6 A Yes, sir.

7 Q It's been published in the Journal of the American
8 Medical Association?

9 A Yes, sir.

10 Q And that influences a lot of people, doesn't it, sir?

11 A Yes, sir.

12 Q Now, this document here by William R. Brooks points
13 to and discusses that study, doesn't it, sir?

14 A Yes, sir.

15 Q And you haven't read this study, this report by
16 Dr. Brooks -- I think he's a doctor -- to determine whether --
17 what validity should be given to the Suskind report? Is that
18 what you are saying?

19 A I don't think this had anything to do with validity
20 of the study.

21 Q Doctor, for instance, I have done some analysis of
22 the Zach Suskind Mortality Study, of the Zach Gaffey Mortality
23 Study --

24 A Yes, sir.

1 Q Of the Suskind Herzberger Morbidity Study. Now,
2 how that data is interpreted by me, and many times I go back
3 into the actual employment records, and I have done that, you
4 have supplied those to me -- rather the -- not the employment
5 records, but the questionnaires that have been answered, and
6 I have made determinations that some people were exposed and
7 were put in an unexposed group, and you know from past
8 testimony in this case that others that were analyzed, the
9 Zach Gaffey Mortality report, and you know that exposed
10 people, exposed cancer deaths were put in the unexposed table;
11 you know that, too, don't you, sir?

12 A No, sir.

13 Q You don't know that, sir? Has no one told you the
14 evidence that has been related -- involved in this case with
15 relation to the Zach Gaffey Mortality Study?

16 A Yes, sir.

17 Q Then you do know what has been testified to and
18 shown?

19 A Yes.

20 Q And you do know that four cancer deaths were put in
21 the unexposed group when in fact they were exposed in the
22 Nitro accident?

23 A They were not put in the 2,4,5-t group.

24 Q Doctor, you know they were put in the unexposed

1 group as cancer deaths of people who were not exposed to
2 2,4,5-t, you know that, don't you, sir?

3 A Yes, because they worked in the 2,4,5-t group.
4 That was a study of 2,4,5-t.

5 Q Doctor, I will get to that report in a moment, but
6 what you do know is that the results -- if I could analyze
7 the results and you can analyze the results if you dig into
8 the background; you do know that, but you did not dig into
9 the background, did you, sir?

10 A Of what?

11 Q Of these studies that we're talking about, more
12 specifically the Zach -- I'm sorry, the Suskind Herzberger
13 Morbidity Study.

14 A I participated in it. I didn't go -- this is
15 historical.

16 Q Then I take it that your answer is that you needn't
17 have gone into the background of it because you knew the
18 background of it?

19 A That's right.

20 Q Did you yourself, Dr. Roush, study the list and
21 compare it to the employment records to determine whether or
22 not the unexposed people had had exposure to 2,4,5-t or TCDD?
23 Did you do that yourself?

24 A I knew that was considered. I didn't go into that.

1 Q All right. Then you did not dig into it, did you,
2 sir?

3 A Not that aspect.

4 Q Now, Doctor, if you direct your attention to that
5 part then that's called the porphyria section of this report
6 by Mr. Brooks, and specifically I'd like to direct your
7 attention to Page C09864, the first page of the porphyria
8 attachment. The third paragraph there gives the purpose of
9 the report, doesn't it, sir, is to highlight the porphyria
10 classifications associated with exposure to chlorinated
11 hydrocarbons, TCDD in particular. Do you see that, sir?

12 A Yes, sir.

13 Q Now, this Monsanto document says right out front
14 that there is porphyria that's associated with exposure to
15 chlorinated hydrocarbons, TCDD, doesn't it, sir?

16 MR. HEINEMAN: Let me object to the premise, Your
17 Honor. First of all, there's been no establishment that
18 it's a Monsanto document. That was my point of my
19 objection to it on the basis it was hearsay and no
20 foundation had been laid for its admission. There has
21 been no evidence that it's a Monsanto document. This
22 witness had never even heard of Mr. Brooks, and there is
23 no evidence that the page which Mr. Carr is referring to
24 now is included in the portion of the document which he

1 has already had reference to. Frankly, I see an
2 enormous difference in the type of the two documents.
3 One looks like to be some sort of computer generated rough
4 draft and the other is dark type copy.

5 MR. CARR: Yes.

6 MR. HEINEMAN: I think there is no evidence that
7 they're the same document. There is no evidence that
8 it's a Monsanto document, and I object to the form of the
9 question, and I object to any further inquiry with respect
10 to it on that basis, Your Honor.

11 MR. CARR: Your Honor, this is a document -- it was
12 in this form when it was given to us by Monsanto recently.
13 It has on each page the Monsanto numbers. These numbers
14 are in numerical order, the computer print has on Page
15 C09863 the name W. Brooks, 1979. The porphyria print
16 has on the signature page C09875, the name Bill Brooks
17 and it's all in one part of the document called porphyria
18 by William R. Brooks. If it's not a Monsanto document
19 then, counsel, I suggest you have been producing things
20 that are not from Monsanto files, but you represented to
21 us that this is a Monsanto document.

22 MR. HEINEMAN: Your Honor, Mr. Carr is making --

23 MR. CARR: It either is or it isn't.

24 MR. HEINEMAN: -- a disingenuous argument. He knows

1 that we may have documents in our file that we have not
2 generated, that we've had nothing to do with. For
3 example, the document -- I use for example the document
4 that was produced by the plaintiff, William Kemner, with
5 respect to how his livestock died and we were -- Mr.
6 Carr objected to that because it was hearsay and because
7 Mr. Kemner did not produce it, but it was found in Mr.
8 Kemner's file. He produced the document to us, but he
9 didn't create the document, and that's the difference in
10 my opinion, Your Honor, between establishes foundation
11 for admissibility and what doesn't. I admit that these
12 things have been numbered by people who were out numbering
13 documents to be produced with a stamper, but if you look
14 at the two different documents, they are intrinsically
15 numbered separately. The document that has typewriting
16 on it rather than this rough draft stuff has -- this is
17 Page 1, this is numbered Page 2. Here it is in the middle
18 of the document numbered Page 2, Page 3, Page 4 and on
19 and on, and I think they're possibly two different
20 documents and I object to any questioning about them.

21 MR. CARR: Well, Your Honor, I think the exhibit
22 speaks for itself. The title page was put there by
23 Monsanto, not by me. It says porphyria by William R.
24 Brooks, and it has C098555 -- I'm sorry, C09855. It has

1 their stamp on it that it's confidential, subject to
2 protective order. I don't think Monsanto is in the habit
3 of stamping as confidential those things that are not
4 Monsanto documents. Now, they either are Monsanto
5 documents and confidential and subject to the protective
6 order or they're not. This is part of their -- the fact
7 that they choose to make a document that includes how the
8 Suskind morbidity work was done along with porphyria is
9 their decision, not mine. It's clearly a Monsanto document.

10 MR. HEINEMAN: Your Honor, one of our people could
11 have a file in which he stapled together five different
12 articles produced by five different people, staple them
13 together in the document, and if we were producing
14 documents from his file, we would reproduce them to Mr.
15 Carr exactly as they came from the file. Therefore, they
16 may not be Monsanto-generated documents, they may not be
17 the same documents. They may -- this may be the way
18 whoever's file this is kloppe these two things together.
19 I don't know where they came from. The people that are
20 producing them don't know that. It's up to Mr. Carr to
21 establish foundation.

22 MR. CARR: Counsel, are you saying that this work --
23 that Dr. Ford is not a Monsanto employee and that he did
24 not have Brooks review these documents at the request of

1 Monsanto.

2 MR. HEINEMAN: Yes, I don't have any -- I know who
3 Dr. Ford is, and I know he is a Monsanto employee. I
4 don't know William R. Brooks from Adam's off-ox. I have
5 no idea who he is.

6 MR. CARR: Yes, why don't you look at the second page.
7 It says to Dr. A. Ford, subject, review of health study
8 conducted by University of Cincinnati, June, of '79.
9 Introduction, at your request I have reviewed plant
10 documents concerning the University of Cincinnati Health
11 Study. This short summary with the attached documents
12 should serve to give you an idea of how the study was
13 conducted. This is certainly not a comprehensive report
14 inasmuch as the work was done by St. Louis personnel,
15 particularly Jan Yung. I am sure that she can supply
16 important information that will fill in the gaps. Doesn't
17 it say that, counsel? Doesn't it say at the request of
18 Dr. Ford, who you do know is a Monsanto person?

19 MR. HEINEMAN: You have read it correctly.

20 MR. CARR: Thank you.

21 MR. HEINEMAN: I have no idea who Mr. Brooks is.

22 THE COURT: Okay. I think, first of all, my
23 decision on whether it's admissible is correct. The
24 foundation has properly been laid, and I don't think it's

1 analogous to the document you referred to from Kemner.

2 I think it's distinguishable as to the questions of notice
3 and knowledge. Your objection is overruled. Mr. Carr,
4 you may -- well, why don't you proceed after lunch.

5 MR. CARR: Yes, Your Honor.

6 THE COURT: Ladies and gentlemen, we will break for
7 lunch at this time. We will resume again at 1:30. The
8 admonishments that I have given you earlier about the
9 breaks will apply during this break, also. Court is in
10 recess for lunch.

11 (At this time a lunch recess was taken.)

12 DR. GEORGE ROUSH,

13 previously sworn and testifies further as follows:

14 CROSS-EXAMINATION (Continued)

15 BY MR. CARR:

16 Q Doctor, there actually are three separate documents
17 in Plaintiff's Exhibit 1446, isn't there, sir? First, there is
18 one dated August 8, 1984 that consists of one, two, three,
19 four pages. It's addressed to Dr. Ford, and Dr. Ford is on
20 the environmental policy staff, did you say, Doctor?

21 A Yes, sir.

22 Q And there is that report and then there's something
23 called a Brooks memo, 1979, on Page -- it starts at Page CO9860.
24 Do you see that, sir?

1 A Yes, sir.

2 Q And this was requested by Owen Dolin. Who is Owen
3 Dolin?

4 A He is one of the staff at Nitro.

5 Q All right. And this is a one, two, three, four page
6 memo that has W. Brooks' name to it and then a date, 1979,
7 does it not, sir, this second document?

8 A Yes, sir.

9 Q And it discusses the health study itself, tells
10 the reader of the objectives of the health study and the
11 participation, does it not, sir?

12 A Yes, sir.

13 Q And it goes into -- it describes the physical exam-
14 inations that took place and the transportation that was given,
15 the scheduling required, the personnel required and so on,
16 does it not, sir?

17 A Yes, sir.

18 Q There is a statement on Page 9861 that I'd like to
19 ask you just a little bit about, Numbered Paragraph 3 at the
20 top of the page. Do you see that, sir?

21 A The very first paragraph?

22 Q Yes.

23 A Right.

24 Q It talks about the importance that was placed on

1 using the University of Cincinnati group, that is, Suskind's
2 group rather than Monsanto, does it not, sir?

3 A Yes, sir.

4 Q It states that many people, and these people, of
5 course, are the employees and ex-employees of Monsanto, many
6 people expressed a willingness to participate if they were
7 confident that the study was independent and not influenced
8 by Monsanto.

9 A Yes, sir.

10 Q See that, sir?

11 A Yes, sir.

12 Q It goes on to say that even the fact that Monsanto
13 was covering the cost of the facility, living expenses of
14 Monsanto -- Cincinnati -- I'm sorry, living expenses of the
15 University of Cincinnati people, transportation, and so forth
16 led some people to believe that Monsanto had a strong influence
17 on the study results. Do you see that, sir?

18 A Yes, sir.

19 Q Now, that doesn't include the fact that you know and
20 that we know that Monsanto paid the University of Cincinnati
21 for conducting these examinations in addition to paying the
22 cost of the facility, their living expenses and their trans-
23 portation; it doesn't mention that fact, does it, sir?

24 A No, it does not.

1 Q Were the participants in this study of Nitro, were
2 they not told, sir, that Monsanto was actually Suskind for
3 these examinations or were they told simply as this suggests
4 that they were only paying these -- the cost of the facility
5 and the living expenses?

6 A I can't answer that.

7 Q I'm sorry?

8 A I can't answer that.

9 Q Have you seen any document that you can recall in
10 which it is pointed out to the workers at Nitro that this
11 study is a study that Monsanto was paying for, that is, was
12 paying the University of Cincinnati to conduct, and not an
13 independent study at all?

14 A As I told you, it was a -- the University of
15 Cincinnati were told by NIEHS that they were sponsoring this
16 study.

17 Q Well --

18 A The University of Cincinnati said that they covered
19 parts of the expenses from their own funds because we didn't
20 have to pay the overhead of what was required to do the study.

21 Q You mean you didn't pay the direct salary of the
22 employees of the University of Monsanto nor did you pay for
23 the cost of the buildings on the campus of the University of
24 Cincinnati or a part of it where the actual analysis took place,

1 that's overhead, isn't that right, Dr. Roush?

2 A That's part of it.

3 Q Dr. Roush, my question was direct to that. Did you
4 read a document or do you know whether or not the workers at
5 Monsanto's Nitro plant, both retired and currently working,
6 whether or not they were told that Monsanto was paying the
7 University of Cincinnati more than just these living expenses,
8 that is, were paying them a fee for each person examined?

9 A I don't know.

10 Q Well, you know whether or not -- let me ask it a
11 different way. Is it that you don't recall ever seeing such
12 a document in which that information was given out or you don't
13 know whether it was all given out, whether or not it was given
14 out, which is it, sir?

15 A I don't know either way.

16 Q Then is it fair to say then that you have no know-
17 ledge that the people were ever told that Monsanto was paying
18 for this morbidity study conducted by Suskind, is that correct,
19 sir?

20 A I don't recall.

21 Q All right. Did you -- if that information was not
22 given to the people, do you know whether or not you would have
23 had the participation that you had achieved in this case?

24 A I can't -- I don't know how to answer that.

1 Q Well, did you have any people that -- this indicates
2 that people said they would participate if they were confident
3 that the study was independent. Now, that -- and not influenced
4 by Monsanto, and these people apparently knew that these --
5 some expenses were being paid. Did you ever find out, did you
6 ever talk to anybody that said I am not going to participate
7 in that study because it's under Monsanto's control and I don't
8 have confidence in the results?

9 A No, sir.

10 Q But what you are saying is actually you have no
11 knowledge that anybody was ever told of the extent of Monsanto's
12 control and payment for this study, is that correct, sir?

13 A I don't think we had any control over this study.

14 Q Doctor, we established before lunch that you had a
15 significant control in that you supplied the names and
16 identity of those persons that were exposed and those persons
17 who were the controls, that is, who were not exposed. I think
18 that we established that that is an important way that the
19 outcome can be influenced. Didn't we establish that before
20 lunch?

21 A And I also said that --

22 Q Excuse me, first of all, did we not establish that?

23 A No, sir.

24 Q We didn't establish that?

1 A No, sir.

2 Q You did not agree, Dr. Roush, that the ability to
3 call somebody unexposed when in fact they did have an exposure
4 to influence the outcome, the results of the study?

5 A I don't believe that influenced the outcome.

6 Q The question is didn't you agree, sir, that it
7 could influence the outcome?

8 A Yes, sir.

9 Q And we did establish that, didn't we, sir?

10 A That it could, yes, sir.

11 Q You are simply saying that in your judgment the
12 fact that you had that kind of control in your opinion did not
13 influence the outcome of the study, isn't that correct, sir?

14 A That's part of it.

15 Q Dr. Roush, on that part of it you do know that there
16 were people that had exposure to some degree of 2,4,5-t that
17 were counted as unexposed; you know that, Dr. Roush, do you
18 not, sir?

19 A No, I don't.

20 Q You don't know that?

21 A No.

22 Q I thought we established that you did know that.

23 A No, I didn't.

24 Q Well, don't you know that maintenance and utility

1 workers were put into the unexposed group, and the foreman
2 of the janitors, or do you know it?

3 A No, I don't.

4 Q All right. What you did, you took it upon my --
5 my statement to you that if those people were in fact in the
6 unexposed group, that they had exposure is what you agreed to?

7 A They may have.

8 Q You are not saying that you have any knowledge that
9 that was done in fact?

10 A No. If they included those, that would mean that
11 they were exposed.

12 Q I'm sorry?

13 A Even if they include the maintenance workers, that
14 doesn't mean that they were exposed, because some of the
15 maintenance workers didn't work in that unit.

16 Q I understand that, Doctor, but what my suggestion to
17 you is is that if they included, for instance, the foreman of
18 the janitors in an unexposed group, for him to appropriately
19 or properly perform his duties he of necessity has to go check
20 on janitors that are working in the 2,4,5-t department, does
21 he not, sir?

22 A I don't know.

23 Q Dr. Roush, what you are saying, at least what I
24 believe you are saying is you don't know whether he went into

1 that department or not.

2 A That's right.

3 Q My question doesn't ask you for that knowledge. My
4 question suggests to you that a janitor -- a janitor's foreman
5 who properly did his job would go into such a department,
6 isn't that correct, sir?

7 MR. HEINEMAN: Excuse me, Your Honor. I'll object.

8 The premise he's obviously asking for speculation on the
9 witness's part. He says, okay, if you don't know, then
10 would it, could it.

11 THE COURT: Objection is overruled. I don't think it calls
12 for speculation. Answer the question, please. Dr. Roush.

13 A It could, it could.

14 Q And you say that, Doctor, because a foreman is
15 supposed to check up on the workers and see whether or not
16 they do a good job of cleaning up and to tell them where to
17 clean and how to clean; that's a foreman's job, and his job
18 is to go see if they're working instead of sleeping, isn't
19 that a foreman's job?

20 A Not necessarily.

21 Q Well, it's not necessarily his job, but you know
22 those are among the duties of a foreman, that is, to assign
23 the work to the workers, to see that they do the work and then
24 to check to see if the work has been done properly. That's

1 what a foreman is, isn't it, sir?

2 A Each foreman has his own kind of an assignment.
3 It's hard for us to predict or speculate what they do.

4 Q Doctor, I am not asking you to speculate what they
5 did. All I am asking you is to agree that you know that the
6 duties of a foreman include those things that I have stated.
7 Now, whether or not he performs his duties I am not asking you,
8 because you obviously have no such knowledge. All I am asking
9 you to agree is that you know that that's what a foreman is
10 supposed to do. I am not asking you does he do it.

11 A I don't know that I believe what you have just said
12 is correct, that the foreman has the responsibility to do that.

13 Q You don't think a foreman has that -- what do you
14 think a foreman does, Dr. Roush?

15 A Which foreman?

16 Q The foreman of the janitors.

17 A The foreman of the plant and operations is the one
18 who decides what maintenance is required for that unit, what
19 cleaning is required and how it's done and who does it.

20 Q What does the foreman of the janitors do?

21 A He probably has responsibility for the offices, not
22 the plant.

23 Q No, this is the foreman of the janitors in the plant,
24 Dr. Roush. You misunderstood me. I meant the foreman over all

1 the plant, the foreman of the janitors over the plant, sir.

2 A That I don't know.

3 Q Don't you know that if he does his job properly, he
4 would check to see if they cleaned up where they're supposed to?

5 A The responsibility of that is the foreman of the
6 plant.

7 Q And the foreman of the janitors has no responsibility
8 to check?

9 A Not in the plant.

10 Q He's got workers in the plant, sir, he's foreman
11 over the janitors in the plant. What does he do then if he
12 doesn't check and see that they do their work?

13 A I don't think the janitor's staff has anything to
14 do out in the plant.

15 Q Doctor, I have given you the suggestion that the
16 janitors -- the foreman is the janitor over the janitors in
17 the plant, and you are not accepting that.

18 A And I don't, that's right.

19 Q Well, but, Doctor, the documents that I am referring
20 to describe the gentleman in question as a foreman of the
21 janitors in the manufacturing plant. Now would you please
22 accept that, sir?

23 A If that's a correct statement, then I accept it.

24 Q Now that foreman, for him to do his job, he's got to

1 go out into the plant where the workers are supposed to clean
2 up, doesn't he, sir?

3 A I don't know.

4 Q You don't know that, either?

5 A No.

6 Q How could he do his job if he didn't check up on them?

7 A Because the plant foreman is the one who checks up.
8 The maintenance and the cleanliness of each one of the plants
9 is the responsibility of that foreman from the plant, not the
10 janitor.

11 Q You know that's the situation at Nitro?

12 A At every plant I've been in.

13 Q And that's the situation at Nitro, that the foreman
14 of the janitors there has no responsibility over the janitors
15 that work for him in the entire plant?

16 A It's my impression, yes, sir.

17 Q Doctor, why would they call him a foreman of the
18 janitors in the entire plant?

19 A Because there is a lot of things about cleaning up
20 a plant besides inside the plant.

21 Q Well, I understand that, sir, but it would include
22 that, would it not, sir?

23 A No.

24 Q The foreman of the janitors would not include the

1 person that -- the people, the janitors that go into the plant
2 itself?

3 A No.

4 Q Even though the document described that as what he
5 does, is that correct, sir?

6 A Yes.

7 Q And you are saying the document doesn't properly
8 describe his duties?

9 A That's right.

10 Q And you are saying you know more about the man --
11 well, I haven't got the document here, so that's not fair, but
12 if he describes his duties as I have suggested, who'd have
13 the greater knowledge, he or you, Doctor?

14 A He does. I am giving you my impression of what I
15 think takes place.

16 Q Well, Doctor, I don't want to get -- bear on this
17 because we've got documents that will describe his duties
18 rather than your impression, and I've spent too much time on
19 this point already, but the point that we're taking is that
20 people can have some exposure, and if they're in the unexposed
21 group, they're inappropriately classified aren't they, sir?

22 A Yes, sir.

23 Q And that is the control that Monsanto had over this
24 study as we have established before, that is, the classification

1 of these workers, isn't that correct, sir?

2 A That's the initial control.

3 Q Yes. Now, Doctor, referring now to the document
4 dealing with the porphyria, if you would, sir, that's No. 9864.
5 Brooks among other things reported at that time as to what
6 porphyria is, did he not, sir?

7 A Yes, sir.

8 Q And he said in his report that the purpose of this
9 report is to highlight the porphyria classifications associated
10 with the exposure to chlorinated hydrocarbons, TCDD in parti-
11 cular, doesn't he, sir?

12 A Yes.

13 Q Now this recognizes then that Monsanto knows or
14 somebody at Monsanto knows that porphyria is associated with
15 exposures to TCDD, is that correct, sir?

16 A Yes, sir. This is a medical student.

17 Q Sir?

18 A This is a medical student who wrote this.

19 Q All right. You know who he is now?

20 A Yes, sir.

21 Q Is that right?

22 A Yes, sir. I checked over the lunch hour.

23 Q And he was working in '79 for Monsanto?

24 A Yes, sir.

1 Q And was he still a medical student in 1984?

2 A No, he was an industrial hygienist at Nitro when he
3 was reporting -- in the early work he was an industrial
4 hygienist. The first part, as you have noted, in '84 was
5 written while he was a medical student in summer school, and
6 this last part on porphyria was also written while he was a
7 medical student.

8 Q Well, he worked in 1979 at the Nitro -- for Nitro?

9 A Right.

10 Q What was he at that time?

11 A Industrial hygienist.

12 Q He was an industrial hygienist?

13 A Yes, sir.

14 Q What was his background to become an industrial
15 hygienist? What was he, sir?

16 A I don't know whether he had any background for
17 industrial hygiene. No. Or not. He could have been a
18 technician, industrial hygiene technician.

19 Q Well, he was a Monsanto employee --

20 A Yes.

21 Q But was called an industrial hygienist?

22 A Yes, sir.

23 Q At that time?

24 A Yes, sir.

1 Q And you don't know what his background was at that
2 time?

3 A No, sir.

4 Q Did he continue working for Monsanto and go to Med
5 School then at night or day?

6 A No, sir. No, no, this was a summer job.

7 Q I'm sorry?

8 A It was a summer -- he worked for us during the
9 summer between semesters.

10 Q All right. How long was he a full time employee of
11 Monsanto before he started to Med School?

12 A I don't know.

13 Q He was a full time employee in 1979?

14 A I am sure he was.

15 Q When he made the report, and then he was a med
16 student in 1984 when he reviewed the health study that had
17 been conducted in June, of '79, is that right?

18 A I think so.

19 Q All right. And he was paid by Monsanto for doing
20 the work as an industrial hygienist in 1979 and for the work
21 that he did in 1984?

22 A Yes, sir.

23 Q Was he still called an industrial hygienist in 1984,
24 was that his job classification?

1 A No, sir.

2 Q What was his job classification at that time, sir?

3 A Summer student.

4 Q Well, he's not a student at Monsanto. He's a student
5 at a medical school. What was his job classification at
6 Monsanto?

7 A I don't know.

8 Q He was doing the same work in '84 that he had done
9 in '79, was he not, sir?

10 A No, sir.

11 Q Doctor, he gave you a report in 1979 that is the
12 second document attached hereto dealing with the health study,
13 did he not, sir?

14 A Yes, sir.

15 Q And then in 1984 he reviewed that health study, did
16 he not, sir, the same health study that he reviewed and
17 discussed in 1979?

18 A Yes, sir.

19 Q All right. Now, this porphyria component of this
20 report, sir, shows that he at Monsanto recognized that porphyria
21 had an association from exposure to chlorinated phenols and
22 TCDD in particular, isn't that correct, sir?

23 A Yes, sir.

24 Q And he reviewed the literature concerning porphyria

1 and TCDD for you, did he not, sir?

2 A Not for me.

3 Q By you I mean Monsanto, Dr. Roush.

4 A Yes, sir.

5 Q Sir?

6 A Yes, sir.

7 Q And he reported to Monsanto on the results of his
8 review, did he not, sir?

9 A Yes, sir.

10 Q According to this report.

11 A Yes, sir.

12 Q And if you'll turn to Page 9873, after he got through
13 discussing the various genetic forms of porphyria he discusses
14 a -- in a paragraph called TCDD in porphyria, doesn't he, sir?

15 A Yes, sir.

16 Q And in there he says that in the last ten years
17 there have been a lot of discussions in the literature on the
18 effects of TCDD on the liver of the individuals exposed, doesn't
19 he, sir?

20 A Yes, sir.

21 Q And he says that the information generated by the
22 study in animals as well as in human epidemiological studies is
23 at times contradictory and has created confusion concerning
24 the actual role TCDD plays, if any, in hepatic injury and in

1 porphyria, doesn't he, sir?

2 MR. HEINEMAN: Excuse me, Your Honor. There is a
3 very substantial phrase that was left out of what Mr.
4 Carr read there. After confusion comes the (at least for
5 me), concerning the actual role that TCDD plays, if any.

6 MR. CARR: Thank you, counsel. I am glad you
7 created that -- pointed that out.

8 Q He does point out that at least for him there is
9 some confusion concerning the actual role TCDD plays, if any,
10 in hepatic injury and in porphyria, doesn't he, sir?

11 A Yes, sir.

12 Q Now, Doctor, he then went on to divide the
13 available information into two separate what he called
14 theoretical camps, correct, sir?

15 A Yes, he does.

16 Q He points out that in one theory supported by Dr.
17 Poland and by Goldstein that it comes about through aryl
18 hydrocarbon hydroxylase, mixed function oxidases and cyto-
19 chrome P-450 effects by the TCDD in the liver, correct, sir?

20 A Yes.

21 Q He also points out that it's not clear how
22 inducement of those named enzyme systems leads to porphyria,
23 doesn't he, sir?

24 A Yes, sir.

1 Q But he also points out that the -- a report on the
2 health effects of Agent Orange makes the statement that ALA
3 synthetase is induced by TCDD, but no reference is given to
4 support that particular conclusion, isn't that right, sir?

5 A Yes.

6 Q Then he goes on to discuss the theory posed by Doss,
7 Strik, Centen and Columbi as to the -- how TCDD affects the
8 porphyrins, doesn't he, sir?

9 A Yes, but I am not sure they are the prime components,
10 but they are part of it.

11 Q And he points out that Doss and Strik: -- well,
12 Doss' premise as used by Strik and Columbi have the premise
13 that secondary coproporphyrinuria is described as a progression
14 of impairment with the normal pattern of copro greater than
15 uro to finally it comes down to progressing to a uro greater
16 than copro, doesn't it, sir?

17 A Yes.

18 Q Now what he is saying again deals with the same
19 inverted ratio of copro and uro that was mentioned by you and
20 discussed by Dr. Renate Kimbrough in the Biohazards committee
21 meeting that we discussed this morning, isn't that correct, sir?

22 A Isn't what correct?

23 Q The inverted ratio pointed out by Strik here or
24 Doss here is the same inverted ratio that you saw Renate

1 Kimbrough pointed out.

2 A I'm not sure what it means by inverted ratio.

3 Q Well, inverted ratio means that ordinarily copro
4 is there greater than uro, but after exposure to TCDD it
5 progresses to a point where the uro then is greater than the
6 copro. That's what that means, doesn't it, Dr. Roush?

7 A It could be also -- it just means that the
8 uroporphyrin is increased and the other one is not increased.

9 Q Well, you have the symbol there that the uro there
10 is greater than the copro. You see that, don't you, sir?

11 A Yes, sir.

12 Q And when the uro is greater than the copro, that's
13 extraordinary, that is, it's different than ordinary, where
14 the ordinary thing is that copro is greater than uro?

15 A Yes, sir.

16 Q And that's exactly what Renate Kimbrough told you
17 at the meeting of January -- well, that told you that you
18 reported in January, of 1983, that is, that's inverted, and
19 you know what inverted means, it means turned upside down.

20 A Yes, but you see my problem is I am not sure that's
21 right. The uroporphyrins can --

22 Q Doctor, I am not asking you to accept the validity
23 or the truth of any of these things, because I understand
24 Monsanto's position. Monsanto's position is that only

1 chloracne is the only thing that can be caused by exposure to
2 TCDD. I am not asking you to agree that this is correct. All
3 I am simply asking you is that these documents make these
4 statements, sir, do they not, sir?

5 A Yes, they do.

6 Q And your Dr. Brooks -- well, he's not a doctor --
7 your industrial hygienist Brooks makes the statement that he
8 thinks that TCDD's effect upon the liver is probably a
9 combination of both theories, doesn't he, sir, that is, the
10 enzyme induction and an inhibition of the uroporphyrin --
11 uroporphyrinogen decarboxylase, doesn't he, sir?

12 A That's what he says.

13 Q And he attaches references to the work that he gave
14 you, one of which includes Strik's Chemical Porphyria in Man,
15 doesn't he, sir?

16 A Yes, sir.

17 Q Now, Doctor, you at Monsanto undertook an analysis
18 of some workers, of their porphyrins at the Nitro plant at
19 Nitro, West Virginia, did you not, sir, in 1984?

20 A Yes, sir.

21 Q And as a matter of fact, you went to Minnesota to
22 the Mayo's Clinic for that purpose, didn't you, sir, in
23 January, of '84?

24 A For what purpose?

1 Q To discuss with Dr. Ellefson the porphyrins in the
2 urinary porphyrin levels of one hundred and one Nitro
3 litigants, didn't you, sir?

4 A I didn't go there for that purpose.

5 Q Doctor, did you go to Mayo Clinic in January, of
6 1984?

7 A Yes, sir.

8 Q And did you not visit with Dr. Ellefson on January 11,
9 1984?

10 A Yes, sir.

11 Q And did you not discuss with him porphyrin analyses
12 of twenty-six of the one hundred and one Nitro litigants
13 were twenty-six at least urinary porphyrins?

14 A No, sir.

15 Q Doctor, perhaps you have forgotten it, or perhaps
16 my question isn't framed in a way that you might technically
17 respond to it.

18 MR. CARR: Would you mark that, please.

19 (At this time Plaintiff's Exhibit 1447 was marked
20 for identification.)

21 Q I hand you now what's been marked Plaintiff's
22 Exhibit 1447 and ask you if you recognize that as a letter
23 dated January 11, 1984 that you wrote to Dr. Ralph Ellefson?

24 A Yes, sir.

1 Q Now, does it refresh your memory about your
2 meeting with him, Doctor?

3 A Yes.

4 Q Yes. And you sent to Dr. Ellefson copies of the
5 porphyrin determinations in question, didn't you, sir?

6 A Yes, sir.

7 Q Now, were you aware at the time you were
8 talking to him, sir, that we had been involved in taking his
9 evidence deposition, that is, Monsanto was taking his
10 evidence deposition for use in this case and we, that is, the
11 plaintiffs in this case were involved in cross
12 examining Dr. Ellefson with regard to those findings?

13 A No, sir.

14 Q You had no knowledge that we were there and were
15 doing that?

16 A I went to see a hepatologist.

17 Q When did you first make contact with Dr. Ellefson,
18 sir, prior to January 11, 1984?

19 A I didn't.

20 Q Well then, was January 11, 1984 your first contact --

21 A Yes, sir.

22 Q -- with Dr. Ellefson either by telephone or any other
23 way?

24 A I had no contact with him.

1 Q Doctor, you had a contact with him by virtue -- you
2 acknowledged this letter of January 11, 1984. Was that your
3 first -- you had a contact with Dr. Ellefson, did you not, sir?

4 A I have trouble with timing on dates. My first time
5 going to Mayo Clinic was to talk to a liver man and I was
6 going to talk about porphyrin metabolism.

7 Q Doctor, all I am asking you is your contact with Dr.
8 Ellefson was that you had a contact with him, did you not, sir?

9 A Yes.

10 Q Was the first contact that you had with him that
11 contact of January 11, 1984 that's described in this exhibit?

12 A I can't say, I don't know.

13 Q All right. Are you saying that you may have had an
14 earlier contact with him?

15 A Yes, sir.

16 Q But you do know that you had a contact with him --

17 A Yes, sir.

18 Q On this date?

19 A Yes, sir.

20 MR. CARR: Now, would you mark this 1447-A.

21 (At this time Plaintiff's Exhibit 1447-A was marked
22 for identification.)

23 Q I hand you now what's been marked Plaintiff's
24 Exhibit 1447-A and ask you if you recognize that as a paper

1 porphyrin -- entitled Porphyrin Abnormalities that you
2 prepared and sent to Dr. Ellefson, or that you had prepared,
3 whether you did it personally or not, I don't know.

4 A Yes, sir.

5 MR. CARR: Might I have another one marked 1447-A.

6 (At this time Plaintiff's Exhibit 1447-A was marked
7 for identification.)

8 Q Doctor, you recognize 1447-A as a blowup of that
9 document 1447?

10 A Yes.

11 MR. CARR: Oh, I have already got it marked. I'm
12 sorry. Cancel that marking if it please the Court.
13 We have already used this. This document -- it's
14 Plaintiff's Exhibit 1433 is a blowup of 1447-A, is it not?

15 A Yes, sir.

16 MR. CARR: Offer these exhibits, Your Honor.

17 THE COURT: 33 hasn't been admitted before?

18 MR. CARR: I'm sure it has, so I'll offer 1447 and
19 1447-A.

20 THE COURT: Do you have any objections?

21 MR. CARR: Just to be on the safe side, I'll offer
22 1433 also, Your Honor, just in case I haven't offered it.

23 THE COURT: Fine, okay.

24 MR. HEINEMAN: Your Honor, we would only make the

1 objection I think that we previously made with respect
2 to the relevancy of the Nitro workers, none of whom were
3 exposed to any orthochlorophenol crude.

4 THE COURT: Fine. That's for all three, is that
5 correct?

6 MR. HEINEMAN: Yes, yes, sir. Oh, that's right--
7 1433 is being --

8 THE COURT: Yes, it is.

9 MR. HEINEMAN: And that's identical with 1447-A?

10 THE COURT: Yes, right, just a blowup of it.

11 MR. HEINEMAN: My objection to all three is based
12 on the relevancy which this Court has previously ruled
13 upon --

14 THE COURT: Yes, I have.

15 MR. HEINEMAN: And I wish it to be made a continuing
16 objection with the Court's permission.

17 THE COURT: Yes, that objection is incorporated.
18 The three exhibits are admitted over objection. You may
19 proceed, Mr. Carr.

20 Q Doctor, directing your attention to this board
21 entitled porphyrin abnormalities, at what laboratory were
22 these tests conducted, the results of which are shown
23 on this board?

24 A At the Mayo Clinic.

1 Q And when where these urine samples tested, sir?

2 A I don't remember. I don't recall.

3 Q Well, could you give us your best memory, sir?

4 Obviously sometime prior to January, of '84.

5 A A sheer guess would be at least eight or ten months
6 before that.

7 Q All right. Then it would be sometime in mid-'83, is
8 that correct, sir?

9 A I would think that's right.

10 Q And how many urine samples did you send to Mayo
11 Clinic for analysis?

12 A We didn't send any of these.

13 Q Well, let me ask it a different way. How many urine
14 samples were sent to Mayo Clinic for analysis?

15 A Of these?

16 Q These are part of a total group that had been sent
17 to Mayo's for analysis, isn't that correct?

18 A Yes.

19 Q Now, I want to know how many were sent of which this
20 is a partial group at that time, at sometime prior to January,
21 of '84 when you sent them, sir?

22 A I didn't send any of these.

23 Q When -- all right. When the samples, when the urine
24 samples were sent, sir.

1 A These were all Nitro data that were given to me to
2 see what I thought of them.

3 Q Doctor, my question is when were the urine samples
4 sent to Mayo?

5 A These? I had no part in sending any of these in
6 the Nitro lawsuit to Mayo Clinic. These were done by the
7 people at Nitro.

8 Q All right. And my question is, sir, when were they
9 done?

10 A I don't know.

11 Q And how many were sent?

12 A I can't get it from this. I think something on the
13 order of a hundred.

14 Q All right. And, Doctor, these are porphyrin
15 abnormalities that were reported -- back up a moment. The
16 Nitro litigants, these one hundred Nitro litigants were either
17 all -- they are all either present or past Monsanto employees,
18 were they not, sir?

19 A Yes, sir.

20 Q And some of these were, if not all of these were
21 persons exposed in the 1949 accident at Nitro, West Virginia,
22 isn't that correct, sir?

23 A I don't know.

24 Q Well, you recognize many of them names, don't you,

1 sir, as being those persons that were in the Nitro accident,
2 McCoy, for instance, Painter. Many of these names are persons
3 that were in the Nitro accident; you do know that, don't you,
4 sir?

5 A No.

6 Q You don't recognize these names, sir?

7 A No, I wasn't a part of this.

8 Q I don't think I've got that list of one hundred
9 and twenty-two litigants with me, but I may have. Doctor,
10 these -- if these -- well, you do know that many of the
11 litigants were involved in the 1949 accident?

12 A Yes.

13 Q You do know that, don't you, sir? All right. Now,
14 these were people that were exposed, many of them on a -- on
15 a -- just to the 2,4,5-t and its contaminants in that accident
16 in 1949, some thirty-five years before these porphyrins were
17 tested, isn't that correct, sir?

18 A Yes, sir.

19 Q Now, Doctor, a porphyrin abnormality that lasts for
20 thirty-five years is not a short range reversible abnormality,
21 is it, sir?

22 A No.

23 Q Doctor, these are twenty-six people out of a hundred
24 that have one or more porphyrin abnormalities, isn't that

1 correct, sir?

2 A Borderline abnormal.

3 Q Excuse me, Doctor, are they reported as porphyrin
4 abnormalities or not?

5 A Yes.

6 Q And it is the -- it is your handwriting at the top
7 of the page that calls them porphyrin abnormalities?

8 A Yes, sir.

9 Q Sir?

10 A Yes, sir.

11 Q You didn't say they are borderline porphyrin
12 abnormalities, did you, sir?

13 A No, sir.

14 Q You said porphyrin abnormalities, didn't you, sir?

15 A Yes, sir.

16 Q All right. And these twenty-six people have what
17 you here characterized as porphyrin abnormalities, didn't they,
18 sir?

19 A Yes, sir.

20 Q That's twenty-six percent of the one hundred litigants,
21 is that correct, sir?

22 A Yes, sir.

23 Q And, Doctor, if these porphyrin abnormalities have
24 existed for thirty-five years, will you not now agree, sir,

1 having this information in hand that chloracne is not the
2 only possible result from exposure to TCDD?

3 A If these are indeed related to that exposure.

4 Q And do you have any knowledge that these abnormalities
5 are not related to that exposure?

6 A I am not sure that these aren't just variations on
7 range of normal.

8 Q Doctor, that isn't what I've asked you. You are now
9 discussing whether they are or are not abnormalities. You
10 have characterized them yourself in your own handwriting as
11 porphyrin abnormalities, and I am not now discussing that with
12 you. What I have asked you -- could you read that question to
13 him so that he can understand the question that I have asked him.

14 COURT REPORTER: "And do you have any knowledge that
15 these abnormalities are not related to that exposure?"

16 A Yes.

17 Q And what is that knowledge, Doctor?

18 A That this is -- that they are just extensions of the
19 normal range.

20 Q Doctor, that isn't what I've asked you. These what
21 you have characterized as porphyrin abnormalities, do you have
22 any knowledge that this that you have characterized as porphyrin
23 abnormalities are not the result of the 1949 exposure?

24 A This hangs on the word abnormality.

1 MR. CARR: I think my question is clear, and I don't
2 want to get into an argument with the witness. I have
3 asked him precisely these porphyrin abnormalities that
4 he has described as porphyrin abnormalities, this that
5 you have described here as porphyrin abnormalities, Dr.
6 Roush, do you have any knowledge that these results which
7 you have characterized, which you have characterized as
8 porphyrin abnormalities are not the results of a 1949
9 exposure?

10 A Yes.

11 Q What is that knowledge, sir?

12 A The range of normals of Ellefson on which this is
13 based.

14 MR. CARR: Your Honor, the witness is not answering
15 my question. I posed it three times.

16 THE COURT: Dr. Roush, you have to answer the question
17 as it is directly posed to you. Now, I'll have the Court
18 Reporter read it back one more time. Please listen to it
19 carefully and answer what is asked of you. It has been
20 asked a couple times and explained. Would you please
21 read back the question.

22 MR. HEINEMAN: May I make an objection for the
23 record. Your Honor, I would object to counsel's
24 request and the procedure initiated by the Court on the

1 grounds that I believe the witness is having trouble
2 with the word -- with the implication by Mr. Carr that
3 the designation of abnormality is his and that's what is
4 concerning him, I believe, based upon what he began to say,
5 and therefore, I object to his being required to answer
6 that question without having an opportunity to explain
7 that problem that he has.

8 THE COURT: Well, your objection is overruled.
9 Number One, the question doesn't hinge on that. Number
10 Two, the question also included when rephrased the word
11 results, which is a more neutral term which takes into
12 its scope this data that's reported on 1447-A at Number 3.
13 The difference between the two has been explained by Mr.
14 Carr when he re-asked the question. Your objection is
15 overruled. I think the question is clear. I'll have the
16 Court Reporter read it back one more time and then, Dr.
17 Roush, you are to answer the question. Could you read that
18 initial question back, please.

19 COURT REPORTER: "And do you have any knowledge that
20 these abnormalities are not related to that exposure?"

21 A No.

22 THE COURT: I'm sorry, I didn't hear your answer.

23 A No.

24 THE COURT: Thank you.

1 Q Now, Dr. Roush, in addition to the -- strike that.
2 This exposure that thirty-five -- that occurred thirty-five
3 years ago, many of these men had only that one single time
4 exposure, did they not, sir, to 2,4,5-t and its contaminant?

5 A It went over -- it could have gone over a period of
6 days to months in cleaning up, so it wasn't just one day.
7 It was over days to months in the cleanup involved. It was
8 just related to that one incident, however.

9 Q After that -- well, some of them were present just
10 in the one -- on the one occasion, weren't they, sir?

11 A I -- it's hard for me to answer the question, but I
12 think you are probably right.

13 Q Now, this porphyria some thirty-five years later,
14 if it is porphyria, and I recognize that you challenge the
15 definition of intoxication porphyria given by Dr. Ellefson,
16 but if it is intoxication porphyria, it is a significant
17 finding, isn't it, sir?

18 A Yes.

19 Q Doctor, with respect now to the Biohazards committee
20 meeting on October 27, 1981, let me give you an exhibit first.

21 (At this time Plaintiff's Exhibit 1448 was marked
22 for identification.)

23 Q I hand you what's been marked Plaintiff's Exhibit
24 1448 and ask if you recognize that as a Biohazards committee

1 minutes meeting for October 27, 1981?

2 A Yes, sir.

3 (At this time Plaintiff's Exhibit 1448-A was marked
4 for identification.)

5 Q Doctor, you recognize 1448-A as a paragraph taken
6 from 1448?

7 A Yes, sir.

8 MR. CARR: Offer 1448 and 1448-A into evidence if it
9 please the Court.

10 THE COURT: Any objection?

11 MR. HEINEMAN: No objection, Your Honor.

12 THE COURT: Admitted without objection. Thank you.

13 Q Doctor, with regard to the soft tissue sarcoma
14 problem that Monsanto has worked on that may be associated
15 with chlorinated phenols, Dr. Gaffey reports in 1448-A on
16 soft tissue sarcomas in Monsanto employees, did he not?

17 A Yes.

18 Q And he points out that there were two cases, two
19 tumors at Nitro -- I'm sorry, three cases all together, two
20 in East St. Louis and one from Nitro. I'm sorry, there is
21 three at Nitro and two in East St. Louis that he reports on.

22 A Yes, sir.

23 Q These five cases reported here are soft tissue
24 sarcomas, are they not, according to Dr. Gaffey?

1 A Yes, sir.

2 Q And these five cases were coupled with cases that
3 had been reported at another Monsanto establishment in Europe,
4 isn't that right, sir?

5 A Yes, sir.

6 Q Now, and I'll get -- I have the documents referring
7 to those. The Biohazards committee of which you were a member
8 made the conclusion -- no, first of all, they asked the
9 question whether or not the four cases of multiple myeloma
10 could be related to these five soft tissue sarcomas and
11 lipomas, don't they, sir?

12 A Yes, sir.

13 Q The multiple myeloma, what is a myeloma, sir?

14 A A myeloma is a special kind of tumor that is found
15 in the bone marrow primarily of men in the age of fifty and
16 above.

17 Q And the four people that had it, when did they have
18 that at the Krummrich plant, sir, or were these current
19 cancers of the bone marrow that are being described here?

20 A I don't recall.

21 Q Why did the committee believe that the cases of the
22 bone cancer myeloma, if that's what it is as you have described
23 it, why did they think that that might be related to the five
24 soft tissue sarcomas?

1 A Because the terminology of soft tissue sarcoma is
2 not very clear. No one is really sure whether these should be
3 included together or not, and they ordinarily are not included
4 with soft tissue sarcomas being counted in the dioxin registry,
5 so they brought it up because they thought it was related as
6 some of these others even though the current terminology would
7 not include multiple myelomas.

8 Q Well then, what they are saying is is that they
9 believe these myelomas might be what others -- or should be
10 included in soft tissue sarcomas, is that right, sir?

11 A Or conversely that the soft tissue sarcoma is too
12 broad.

13 Q Well, in any event if they correctly -- if they
14 believe that these four cases should be classified as soft
15 tissue sarcomas, they are really talking about nine soft tissue
16 sarcomas associated with Monsanto, aren't they, sir?

17 A They didn't suggest. They said they raised the
18 question.

19 Q Well, but if in fact the question is answered in
20 the affirmative that these are akin to or they are soft tissue
21 sarcomas, then we are talking about nine soft tissue sarcomas,
22 aren't we, sir?

23 A No, sir. On the five soft tissue sarcomas that are
24 listed here NIOSH has since --

1 Q Doctor, you are jumping ahead of time, and I'm
2 talking about this particular meeting of this particular time.
3 We'll get to NIOSH shortly, but I am asking you at this time
4 they are talking about the possibility of soft tissue sarcomas
5 connected with Monsanto, aren't they, sir?

6 A Yes.

7 (At this time Plaintiff's Exhibit 1449 and 1449-A
8 were marked for identification.)

9 Q I hand you now what's been marked Plaintiff's Exhibit
10 1449 and 1449-A.

11 MR. CARR: Could I have another one marked 1449-A also.

12 (At this time Plaintiff's Exhibit 1449-A was marked
13 for identification.)

14 Q Doctor, 1449-A, both the blowup and the large one is
15 part of 1449, is it not, sir?

16 A Yes, sir.

17 MR. CARR: Yes, offer 1449 and 1449-A. I'll give a
18 copy to counselor and the Court in just a moment.

19 THE COURT: Do you have any objections?

20 MR. HEINEMAN: Oh, I'm sorry, Your Honor.

21 THE COURT: They have been offered.

22 MR. HEINEMAN: No, I have no objections.

23 THE COURT: They are both admitted without objection.
24 Before we go into it, we'll take a short break.

1 MR. CARR: Your Honor, may I approach the bench
2 before we take a break?

3 THE COURT: Sure.

4 (At this time a short conference was had at the
5 bench off the record.)

6 Q This report of September 30, of '81, of which the
7 jury has the excerpts labeled 1449-A, this is a meeting that
8 preceded the meeting that we just got through discussing, isn't
9 it, sir?

10 A Yes, sir.

11 Q And Dr. Munn was brought over from the British plant
12 in Newport, South Wales, wasn't he, sir? He was at that meeting?

13 A Yes, sir.

14 Q And he discussed in some detail the B Cell lymphomas
15 or the development of the malignant lymphoma of the scalp of
16 these workers with the pentachlorophenol?

17 A Yes.

18 Q Now, the presentation that follows in that paragraph
19 after that, is that also a presentation by Dr. Munn from Great
20 Britian?

21 A Yes.

22 Q Then he discusses with you the findings of B Cell
23 lymphomas in addition to those that he found at Newport, South
24 Wales, does he not, sir?

1 A Those were B Cell lymphomas.

2 Q That's what I said, in addition to the B Cell
3 lymphomas.

4 A Yes, sir.

5 Q And he reports to you about the one hundred and
6 twenty-three cases non-Hodgkins lymphoma that were obtained in
7 occupational history by the University of Lund, Sweden, and
8 reported in Lancet?

9 A Yes, sir.

10 Q He goes on to point out that of five that had these
11 cancers, four of -- five of the hundred and twenty-three that
12 had skin lesions -- now, is that skin lesions, is that
13 described as chloracne, Doctor?

14 A No, sir.

15 Q What kind of skin lesions are they talking about,
16 the lymphoma itself?

17 A The lymphoma itself.

18 Q All right. Then five of the hundred and twenty-three
19 that had the lesions of the skin, four of those five had been
20 exposed to herbicides, correct, sir?

21 A Yes, sir.

22 Q And those would be the same kind of herbicides that
23 2,4,5-t is a member of that family?

24 A Yes, sir.

1 Q Now, who makes the point that of seven hundred
2 workers exposed to pentachlorophenol at the Krummrich plant
3 fifty percent had chloracne; that's not Dr. Munn's report, is
4 it, sir?

5 A No.

6 Q That's somebody else said that?

7 A Yes.

8 Q Who said that?

9 A It's hard to say. It could have been me.

10 Q All right. And you point out that four of those
11 people had lymphomas?

12 A Yes.

13 Q Don't you, sir?

14 A Yes.

15 Q And that's the soft tissue --

16 A No, sir.

17 Q No? That's a malignant cancer of the skin?

18 A Yes, lymphomas are relatively common.

19 Q My question is this is a malignant cancer of the skin?

20 A Yes.

21 Q Is it not, sir? And those on the committee,
22 including yourself, agree that it was something that was worthy
23 of study?

24 A Yes, sir.

1 Q Doctor, I know it may appear to you as if we are
2 going backwards, and we are, from Dr. Munn's report, but now
3 I'd like to hand you a Telex that you sent to Dr. Munn.

4 MR. CARR: Would you mark that, please.

5 (At this time Plaintiff's Exhibit 1450 was marked
6 for identification.)

7 Q Doctor, handing you now Exhibit 1450, and ask if you
8 recognize that as a Telex that you sent to Dr. Munn when you --
9 shortly after you had been advised by him of the existence of
10 the sarcoma at the plant in England.

11 (At this time Plaintiff's Exhibit 1450-A was marked
12 for identification.)

13 Q And do you recognize 1450-A also as a blowup on one
14 board of that two-page Telex that you sent to Dr. Munn?

15 A Yes, sir.

16 MR. CARR: Offer 1450 and 1450-A if it please the
17 Court.

18 THE COURT: Okay. Any objections?

19 MR. HEINEMAN: Can we see 1450-A?

20 MR. CARR: Yes. It's those two pages on one board.

21 MR. HEINEMAN: Oh, okay. We have no objection, Judge.

22 THE COURT: Fine. They are both admitted without
23 objection. Thank you.

24 (At this time the exhibit was passed to the jury.)

1 Q Doctor, to again put this exhibit in the proper
2 time context, Dr. Munn had sent you a Telex asking you about
3 the results of various studies and investigations that Monsanto
4 had conducted so he could make a determination of whether or
5 not the sarcomas that he had discussed might be associated
6 with exposure to the chlorinated phenols, isn't that correct,
7 sir?

8 A Yes, sir.

9 Q And as a matter of fact, he had, and we'll get to that
10 shortly, he had sent you a letter in March, of '81, referring
11 to these same cases, didn't he, sir?

12 A I am not sure about the time.

13 Q Well, I have it here, and I have you at a disadvantage.
14 I've got a letter that he wrote you dated March 16, 1981, in
15 which he says Dear George, and he discusses these --

16 A Two tumors.

17 Q Yes. Now, Doctor, referring to this Telex itself,
18 you mentioned here at the outset two studies that Monsanto did.
19 One was the Zack-Suskind Mortality Study, and the study that
20 you described there in the next sentence as a subsequent study
21 of a larger group, is that the study that's known as the Zack-
22 Gaffey Study?

23 A Yes, sir.

24 Q All right. So the Zack-Suskind Study produced one

1 soft tissue sarcoma death according to your Telex, and the
2 second study produced another soft tissue sarcoma death, is
3 that correct, sir?

4 A Yes.

5 Q And there was a letter in January, of '81, and I have
6 a copy of it here, I'll have it marked in a moment, but you
7 referred to a letter to the editor of Lancet in January, of
8 '81, don't you, sir, in which they refer to and in fact combine
9 two Monsanto studies along with two Dow studies, don't they,
10 sir?

11 A Yes.

12 Q See that, sir?

13 A Yes, sir.

14 Q Now, actually that Lancet report did more than or
15 said more than just what you pointed out in this Telex to Dr.
16 Munn, didn't they, sir? Didn't they point out that the --
17 that the -- there were 2.9 percent of sarcoma, soft tissue
18 sarcoma deaths in this group where there should be only .07
19 percent?

20 A I don't recall that.

21 Q All right. Let me give that to you at the same time.
22 Well, I'll get to that in a moment. In any event, you do
23 point out this fact that these studies were combined, don't
24 you, sir?

1 A Yes, sir.

2 Q And that they suggest that there is a cause or
3 relationship to the soft tissue sarcomas and the herbicide
4 exposure, isn't that correct, sir?

5 A Yes, sir.

6 Q Now, Doctor, are you by this Telex to Dr. Munn
7 suggesting to him that there may be such a connection?

8 A No, sir.

9 Q You are simply giving him information so that he can
10 draw his own conclusions?

11 A No, sir. He wanted this information so he could
12 talk to the health and safety executive, which is the
13 equivalent of our OSHA for the United Kingdom, and I wanted
14 him to have this information when he talked to them so he could
15 describe this.

16 Q You are neither -- you are not passing on the --
17 you are not giving him your belief or disbelief either way,
18 you are simply --

19 A Just stating facts.

20 Q -- passing on to him information that you have?

21 A Yes, sir.

22 Q And, Doctor, your Telex goes on to describe in
23 detail the malignant lymphoma that were reported in the letter
24 to the editor from Hardell, don't you, sir?

1 A Yes, sir.

2 Q And you point out that there were eleven tumors in
3 the sinus, the side of the neck, the bladder, the carotid area,
4 the ilium, the retroperitoneal, two submandibular, the groin
5 in two and the femur of these -- how many -- what is that,
6 fourteen cancers then reported or eleven reported?

7 A What's that?

8 Q It would be eleven reported.

9 A I think so.

10 Q Yes. And then you point out that NIOSH is going to
11 conduct a soft tissue sarcoma study in the United States and
12 that they are going to subpoena the medical records at
13 Krummrich, Nitro, and Queeny, correct?

14 A Yes, sir.

15 Q Did you ever receive such a subpoena?

16 A We are already participating in that study. It
17 wasn't a subpoena.

18 Q Well then, is the answer to my question that you
19 never did receive a subpoena?

20 A I don't think we received a subpoena.

21 Q Did you ever send these medical records to NIOSH?

22 A Yes.

23 Q Understanding the fact that they weren't subpoenaed?

24 A Yes.

1 Q Now Dr. Gaffey apparently pointed out to you that
2 there is enough of a question raised to justify the systematic
3 study of as large a population as possible, correct, sir?

4 A Yes, sir.

5 Q And do you agree that there is by this data that you
6 had at that time, did you agree with Dr. Gaffey that there was
7 enough of a question raised as to justify systematic study?

8 A Yes, sir.

9 MR. CARR: All right. Your Honor, I have used the
10 time that you said I might have at this point.

11 THE COURT: All right. Ladies and gentlemen, we will
12 take a break at this time. The admonishments that I have
13 given you earlier will apply during this break also.

14 Recess.

15 (At this time a short recess was taken.)

16 DR. GEORGE ROUSH,

17 CROSS-EXAMINATION (Continued)

18 BY MR. CARR:

19 (At this time Plaintiff's Exhibit 1451 was marked
20 for identification.)

21 Q Doctor, I will now hand you Exhibit 1451 and ask
22 you if that isn't the letter that I referred to earlier that
23 was written to you by Dr. Munn dated March 16, 1981?

24 A Yes, sir.

1 Q I'm sorry, I couldn't hear you. Did you answer?

2 A Yes, sir.

3 Q All right.

4 MR. CARR: Offer that exhibit into evidence along
5 with 1451-A, B and C, Your Honor, when I get the labels.

6 THE COURT: Any objections?

7 (At this time Plaintiff's Exhibits 1451-A, B and C
8 were marked for identification.)

9 MR. HEINEMAN: I am not clear as to what the markings
10 are, Your Honor. The entire document is 1451, correct?

11 THE COURT: Yes, that's correct, Plaintiff's 1451.

12 MR. HEINEMAN: And then there is an A, B and C?

13 THE COURT: That's correct. That's what I understand.

14 MR. CARR: A, B, and C will be the blowup of each
15 page.

16 MR. HEINEMAN: Your Honor, I would like to institute
17 an objection on the basis of lack of relevancy with
18 respect to the -- the United Kingdom Health and Safety
19 Studies because as is apparent from the documents them-
20 selves, these people are exposed to pentachlorophenol,
21 and not to any of the materials that are the subject of
22 this lawsuit. Therefore, I would object on basis of lack
23 of relevance.

24 THE COURT: I will admit them over objections, so

1 they are all admitted.

2 Q Doctor, 1451-A, B and C are blowups of the three
3 page document 1451, are they not, sir?

4 A Yes, sir.

5 MR. CARR: Yes, offer those three exhibits as well,
6 Your Honor.

7 THE COURT: Fine. They are admitted. They were part
8 of the other group.

9 MR. CARR: Yes.

10 MR. HEINEMAN: Yes, I believe we've already stated
11 our objection with respect to that, Your Honor.

12 THE COURT: Right. They are noted on the record as
13 to what your objections are.

14 Q Doctor, the first page of 1451 is that letter that
15 I previously mentioned, and Dr. Munn makes a point with you
16 that these two cases have occurred in a relatively small
17 pentachlorophenol population, does he not, sir?

18 A Yes, sir.

19 Q And insofar as pentachlorophenol is concerned, you
20 know that it does contain dioxins, don't you, sir?

21 A Yes, sir.

22 Q And he apparently, Dr. Munn apparently committed
23 himself to ascertaining what was Monsanto's experience in
24 the pentachlorophenol population both at Krummrich and at Nitro,

1 did he not, sir?

2 A Yes, sir.

3 Q And the second page bears out that commitment.
4 These people that are described at the top of the page there,
5 are those all Monsanto employees?

6 A Are you referring to this Bishop, Jones, and Jones?

7 Q Yes.

8 A No, those are -- those are safety executive management
9 from -- they're OSHA.

10 Q Then the only Monsanto employee that was at that
11 meeting was Dr. Munn, is that correct, sir?

12 A Yes, sir.

13 Q And they asked, first of all -- not first of all,
14 but in the fourth paragraph there Dr. Munn comments to the
15 meeting on the immuno suppressive action of the dioxin, doesn't
16 he, sir?

17 A Yes, sir.

18 Q And he is talking about the dioxins that are in the
19 pentachlorophenol, doesn't he, sir?

20 A Yes, sir.

21 Q And those dioxins that are in pentachlorophenol are
22 also in other chlorinated phenols, aren't they, sir?

23 A The difference in ratio is in things like that.

24 Q Yes, but they're there, aren't they, sir?

1 A I think so.

2 Q Yes. And Dr. Munn comments that these dioxins has
3 an immuno suppressive action, doesn't he, sir?

4 A Yes, sir.

5 Q Now, Doctor, he is, Dr. Munn is a paid employee of
6 the Monsanto Corporation, isn't he, sir?

7 A Yes, sir.

8 Q And he says in effect that there are suppressive
9 actions, immuno suppressive actions of the dioxins, doesn't he,
10 sir?

11 A Yes, sir.

12 Q Sir?

13 A Yes, sir.

14 Q Now, Dr. Roush, you, however, in this country, you
15 have the view yet that the only thing dioxins can do is cause
16 chloracne, is that correct, sir?

17 A Based on information today, yes.

18 Q And, Doctor, did you ever tell Dr. Munn, did you ever
19 write him? You had this document in your possession since
20 March, of 1981 in which he says his apparent belief at that
21 time that dioxins can have an immuno suppressive action. Did
22 you ever write Dr. Munn, Telex Dr. Munn, that dioxins don't
23 have an immuno suppressive action in your judgment?

24 A No, sir, I did not.

1 Q So far as you know does Dr. Munn still hold the
2 view, have the view in his capacity as the chief medical
3 officer for Monsanto in England at least that dioxins do have
4 an immuno suppressive action?

5 A I don't know. We haven't discussed it.

6 Q If you don't know, is it fair to say that so far as
7 you know this is his view, that you know of nothing to suggest
8 that his view has changed since 1981, do you, sir?

9 A No.

10 Q Doctor, do you agree that if dioxins do have an
11 immuno suppressive action, that that can be a factor in the
12 causation of lymphomas, cancers, soft tissue sarcomas?

13 MR. HEINEMAN: In the causation did you say?

14 MR. CARR: Yes.

15 A No.

16 Q Do you agree that the immuno suppressive action of
17 dioxins may allow carcinogens to do things to the human system,
18 that is, cause cancers where the immuno systems of the human
19 beings might otherwise prevent these cancers from occurring?

20 A No.

21 Q Have you ever written Dr. Munn that he should,
22 because he is speaking for Monsanto just as you are speaking
23 for Monsanto, have you ever written him to tell him that his
24 view is not Monsanto's view as you see it?

1 A No, sir.

2 Q And, Doctor, on the last page of this document 1451
3 there are -- there is a top paragraph there that has stars on
4 it, some kind of stars on it. Do you know who put those stars
5 there, sir? Did you do it?

6 A I am not certain, but I could have done it.

7 Q All right. And you may have done it at that time
8 to point out what your responsibility or what you are being
9 asked to do, that is --

10 A Yes.

11 Q -- to find out what, how many cases, if any cases
12 of lymphoma had occurred at the -- he says here Monsanto plant,
13 but actually it's Monsanto plant in the United States, isn't
14 that correct, sir?

15 A He's talking about the pentachlorophenol plant.

16 Q He's talking -- well, at this time, Doctor,
17 pentachlorophenol was not being manufactured by Monsanto.

18 A Nor was the one in U.K. when they were talking about
19 this.

20 Q All right. These cases then of cancer that they've
21 discovered in U.K. after they also stopped manufacturing
22 pentachlorophenol?

23 A I think that's right.

24 Q And they wanted to find out whether or not cancers

1 had occurred at the Krummrich -- no, he's asking for more than
2 that. The Krummrich plant refers to the pentachlorophenol,
3 but the Nitro group refers to 2,4,5-trichlorophenol, does it
4 not, sir? His first -- the first page of his letter he is
5 asking you not just for the pentachlorophenol population, but
6 he's asking you for the cancers that have occurred in
7 2,4,5-trichlorophenol marked quote "Two other dioxin-containing
8 Monsanto products", isn't he, sir?

9 A Yes.

10 Q And as a matter of fact, when you sent him the Telex,
11 that is 1450, you responded to more than just the Krummrich
12 plant data, didn't you, sir?

13 A Yes, sir.

14 Q Yes. Now, Doctor, in addition to responding to Dr.
15 Munn's request you also reviewed for Monsanto where you had
16 reviewed or somebody reviewed for you the results of various
17 meetings and testimony that was taking place relating to dioxin
18 and soft tissue cancer, and you so reported or at least the
19 policy staff reports in July, of 1983, is that correct, sir?

20 A I don't know.

21 Q You don't know?

22 (At this time Plaintiff's Exhibit 1452 was marked
23 for identification.)

24 Q I hand you now what's been marked as Plaintiff's

1 Exhibit 1452 and ask you if you recognize that as a corporate
2 document made by the environmental policy -- a special report
3 by the environmental policy staff dated July 25, 1983 dealing
4 with dioxin and soft tissue cancer? Do you recognize that as
5 such a report?

6 A Yes, sir.

7 MR. CARR: Offer that exhibit, Your Honor.

8 THE COURT: Any objection?

9 (At this time Plaintiff's Exhibit 1452-A was marked
10 for identification.)

11 MR. HEINEMAN: Your Honor, I'll object to it only
12 on the basis of foundation. I don't know that anybody
13 knows or at least it hasn't been established as to who
14 the author of this document is, and I don't think that
15 this witness has said that he knows.

16 MR. CARR: Your Honor, I don't think it makes any
17 difference who the author is. This is a document of
18 Monsanto's prepared by their environmental policy staff,
19 and I don't need to identify the author nor do we need it
20 for a foundation in this case.

21 THE COURT: It's admitted over objection.

22 Q Doctor, 1452-A is a paragraph taken from that report,
23 if you look to the third page of the exhibit, last paragraph on
24 that page, is it not, sir, third page of the exhibit, last

1 paragraph beginning with the word NIOSH?

2 A Yes, sir.

3 MR. CARR: Offer 1452-A if it please the Court.

4 THE COURT: Same objections?

5 MR. HEINEMAN: Same objection, Your Honor.

6 THE COURT: Same ruling.

7 MR. HEINEMAN: Can we -- there hasn't been an
8 identification of what's being passed to the jury. Is
9 it the entire --

10 MR. CARR: Yes, the entire document.

11 MR. HEINEMAN: 1452?

12 MR. CARR: That's correct.

13 Q Now, Doctor, directing your attention to the report
14 itself, it went to the entire corporate administrative
15 committee according to the front page, did it not, sir?

16 A Yes, sir.

17 Q And the second page discusses a -- apparently it's
18 the knowledge of Monsanto had as to what several federal
19 scientists were going to testify to in Congress before an
20 environmental subcommittee. Do you see that, sir, that there
21 is going to be a forty -- testimony will show that there is a
22 forty-fold -- that means forty times -- increase in soft tissue
23 cancer among workers exposed to dioxin in the manufacture of
24 2,4,5-t, pentachlorophenol, and other chemicals. Do you see

1 that, sir?

2 A Yes.

3 Q Now, these -- these scientists, Lardrigan from NIOSH
4 and Houk of CDC, did they testify that there was a forty-fold
5 increase in soft tissue cancer among these workers described
6 there, sir?

7 A I don't know.

8 Q Is it -- is it that you don't -- that you knew at
9 one time and you have now forgotten?

10 A No.

11 Q Or you never did know?

12 A I never did know.

13 Q Well, Dr. Roush, there is a statement here that
14 among these workers, these were Monsanto employees. Did you
15 not attempt to get a copy of the testimony or make other efforts
16 to find out whether or not there were Monsanto employees in
17 this group of workers that had a forty-fold increase in soft
18 tissue cancer?

19 A Yes, did that.

20 Q Sir?

21 A I did that.

22 Q All right. And what Monsanto employee did they
23 identify as being among those that had a forty-fold increase in
24 soft tissue cancer?

1 A Ours wasn't forty-fold increase. It was the total
2 study that was forty-fold.

3 Q Well, I understand that's what they said that the
4 total shows that soft tissue cancer, that it's a forty-fold
5 increase, but my question is which were the workers, which
6 were the Monsanto workers that were included in that
7 description of employees of workers that would get this -- or
8 had this soft tissue cancer?

9 A As stated, there were two from Nitro and three from
10 Krummrich.

11 Q Well, aren't these -- what they're referring to in
12 your -- you are talking about the third page now of this
13 document, but that's talking about death from soft tissue
14 sarcoma.

15 A Yes, sir.

16 Q The study itself doesn't say or at least the second
17 page of the testimony doesn't say that it's a forty-fold
18 increase in deaths in soft tissue cancer. It talks about a
19 forty-fold increase in soft tissue cancer and you're talking
20 about the death resulting from it.

21 A Yes.

22 Q I am asking you whether or not you made an effort
23 to discovery which Monsanto employees still living have the
24 soft tissue cancer that was the subject of this testimony?

1 A That soft tissue cancer is related to mortality.

2 Q The forty-fold increase in soft tissue cancer --

3 A Yes.

4 Q -- it talks about soft cancer -- death from soft
5 tissue cancer?

6 A Yes.

7 Q And that's United States workers?

8 A Yes, sir.

9 Q And that would include the workers making 2,4,5-t
10 at Nitro, pentachlorophenol at Krummrich -- well, it says
11 other dioxin in other chemicals as well. I suppose it could
12 cover other chlorinated phenols, could it not, sir?

13 A It's hard to tell.

14 Q Sir?

15 A I don't know.

16 Q You don't know and you haven't -- and you didn't --

17 A I knew about these cases.

18 Q Now, Doctor, I am wanting to go beyond the cases
19 and I am wanting to find out whether or not you at Monsanto
20 made an effort to find out about this forty-fold increase.
21 Now, if it's forty-fold increase in soft tissue cancer deaths,
22 it becomes more dramatic and more important than the way I
23 interpreted it. I interpreted it just to mean that soft tissue
24 cancers had increased forty-fold, not that deaths had resulted

1 from that increase, but you are telling me that this means
2 a forty-fold increase in soft tissue cancer deaths?

3 A Yes.

4 Q My question is why didn't you, if this included
5 Monsanto employees -- or do you believe that the only soft
6 tissue deaths from cancer in the Monsanto employees were the
7 nine that we talked about here in these earlier documents?

8 A The nine-what?

9 Q The nine soft tissue cancers that we discussed
10 earlier today.

11 A We didn't call those soft tissues, those nine.

12 Q I'm sorry?

13 A We didn't call those nine soft tissue.

14 Q The October 27, 1981 meeting, Exhibit 1448-A
15 leaves -- do you have that exhibit in front of you?

16 A What is that?

17 Q It's the Biohazards committee meeting of October 27,
18 1981. Do you have that, sir?

19 A October 27?

20 Q Yes.

21 A Yes, sir.

22 Q And this is the exhibit from it. This discussed
23 cases, and I thought we had added those up to nine cases.

24 A You don't put multiple myeloma with sarcomas and you

1 don't put lymphomas with sarcomas.

2 Q Well, didn't you tell us that this myeloma was
3 considered by your Biohazards committee right there as it
4 could be related to soft tissue sarcomas? Isn't this something
5 that your committee said, not something that I said, but
6 something that your committee said?

7 A Yes, but in another place -- all they're raising
8 is the question of multiple myeloma. They didn't say that
9 they should be added to the soft tissue sarcomas.

10 Q They said that there might be a relationship, didn't
11 they?

12 A That doesn't mean that they are all the same kind
13 of disease.

14 Q Well, these nine cases that are referred to in the
15 minutes of October 27, 1981, are they all deaths, sir?

16 A Yes, sir.

17 Q And how many of those nine deaths would have been
18 referred to in your judgment, Dr. Roush, by exhibit or in
19 Exhibit 1452, this special report of your environmental policy
20 staff?

21 A Four.

22 Q Now, Doctor, then on the next page there is the --
23 a paragraph taken from that report that I've blown up, and
24 it discusses the two deaths at Dow Chemical Company and two at

1 Monsanto, but it doesn't discuss the two others, and you said
2 there were four deaths, and this just talks about two of
3 Monsanto's. Oh, I'm sorry, it does talk about -- I take that
4 back -- it talks about two at Nitro and two at the Sauget
5 plant, so that is four indeed.

6 A But it's actually five.

7 Q Actually five, all right. And NIOSH says that this
8 is a very rare form of cancer that occurs in only .07 percent
9 of the general population?

10 A Yes, sir.

11 Q And that would be a very small number, wouldn't it,
12 sir?

13 A Yes, sir.

14 Q Less than one-tenth of one percent?

15 A Yes, sir.

16 Q And the article in Lancet that I asked you about
17 earlier also discusses these very rare forms of cancer, doesn't
18 it, sir?

19 A I don't know.

20 Q You don't remember? You knew at one time?

21 A Right.

22 Q All right.

23 MR. CARR: Could you mark that as an exhibit.

24 (At this time Plaintiff's Exhibit 1453 was marked for

1 identification.)

2 Q Handing you now what's been marked Plaintiff's
3 Exhibit 1453, I'll ask you if you recognize that as the
4 Lancet article that was referred to dated January 31, 1981.
5 Do you recognize that, sir?

6 A Yes, sir.

7 MR. CARR: Offer 1453 into evidence if it please the
8 Court.

9 MR. HEINEMAN: Your Honor, I object to it for lack
10 of foundation. It's hearsay. It's not prepared by any
11 Monsanto employee. It's something that just happens to
12 be in their files. No foundation laid.

13 MR. CARR: Well, let me lay a foundation if counsel
14 is concerned about it.

15 Q Doctor, Lancet is a recognized medical journal of
16 quite prestigious standing published in Great Britian, is it
17 not, sir?

18 A Yes, sir.

19 Q It's recognized and accepted as authoritative in the
20 field as an authoritative publication, is it not, sir?

21 A Peer reviewed.

22 MR. CARR: Now I'll offer 1453.

23 MR. HEINEMAN: Same objection, Your Honor.

24 Authoritative only lets him question about it. It

1 doesn't get it into evidence.

2 THE COURT: Objection is overruled. It's admitted
3 over objection.

4 Q And, Doctor, this -- we need to pass it, I'm sorry.

5 (At this time the exhibit was passed to the jury.)

6 Q Doctor, this article in the first paragraph makes
7 a percentage calculation of the hundred and five deaths
8 referred to in the two Monsanto studies, that is, the Zack-
9 Suskind Study and the Zack-Gaffey Study, doesn't it, sir?

10 A Yes, sir.

11 Q And it points out that three, that is, nearly three
12 percent were due to soft tissue sarcomas, doesn't it, sir?

13 A That includes Dow's data, too.

14 Q Yes, of the four, it talks about four cohorts,
15 that is, the two Dow studies and the two Monsanto studies,
16 correct, sir?

17 A Yes, sir.

18 Q And those three deaths reported there -- in fact,
19 there are more than that -- that represents three percent,
20 doesn't it, sir, as opposed to less than one-tenth of one
21 percent for all deaths in the United States from soft tissue
22 sarcomas?

23 A Yes, sir.

24 Q Do you see that, sir? Sir, that is a factor that is --

1 accounts for the -- or does it account for the forty-fold
2 increase that the scientists testified to in front of the
3 subcommittee for Congress?

4 A That would be about forty-fold.

5 Q Yes. And so then the conclusion that was reached
6 by the scientists for CDC and the NIOSH is based then upon the
7 soft tissue cancer deaths found at Dow and at Monsanto, correct,
8 sir?

9 A Yes, but this is a letter. This is not an article.

10 Q Well, but the point is is that they are talking
11 about three deaths and you had five deaths at -- of Monsanto
12 employees, two at Sauget and three at Nitro, and this is
13 talking only about three deaths, two at Monsanto and one from
14 Dow, isn't that correct, sir?

15 A Yes.

16 Q Sir, if Monsanto then from its own deaths can account
17 for five soft tissue cancer deaths, which is -- would be then
18 not a forty-fold but close to one-hundred fold increase in
19 soft tissue cancer deaths, isn't it, sir?

20 A If they were in fact as reported.

21 Q Well, what -- if you look at your Exhibit 1452,
22 you yourself say on the page Number 2, which actually is the
23 fourth page of the exhibit, the top of the page, you say your-
24 self the fact is that five former Monsanto employees were

1 found to have soft tissue cancer, two at the Sauget plant and
2 three at Nitro.

3 A Yes, sir.

4 Q So that five -- you are saying yourself that they've
5 had it, aren't you, sir, that they died from soft tissue cancer?
6 You've not made any mistake about that, have you, sir?

7 A Yes, I made a mistake.

8 Q You made a mistake?

9 A This whole --

10 Q This document of July, 1983 in describing these as
11 soft tissue cancer deaths?

12 A Yes.

13 Q Did you ever -- is there any document where that's
14 pointed out, sir? Is there any memo that I've missed or
15 something?

16 A Yes.

17 Q Where is that, sir?

18 A There is a subsequent one when NIOSH says that one
19 of their Nitro soft tissue sarcomas was found to be a malignant
20 cancer that could be confused with it histologically and was
21 not a soft tissue sarcoma. That's one. And the other two of
22 these here in which we talk about that he was never exposed --

23 Q Now, Doctor, you are not -- you are not challenging
24 the statement at the top of the page?

1 A Which statement?

2 Q Page 2, the fact is where it says "The fact is that
3 five former Monsanto employees were found to have soft tissue
4 cancer, two at the Sauget plant and three at Nitro"?

5 A Yes, sir. I am not quarreling with that.

6 Q All right.

7 A No, I am quarreling with one of them. One of them
8 is not a soft tissue sarcoma, one of those five.

9 Q Well, you say that there is a document that NIOSH --

10 A Yes.

11 Q -- so states. I don't have it in front of me at
12 the present time, but I'll take your word for it now that it
13 exists, but the four then is significantly greater by one-third
14 than the three referred to in this Lancet letter, isn't it, sir?

15 A Yes, but --

16 Q So that's a forty-fold increase, four would be at
17 least a sixty or seventy-fold increase, would it not, sir?

18 A But NIOSH says two out of those four --

19 Q Could you answer that question first?

20 A No.

21 Q You won't answer -- oh, you are answering that
22 question?

23 A I'm answering that.

24 Q Sir?

1 A I am -- no.

2 Q Four -- if three is a forty-fold increase over what's
3 expected --

4 A Yes.

5 Q -- at .07 percent --

6 A Yes, sir.

7 Q -- isn't four then a sixty-fold increase?

8 A No, sir.

9 Q Well, what is it?

10 A It depends on the denominator.

11 Q Well, our denominator is .07 percent.

12 A No, sir.

13 Q Let me back up, Dr. Roush. Did you not agree a
14 moment ago that the three soft tissue deaths was a forty-fold
15 increase over the .07 percent that's expected?

16 A If they were related to this.

17 Q And that's what I'm giving you, that hypothesis.

18 MR. HEINEMAN: Excuse me, what's the hypothesis?

19 Q That three soft tissue cancer deaths is forty times
20 greater than the .07 percent that would be expected in this
21 population. Seven-hundredths of one percent, sir -- three,
22 I think you agreed earlier was forty times that?

23 A Yes, sir.

24 Q All right. Four then would be sixty times that,

1 wouldn't it, sir, or seventy times that?

2 A Yes.

3 Q All right. Now, Doctor, getting to the -- back to
4 this EPS special report, the author of this document says that
5 of the five Monsanto cases it's virtually certain that two had
6 no exposure to dioxin, but in the very next paragraph when he
7 discusses one of those cases, he states that he held a clerical
8 job for all but a few months during the time that 2,4,5-t
9 herbicide was made at the plant. His few non-clerical months
10 were spent as a maintenance worker. You see that, sir?

11 A Yes, sir.

12 Q You know from other studies --

13 MR. HEINEMAN: Excuse me. Do you want to read him
14 the rest of that sentence?

15 MR. CARR: Not yet, counsel.

16 Q You know from other studies, don't you, Dr. Roush,
17 that maintenance workers because of the nature of their work
18 happen to get in and work with the pipes that the chlorinated
19 phenols go through and work to repair damaged machinery, that
20 they have a very great likelihood of exposure, and you have had
21 studies yourself, reports yourself that so indicate, isn't that
22 correct, sir?

23 A Not necessarily.

24 Q Well, not necessarily. Indeed if a maintenance

1 worker isn't working with machinery that makes 2,4,5-t, then
2 he's not exposed, but if a maintenance worker is going in to
3 repair machinery that makes 2,4,5-t, he does have exposure,
4 doesn't he, sir?

5 A Yes, sir, yes, sir.

6 Q Now this worker worked as a maintenance worker in
7 the 2,4,5-t department, didn't he, sir?

8 A It doesn't say he worked in 2,4,5-t.

9 Q Well, do you know where he worked, sir?

10 A No, sir.

11 Q Then how can you say or whoever wrote this document --
12 he could have been a full time worker for those months in
13 2,4,5-t so far as you know at this time, isn't that right, sir?
14 Isn't that correct, sir?

15 MR. HEINEMAN: Let me object to that, Your Honor, as
16 calling for speculation on the part of the witness. He
17 could have worked in the lab, too.

18 THE COURT: Objection is overruled.

19 MR. HEINEMAN: It's pure speculation.

20 THE COURT: Objection is overruled.

21 Q Doctor, do you have any information suggesting that
22 this man that worked as a maintenance worker was not working
23 in those departments where 2,4,5-t was manufactured?

24 A We only have what they stated, and they tried to

1 state it as objectively as they could.

2 Q Well, all they do is speculate, don't they, sir?
3 It is highly unlikely that he was ever exposed to dioxin
4 simply because his few non-clerical months were spent as a
5 maintenance worker?

6 A I don't know how good those statements are.

7 Q Doctor, it's indeed possible, is it not, that this
8 man was a maintenance worker and was exposed to dioxin?

9 A It's possible, but that isn't what the sentence says.

10 Q I know that, and that's the reason I'm bringing the
11 point up, to point out that this sentence isn't necessarily
12 true, is it, sir?

13 A Not if he had exposure.

14 Q That's correct. And there is no evidence that you
15 have that you are aware of that ever came forward to show that
16 he did not have any exposure, is there, sir?

17 A Yes, the sentence here that says it is highly
18 unlikely he was exposed to dioxin.

19 Q Doctor, is this statement that it's highly unlikely --
20 and they say simply because he spent a few months as a
21 maintenance worker, they say it's highly unlikely. Where do
22 they get that information?

23 A I don't know.

24 Q No, and it's not pointed out where they got that

1 information, is it, sir?

2 A Not there it isn't.

3 Q Do you know anywhere where it's pointed out, sir?
4 Have you seen any documents at all where it's pointed out that
5 this man did not have exposure to dioxin working in the plant?

6 A NIOSH in their statement agrees that he didn't have
7 exposure.

8 Q Is NIOSH talking about this worker in their statement?

9 A Yes. Not in this statement, but subsequently it is.

10 Q No, my question is is this worker the one that NIOSH
11 says that he had no exposure?

12 A Yes.

13 Q Doctor, where did NIOSH get the information, from
14 whom did NIOSH get that information?

15 A From Monsanto.

16 Q And do you know what information it was that was sent
17 to him, sir?

18 A No, sir, I don't have it.

19 Q Wasn't it information that he was a clerical worker,
20 sir?

21 A I don't know.

22 Q Doctor, the records were never subpoenaed, were they,
23 sir? These were records that you supplied to NIOSH voluntarily,
24 weren't they, sir?

1 A Yes, sir.

2 Q Doctor, the next paragraph discusses the cancers
3 developed at the Sauget plant, don't they, sir?

4 A Yes, sir.

5 Q And it suggested there that he worked in the area of
6 possible dioxin exposure for quote "Only one year", isn't that
7 correct, sir?

8 A Yes, sir.

9 Q Now certainly if he had worked in a dioxin exposure
10 for one year he could have come in contact with TCDD and other
11 dioxins, could he not, sir?

12 A I don't know when they were working, whether they
13 were making 2,4,5-t at that time or not.

14 Q Well, Doctor, they weren't making 2,4,5-t at the
15 plant, and I didn't say 2,4,5-t at the Monsanto plant. I said
16 TCDD dioxins. You've got them in your 2,4-dichlorophenol and
17 your Santophen and orthochlorophenol, you have them in
18 parachlorophenol, you have them in all of the chlorinated
19 phenols manufactured at Monsanto Krummrich plant, and isn't it
20 possible, sir, that he was exposed to dioxin working for those
21 two years in that plant in that area of possible dioxin exposure
22 for one year?

23 MR. HEINEMAN: We object to the form of the question,
24 Your Honor, as misstating the evidence. Mr. Carr states

1 that they presently have.

2 THE COURT: Objection is overruled.

3 A I don't have the information to answer the question
4 about their exposure of dioxin at that time.

5 Q Doctor, if I give you as fact, I'd like you to
6 assume that in this case it's been proven that dioxins have
7 been found in all of the chlorinated phenols manufactured at
8 the Sauget, the Illinois plant. Would you assume that please,
9 sir?

10 A Yes.

11 Q And this man worked in that department in the plant
12 for two years and in the area of possible dioxin exposure for
13 one year, did he not, sir?

14 A Yes.

15 Q If he's exposed to dioxin, if he's in that area,
16 he can get dioxin in his system, can't he not, sir?

17 A Yes.

18 Q Now, Doctor, it's also stated there that because
19 cancer generally develops over twenty to thirty years there is
20 no reason to believe that this young man's cancer was
21 work-associated; isn't that what it says, sir?

22 A Yes, sir.

23 Q But you do know that cancer can develop in some
24 given susceptible individuals at a much faster rate than

1 twenty to thirty years; you know that, don't you, sir?

2 MR. HEINEMAN: Objection, Your Honor. It's vague.

3 Is he talking about any cancer or soft tissue sarcoma?

4 THE COURT: Objection is overruled.

5 A The reason this was stated this way --

6 Q Dr. Roush --

7 A Yes, sir.

8 Q I didn't ask you for the reason it was stated. I
9 asked you whether or not you know that cancer can develop in
10 some unfortunate individuals who are disposed that way in much
11 shorter periods of time than twenty to thirty years?

12 A Yes.

13 THE COURT: Mr. Carr, is this a good point for a
14 very short break?

15 MR. CARR: Yes, Your Honor.

16 THE COURT: Ladies and gentlemen, we will take a
17 five-minute break, and then we'll resume testimony. The
18 admonishments I have given you earlier will apply during
19 this break, also. Court is in recess.

20 (At this time a short recess was taken.)

21 DR. GEORGE ROUSH,

22 resuming the witness stand, having previously been sworn
23 testified as follows:

24 (At this time Plaintiff's Exhibit 1454 was marked

1 for identification.)

2 MR. CARR: I only have one copy of this, counsel.

3 I'll let you see it before I show it to the witness.

4 Q Doctor, I'll hand you what's been marked Plaintiff's
5 Exhibit 1454 and ask you if in the third paragraph it doesn't
6 discuss maintenance-type employees and their need for the same
7 kind of protection in the double locker system from a medical
8 viewpoint as production workmen?

9 MR. CARR: Well, that's premature, Your Honor.

10 Q Do you recognize that as the document generated by
11 the medical department, the department that you're the head of,
12 don't you, Doctor?

13 A Yes, sir.

14 MR. CARR: Offer that exhibit, Your Honor.

15 THE COURT: Any objections?

16 MR. HEINEMAN: No objection, Judge.

17 THE COURT: Admitted without objection. Thank you.

18 Q The paragraph that I referred to talks about the
19 need for a double locker system for maintenance workers as
20 well as for production workers, doesn't it, sir?

21 A Yes, sir.

22 Q And it says from a medical viewpoint they need it
23 just as much as the production workers, doesn't it, sir?

24 A Yes, sir.

1 Q And that indicates the medical department believes
2 that the maintenance workers had just as much exposure to the
3 dioxin potential as the production workers, doesn't it, sir?

4 A Yes, sir.

5 Q Yes. Actually this exhibit that you or whoever --
6 who is Dr. Donald Coleman?

7 A He's one of our physicians in the medical section.

8 Q It says here he has a title of director, occupational
9 medicine and epidemiology in 1982 at least.

10 A Yes.

11 Q Is that correct, sir?

12 A No longer.

13 Q What is his title now?

14 A Staff physician.

15 Q At that time at least he says the maintenance
16 employees present a different type of problem with potential
17 for high exposure, don't they, sir?

18 A Yes, sir.

19 (At this time Plaintiff's Exhibit 1455 was marked
20 for identification.)

21 Q Doctor, now handing you what's been marked Plaintiff's
22 Exhibit 1455, I'll ask you to see if you recognize that as a
23 Monsanto document called WGK Today and it refers to some
24 soft tissue cancer cases.

1 (At this time Plaintiff's Exhibit 1455-A was marked
2 for identification.)

3 Q 1455-A is a blowup of 1455, is it not, Doctor?

4 A Yes, sir.

5 MR. CARR: Offer 1455 and 1455-A if it please the
6 Court.

7 THE COURT: Any objections?

8 MR. HEINEMAN: I didn't hear him answer the first
9 question. I don't know that a foundation has been laid
10 for admission.

11 THE COURT: I think he said yes. I thought I heard
12 him say yes.

13 MR. CARR: I don't know that he answered that question
14 either, Your Honor. He answered yes to 1455-A was a
15 blowup of 1455.

16 THE COURT: Oh, okay.

17 MR. CARR: But I don't really think he answered the
18 question on 1455.

19 A I was still reading that. I'm sorry.

20 Q You recognize that as a Monsanto document called
21 WGK Today dated December 30, 1982, don't you, sir?

22 A Yes, sir.

23 MR. CARR: I'll offer it now, Your Honor.

24 THE COURT: All right. Any objections now?

1 MR. HEINEMAN: No objection.

2 THE COURT: Fine. They're both admitted without
3 objection.

4 Q Doctor, this WGK Today actually is an inhouse kind
5 of news bulletin that's distributed to the workers at the
6 Krummrich plant, isn't that correct, sir?

7 A Yes, sir.

8 Q And this particular document that was distributed
9 to the workers discusses these soft tissue sarcomas that we
10 have just been discussing here, doesn't it, sir?

11 A Yes, sir.

12 Q You point out that -- or it says by Monsanto in
13 this document that the one employee worked at the plant for
14 approximately two years, and therefore, any relationship
15 between his illness and his workplace is almost non-existent.
16 That statement is contained there, is it not, sir?

17 A Yes, sir.

18 Q Doctor, and of course you know from your answers
19 here today that working at the plant for two years could expose
20 you to significant amounts of dioxin, couldn't it, sir?

21 A If he was working where he could get exposure.

22 Q Yes. And the statement that a relationship between
23 his illness and the workplace simply because he works there
24 just two years, the statement that that relationship is almost

1 non-existent simply isn't true, is it, sir?

2 A No.

3 Q Are you -- perhaps my question wasn't aptly phrased.
4 Are you saying that the statement is true?

5 A It is not true.

6 Q You are saying it's not true, all right. Doctor,
7 there is also another untrue statement in this document.

8 A I'm sorry, I have misspoken when I say -- I don't
9 think that a man who worked there and gets a sarcoma two years
10 after he's started to work can possibly be related to working
11 with a chemical.

12 Q You agreed earlier, I thought, that some unfortunate
13 individuals have a genetic makeup that would allow them to have
14 cancers come on rather rapidly.

15 A Yes, sir, relatively so.

16 Q Sir?

17 A Relatively so.

18 Q And you could have a cancer develop two years after
19 exposure to a carcinogen, could you not, sir?

20 A Not that I know of.

21 Q You have never heard of that experience?

22 A No, sir.

23 Q Not -- I am not now talking about dioxin per se, I am
24 talking about any carcinogen.

1 A Any carcinogen.

2 Q You don't know of a case where a cancer developed
3 two years after exposure to the toxic substance?

4 A No, sir.

5 Q Are you saying that it's not possible, sir?

6 A Yes.

7 Q This statement that's contained in the last sentence
8 of that same paragraph, generally speaking sarcomas have never
9 been directly related to or caused by the effects of chemical
10 exposure -- Doctor, you know that that isn't so, don't you,
11 sir?

12 A No.

13 Q Doctor, the Hardell study was in existence in 1982,
14 wasn't it, sir?

15 A Yes, sir.

16 Q And didn't he study and didn't he make a relationship,
17 state that in his judgment, his opinion based upon his studies
18 that there was a relationship to the sarcomas that he found
19 and the exposure of these forestry workers?

20 A Yes, sir.

21 Q Then, Doctor, he did make a direct relationship to
22 the sarcomas that he mentioned them in this study and the
23 chemical exposure, didn't he, sir?

24 A Yes, sir.

1 Q So this statement then is not true, is it?

2 A No, sir.

3 Q Sir?

4 A No, sir.

5 Q Did he make a study directly relating the exposure
6 to the sarcoma?

7 A Yes, sir.

8 Q This statement says they have never been directly
9 related, doesn't, sir?

10 A That's right.

11 Q And they have been, haven't they, sir, by Hardell?

12 A But not confirmed by anyone else.

13 Q Now, Doctor, this is not saying confirmed, is it, sir?
14 There hasn't been a confirmation of ninety-nine percent of the
15 studies that are published relating in this area, but what you
16 have told us -- not you, but whoever prepared this document,
17 you said that sarcomas have never been directly related to
18 or caused by the effects of chemical exposure, and you know
19 that that statement is simply not true, because Hardell and
20 others have directly related sarcomas to chemical exposure,
21 have they not?

22 MR. HEINEMAN: Objection, Your Honor. The question
23 Mr. Carr asked does not read the entire sentence.

24 THE COURT: Objection is overruled.

1 A Our responsibility is to talk about the total
2 medical evidence, not one article. It has to be -- the weight
3 of the evidence establishes whether there is any relationship
4 or not.

5 Q Well, Doctor, you could have said in this bulletin
6 that the weight of the evidence or you could have said it's
7 clear by our analysis of the available medical literature that
8 in our opinion the weight of the evidence says that sarcomas
9 have never been directly related to or caused by the effects
10 of chemical exposure. You could have said that, could you not,
11 sir?

12 A That might have been better.

13 Q And it would have been true, wouldn't it, sir, in
14 your judgment? That there are reputable scientists, a
15 significant number of reputable scientists, that believe
16 Hardell's study is true and correct, isn't that correct, sir?

17 A I don't know that.

18 Q You don't know that?

19 A No.

20 Q Isn't Hardell's study cited in any number and numbers
21 and numbers of articles dealing with cancer caused by chlorinated
22 phenols?

23 A Every time they do that they are now --

24 Q Excuse me. Isn't it cited and relied upon in any

1 number of articles published in this field?

2 A It's cited.

3 Q And don't reputable scientists believe that it's so?

4 A No, sir.

5 Q The scientists that believe that it's so are not
6 reputable, Doctor?

7 A That isn't, no.

8 Q Well, you know that they are reputable and you know
9 that there are reputable scientists that believe the truth of
10 Hardell's study, isn't that correct, sir?

11 A I don't believe so anymore.

12 Q All right. You think now today that no reputable
13 scientist believes Hardell's study is correct?

14 A That's right.

15 Q All right. Is there any literature, sir, that has
16 been accepted by the scientific community that so states that?

17 A Many literature citations will say that.

18 Q I'm sorry?

19 A Many literature citations will say the total
20 information on sarcoma is much more questionable than it was
21 two or three or four years ago.

22 Q Doctor, I won't even quarrel with that, but that's
23 not the equivalent to saying that just simply because it's
24 questionable isn't the equivalent to saying that no reputable

1 scientist believes that soft tissue sarcoma can be caused by
2 exposure to chemicals. They are not equivalent statements,
3 are they, Dr. Roush?

4 A I think they are.

5 Q You think they are?

6 A Yes, sir.

7 Q If that's your definition then, that simply because
8 it's questionable that that's the equivalent to saying that
9 no one believes it, then I can pass on, and that apparently is
10 what you are saying.

11 A Yes, sir.

12 Q All right. Now, Doctor, the last paragraph there is
13 defining sarcoma. It says skeletal sarcoma, malignant tumors
14 as well, doesn't it, sir?

15 A Pardon, sir?

16 Q It includes skeletal sarcomas as a soft tissue --
17 no, I'm sorry, it does not say soft tissue sarcoma, does it,
18 sir? It's talking about sarcomas in general.

19 A That's right.

20 Q All right.

21 MR. CARR: Continue, Your Honor?

22 THE COURT: If this is a convenient point --

23 MR. CARR: It is, but I'll go ahead if you like.

24 THE COURT: Ladies and gentlemen, we will break at

1 this point since this is a convenient point at which to
2 stop. Tomorrow morning we will start again at 9:30.
3 I would remind you, as I do for any overnight break, that
4 you are not to read, listen to, or watch anything about
5 this case in particular or the subject matter in general,
6 in any of the media, print or electronic. I would also
7 remind you that as of Thursday morning we will switch
8 over to different hours starting at 9:00 and ending
9 approximately 4:00. This is what we talked about earlier.
10 We will start that Thursday morning. Have a good evening.

11 MR. CARR: Your Honor, we didn't hear what you said.

12 MR. HEINEMAN: I can't hear you, Judge.

13 THE COURT: Oh, I'm sorry. I was reminding them that
14 on Thursday we will switch over to the 9:00 to approxi-
15 mately 4:00.

16 MR. CARR: Thursday, all right.

17 THE COURT: Thursday morning. Court is adjourned.
18 Have a good evening.

19 (Court adjourned for the day.)
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24

1 STATE OF ILLINOIS)
2 TWENTIETH JUDICIAL CIRCUIT) SS
3 COUNTY OF ST. CLAIR)
4

5 I, RICHARD P. GOLDENHERSH, Circuit Judge in and for
6 the Twentieth Judicial Circuit of the State of Illinois,
7 and the sole presiding Judge in the aforesaid cause on the
8 3rd day of June, 1985, do hereby certify that I have examined
9 the aforesaid transcript of the proceedings and further
10 certify that the same is a true and correct transcript of
11 said proceedings had in said cause.

12 Dated this _____ day of _____, 1985.
13
14

15 
16 _____
17 CIRCUIT JUDGE
18
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23
24

1 STATE OF ILLINOIS)
2) SS
3 COUNTY OF ST. CLAIR)

4 I, MARSHA SCHNIPPER, one of the Official Court
5 Reporters in and for the Twentieth Judicial Circuit of the
6 State of Illinois, and the Official Court Reporter who
7 reported the proceedings had at the hearing of Frances E.
8 Kemner, et al., vs. Monsanto Company, et al., No. 80-L-970,
9 on the 3rd day of June, 1985, do hereby certify that the
10 above and foregoing is a true and correct transcript of the
11 proceedings had at said hearing, which proceedings were
12 reported by me in shorthand and by me correctly transcribed.

13 Dated this ____ day of _____, 1985.

14
15 _____
16 Official Court Reporter
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