

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,)
)
7 Defendant.)

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9
10 REPORT OF PROCEEDINGS

11 Before the HON. RICHARD P. GOLDENHERSH

12 JURY TRIAL

13 May 30, 1985

14
15 APPEARANCES:

16 Mr. Rex Carr,
17 Mr. Jerome Seigfreid
 On Behalf of the Plaintiffs;

18 Mr. John Musgrave,
19 Mr. Joseph Nassif,
20 Mr. Kenneth Heineman
 On Behalf of the Defendant.

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23 Debra M. Musielak, CSR, CM
24 Official Court Reporter

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EXHIBITS

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EXHIBITS SUBMITTED ON BEHALF OF THE PLAINTIFF:

Plaintiff's Exhibit No.:

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1 BE IT REMEMBERED, that on the 30th day of May, 1985,
2 the same being one of the regular judicial days of said
3 court, the above-styled cause came on regularly for hearing
4 before the HONORABLE RICHARD P. GOLDENHERSH, one of the
5 Judges at the St. Clair, County Building, 10 Public Square, in
6 the City of Belleville, County of St. Clair, State of
7 Illinois. Whereupon the following proceedings were had:

8 COURT CONVENED:

9 THE COURT: Good morning. Mr. Carr.

10
11 JAMES WILSON

12 (being called as a witness on behalf of the Plaintiff, under
13 Section 2-1102, having been previously sworn, continued to
14 testify as follows)

15 RECROSS EXAMINATION

16 BY MR. REX CARR

17 Q. Dr. Wilson, yesterday we were discussing the
18 article Freeman and Shroy had sent to Science Magazine for
19 publication dealing with a suggestion by Freeman-Shroy that
20 most of the TCDD in the soil at Times Beach would have
21 disappeared in a short period of time, relatively speaking,
22 and that McConnell's article was in error when it discussed
23 the bio-availability of TCDD in contaminated soil, do you
24 recall that, sir?

1 A. Well, not exactly. I don't recall the
2 characterization of the Shroy and Freeman findings that it
3 would disappear in a relatively short period of time. I
4 don't think that was the import of the article but I do
5 recall some discussion, yes.

6 Q. Well, you wouldn't consider that 90 percent of it
7 disappearing in a few months in, oh, less than ten years, 90
8 percent of the total TCDD had disappeared, you wouldn't
9 consider that a relatively short period of time?

10 MR. MUSGRAVE: Is the question in less than ten
11 years or relatively few months? I object to it as vague,
12 indefinite.

13 MR. CARR: I agree, it is conflicting. In less
14 than ten years, 90 percent having disappeared?

15 A. I don't consider that relatively fast, no.

16 Q. When you consider that it's accepted that a
17 half-life of TCDD in soil is ten years?

18 A. It's not so accepted. There is -- it's quite clear
19 that the disappearance in the movement in the soil cannot be
20 described by a half-life process.

21 Q. It's clear from your Lillian and Queeny plant
22 experiences TCDD in the soil 16 years ago is still there?

23 A. No, sir, it's not the case.

24 Q. It's not the case?

1 A. There is no -- the TCDD that was found at the
2 Queeny plant is not associated with oil, it's in oil and gunk
3 on the underside of an elevator, has nothing to do with soil.

4 Q. But the TCDD at the Krummrich plant, it's in soil?

5 A. That's correct.

6 Q. And that was put in soil when, sir?

7 A. To the best of my knowledge before 1980.

8 Q. Which is fourteen years ago, better than fourteen
9 years ago and it's there, isn't it, sir?

10 A. Some remains, yes.

11 Q. Well, the point that I'm getting at in any event,
12 you stated yesterday that Science Magazine had refused to
13 publish this article written by Freeman and Shroy, you recall
14 that, sir?

15 A. I recall saying that they had not agreed to publish
16 it, yes.

17 Q. But you didn't know why they had refused to publish
18 it?

19 A. That was correct.

20 Q. Well, this morning your attorneys delivered to me a
21 letter, a number of documents that at 9:15 this morning, one
22 of which was a comment by a person from Science on the
23 article, and have you read that, Dr. Wilson?

24 A. I have not read all of those materials, no.

1 Q. When did you become aware of the fact that Science
2 Magazine had given criticisms to Freeman and Shroy of their
3 comment on McConnell?

4 A. Well, I recall that they returned comments at the
5 time that I think they said they didn't have room to publish
6 the technical comment as they described it, if that's what
7 you are referring to. I suppose shortly after the date that
8 they were received, but I can't remember when that was, I
9 suppose it was last fall sometime.

10 Q. Doctor, I asked you yesterday whether or not you
11 knew why they -- why they had refused to publish it and you
12 said just simply because they didn't have room?

13 A. No, sir, I said yesterday, I didn't remember, I
14 believe.

15 Q. But today you do remember?

16 A. Well, I believe that's the substance of at least
17 one of those responses in there, yes.

18 Q. I don't have a copy of this, so I'll just have to
19 have this one marked because it was delivered to me -- Dr.
20 Wilson, handing you Plaintiff's Exhibit 1432 and turn to a
21 page that is numbered C22298, would you look at that please,
22 sir? That page there is a comment by some person from
23 Science who was given the responsibility of critiquing the
24 Freeman-Shroy comment on McConnell, is it not?

1 A. I believe that's the case, that's what it looks
2 like.

3 Q. And that person gives five deficiencies --

4 MR. MUSGRAVE: I object to counsel -- I object to
5 counsel testifying, asking questions as to the contents of
6 the document until it's offered into evidence, Your Honor, it
7 hasn't been offered into evidence, I should say.

8 MR. CARR: Well, I'll offer it into evidence, no
9 problem.

10 THE COURT: Any objection?

11 MR. MUSGRAVE: Object to it as hearsay.

12 THE COURT: Objection is overruled.. Admitted into
13 evidence.

14 Q. Dr. Wilson, the author from Science, the writer
15 from Science says that the authors, and by that he means
16 Freeman and Shroy, in responding to the report by McConnell
17 et. al. have failed to provide persuasive evidence of
18 oversight in the original report based on several criteria,
19 does he not say that, sir?

20 A. That's what it says, that's correct.

21 Q. And then he lists five places where they, on those
22 criteria where they failed to persuade, to give persuasive
23 evidence, do they not, sir?

24 A. At least five comments, yes.

1 Q. Thank you. Doctor, with regard to the Eglin data
2 and the article that was written by Freeman and Shroy, and
3 that was delivered to the American Institute of Chemical
4 Engineers, and Professor Jury's comments thereon, you recall
5 we had finished the day discussing that particular article?

6 A. I believe that's what we were doing, yes.

7 Q. Doctor, the -- could you give the exhibits that I
8 pulled out.

9 THE CLERK: They are over there.

10 Q. He has them. Fine. Referring to Exhibit 1415, if
11 you would, that was the paper that was originally sent to the
12 American Institute of Chemical Engineers for publication and
13 the paper that was presented to the society, to the national
14 meeting held in Philadelphia?

15 A. That's my understanding, yes.

16 Q. Now, the equations in that document are basically
17 on two pages that support the theory or the model, are there
18 not, sir, that is on Pages 5 and 6?

19 A. That's correct.

20 Q. And the article thereafter refers to actual
21 measurements at Eglin Air Force Base that we have discussed
22 here earlier, and the model, that is the model based upon
23 those equations, or that's represented by those equations and
24 those conclusions, isn't that correct, sir?

1 A. Basically that's correct, yes.

2 Q. And those conclusions that are reached are based
3 upon the equasions that are contained on page, Pages 5 and 6,
4 are they not, sir?

5 A. Well, no, not all of them, no, in fact --

6 Q. I didn't ask you about all of them.

7 A. Well, then the answer is --

8 Q. Referring to the model and comparing the model to
9 the actual soil measurements is based upon the equasions on
10 Pages 5 and 6, isn't that correct, sir?

11 A. Strictly speaking, no, it's not correct.

12 Q. Well, refer to Page 9, if you would, sir, so we can
13 get a specific reference to it, exactly when they were doing
14 -- the very first sentence on that says, using the transport
15 model previously presented in this paper, a simulation of the
16 TCDD movement was done, do you see that, sir?

17 A. Yes.

18 Q. When they are talking about the transport model
19 previously presented, they are referring to the model based
20 upon the equasions on Pages 5 and 6, are they not, sir?

21 A. They are in part.

22 Q. Well, that's the only model that was previously
23 presented in the paper, isn't that correct, sir, is there
24 some other model that I've missed that's not on Pages 5 and

1 6, is it buried somewhere in that document that I haven't
2 seen it? It is on 5 and 6, is it not, sir, the transport
3 model previously presented in this paper is that which was
4 presented on Pages 5 and 6?

5 A. That's correct.

6 Q. And, they say using that model, a simulation of the
7 TCDD movement was done, do they not, sir?

8 A. They do.

9 Q. And they say using that model, the third paragraph
10 on that page, the good agreement between the model and the
11 data suggests that all the TCDD applied by Dr. Young in 1972
12 is still contained in the biodegradation plots, do they not?

13 A. They do.

14 Q. And they say, the last sentence on the paragraph
15 two referring the model, to the actual measurements made, the
16 model fits the data well, do they not say that, sir. Page 9
17 second paragraph, last sentence?

18 A. Yes, they say that.

19 Q. Now, again, the model they are talking about goes,
20 are the equations on 5 and 6, aren't they, sir?

21 A. --

22 Q. Didn't you just say that, Dr. Wilson, ten seconds
23 ago?

24 A. In fact --

1 Q. Doctor, didn't you just say that ten seconds ago,
2 that model that they are referring to is the model that's
3 represented by the equations on Pages 5 and 6?

4 A. That's what it says, yes.

5 Q. Yes. And, this model they say fits the data well,
6 do they not, sir?

7 A. That's what it says.

8 Q. Now, Doctor, in the pre-publication draft, they
9 changed the equations on Page 5, did they not, sir?

10 A. Yes, they did.

11 Q. But they didn't change one single word of the
12 conclusions, did they, sir?

13 A. That's correct.

14 Q. Doctor, and Dr. Jury had said that the equations
15 that they were using in the original document were completely
16 ridiculous, that it's off by a factor of a thousand?

17 MR. MUSGRAVE: Object to counsel's
18 characterization.

19 MR. CARR: I do agree. I didn't say ridiculous.

20 MR. MUSGRAVE: May it be stricken, counsel's
21 misleading comment?

22 THE COURT: It will be stricken.

23 Q. He says that the volatilization predictions made by
24 your model are not physically possible, given the parameter

1 values of dioxin, does he not, sir?

2 A. On which page does he say that?

3 Q. Oh, the third page of the letter dated September
4 25th, 1984, on Plaintiff's Exhibit 1418?

5 A. Yes, it does say that, you are correct.

6 Q. Now, also goes on the bottom of the page he says,
7 "On the other hand your model predicted 31.66 percent of the
8 initial application of TCDD would be volatilized during the
9 first 30 days." Then makes another comment about estimated
10 applications, and then he says, "This appears to be a
11 physical impossibility." Doesn't he, sir?

12 A. It does say that, yes.

13 Q. Now, Doctor --

14 A. Approximately.

15 Q. The equations were changed in the subsequent
16 document but not the conclusions, the conclusions that were
17 reached in the original document were based upon the
18 equations that were changed. The equations were changed
19 because that was a physical impossibility for that to occur
20 as pointed out by Professor Jury, but the conclusions didn't
21 change. How can that be, Doctor, how can you have a model
22 that's based upon an equation and you say in commenting on
23 that model the data fit that model well, you changed the
24 model, it goes from a Model T to a Model A, or it goes from

1 one kind of a bridge to another kind of bridge, goes from one
2 vehicle to another, the equations change, the model changes,
3 but now, the data which he said in 1415, the measurements fit
4 the model set out in 1415, he changed the model. He says now
5 --

6 MR. MUSGRAVE: I object to this continuing speech.

7 Q. The data same data --

8 MR. MUSGRAVE: He asked the man a question, he
9 continues on giving his, counsel's own version. He's asked
10 the man a question that he's never let him answer. I object
11 to this as no more than a speech.

12 MR. CARR: I haven't finished the question, yet,
13 Your Honor.

14 THE COURT: Finish the question. Objection is
15 overruled.

16 Q. (by Mr. Carr) The data remains the same. The
17 measurements of the soil remains the same, exactly the same,
18 but the model changes. But now he says the same thing, the
19 model, that is, the new model fits the data well. That seems
20 to me, sir, and I'll ask you to agree that that is an
21 impossibility, is it not, sir?

22 MR. MUSGRAVE: I object. It's two questions. He
23 ought to be able to answer both questions.

24 MR. CARR: He can certainly answer all the

1 questions I asked him, counsel.

2 THE COURT: Objection is overruled.

3 A. Certainly not impossible, and the answer to the
4 question is quite simple. What those equations describe is
5 not the model that is used to do the calculation because that
6 is something that is described in computer code, those
7 equations describe the theory on which the model is based.
8 Dr. Freeman developed a computer technique for making
9 calculations that were derived on this theory, and by the way
10 was incorrectly described in this original paper in a couple
11 of key points as Dr. Jury pointed out. In changing the
12 description of the theory to represent in following Dr. Jury
13 and his colleagues suggestions, it gives a better description
14 of that theory as Dr. Jury said, but it doesn't change the
15 computer model on which the calculations are based, doesn't
16 change it at all. In fact, Doctor, the last half of Dr.
17 Jury's comments are based on an assumption about one of the
18 constituents in Dr. Freeman's theory, namely that this K of
19 Kenoga that he's talking about was part of the theory, the K
20 that was in Dr. Freeman's theory was there as an adjustable
21 parameter, and the whole second half, the whole last page and
22 a half of Dr. Jury's comments are based on incorrect
23 assumptions. They are not relevant.

24 Q. It is not relevant when he says that the model, he

1 says "Your model predicted that 31 percent would be gone
2 during the first 30 days," does he not say that, sir?

3 A. That's correct.

4 Q. And the model he's talking about is the model on
5 Pages 5 and 6, is he not?

6 A. No, sir, he's not.

7 Q. What other model again is there, Doctor, I've asked
8 you this several times, only one model in this document,
9 isn't there, sir?

10 A. What Dr. Jury is talking about --

11 Q. Excuse me, is there not only one model in the
12 document?

13 MR. MUSGRAVE: I object, he's asked two questions.

14 A. No, sir.

15 MR. MUSGRAVE: The witness is entitled to answer
16 both of them since he posed them. I don't think the witness
17 is required to answer them in any particular order unless --
18 I request the witness be permitted to answer the question.

19 A. Dr. Jury --

20 THE COURT: Objection is overruled. It was not a
21 multiple question.

22 A. Dr. Jury assumed that the equations mean a certain
23 model by his comments in this letter, and his assumption is
24 incorrect, that's one model that is not described in the

1 paper but described in his letter. The model he's talking
2 about leads to those results which are incorrect, but that's
3 not the model that Dr. Freeman used to do his calculations.
4 Now, the theoretical description of Dr. Freeman's model in
5 this original draft, the Plaintiff's Exhibit 1415, is not as
6 good as the one that is given in the later document called
- 7 pre-publication draft. It was improved by the taking into
8 account of Dr. Jury's comments on the original, but the basic
9 model is the same.

10 Q. If I understand you correctly, Freeman-Shroy
11 described a particular model in this document on Pages 5 and
12 6, in both documents, although different models, correct,
13 sir, different equations?

14 A. They described a theoretical justification for the
15 actual computer model in which, by which they did their
16 calculations.

17 Q. They don't give then -- when they say that the
18 model uses the following material balance equations, they
19 don't really mean that then?

20 A. They do not give the detailed model, that is
21 correct.

22 Q. Why do they say in their document if they do not
23 mean to mislead, why do they say the model uses the following
24 material balance equations?

1 A. Because it's clear to anyone skilled in the art
2 that this is a model based upon a computer simulation and
3 they realize that those who will be reading this paper will
4 be able to draw, will be able to conclude the kind of
5 computer model that is derived from it, and they will assume
6 that kind of computer model is used.

7 Q. Doctor, the impression that Freeman and Shroy give
8 is that they have an equation that they call the model uses
9 those equations, Jury says it's impossible for that to work,
10 it's by a factor of a thousand, then they come up and put
11 another equation on paper, but now you tell us that's really
12 not what they put in the computer at all, they have got a
13 different theory, a different model that they put in the
14 computer?

15 A. No, sir, they have the same model in the computer,
16 they have the same basic theory.

17 Q. Let's stop right there, they have got the same
18 model in the computer, but yet the model changed from one
19 document to another, did it not, sir?

20 A. No, sir, it did not, the equations used to describe
21 the theoretical basis for it.

22 Q. Doctor, how else do you describe a model except by
23 an equation?

24 A. Well, this model --

1 Q. There is no other way, is there Dr. Wilson, to
2 describe a model other than by equations?

3 A. Yes, sir, there is.

4 MR. MUSGRAVE: Object, he won't let him answer the
5 first question, cut him off before he could answer it, I
6 request the witness be permitted to answer the first
7 question.

8 THE COURT: Overruled.

9 A. This model is described in terms of a complex
10 computer code, not a series of equations but a series of
11 steps describing how the computer will go through
12 calculations.

13 Q. And that model is not put in the paper, is it, sir?

14 A. That model is not, that's correct.

15 Q. And no one knows whether or not it's a good model
16 or poor model, do they, sir? The only way they have to judge
17 that is by the equations put in this paper, isn't that
18 correct?

19 A. No, sir, that's not correct.

20 Q. Is it anywhere in this paper, computer code, that
21 model in either of those documents?

22 A. No, sir, they can judge it by the fit of the
23 results with the actual data that are observed in the field.
24 That's the only way to judge the quality of the model, is how

1 well it fits the observed data.

2 Q. If you massage the data to fit the model then it
3 would appear your model is correct, wouldn't it, sir, if you
4 change the data in the field?

5 A. That would be correct. No, not necessarily. In
6 this case if you massage the data it would make it appear the
7 model does not fit, because if you don't massage the data as
8 we have not, the model does fit.

9 Q. Well, I think we have demonstrated and I'll
10 re-demonstrate it in a moment that you have massaged the
11 data, but nonetheless, the point that those questions pointed
12 to here today, Dr. Wilson, is that Freeman and Shroy say they
13 construct a model based upon certain equations, and they
14 reach certain conclusions based upon that model so
15 constructed. They change the model, they change the
16 equations but they don't change the conclusions, and you say
17 that is perfectly proper and appropriate?

18 A. They did not change the model, they changed the
19 description and, yes, that's perfectly proper and
20 appropriate.

21 Q. And, Doctor, as we pointed out yesterday, the new
22 model and the new equations were never given to Dr. Shroy,
23 Dr. Jury, Dr. Freeman and -- I'm sorry, Dr. Palmer and Dr.
24 Farmer and Dr. Spencer so far as you know by any document

1 submitted to them, isn't that correct, sir?

2 MR. MUSGRAVE: Object to the question, mis-states
3 the witness' testify. They did not change the model.
4 Counsel is again attempting to mislead the jury. Object to
5 the question. It's improper representation of the witness'
6 testimony.

7 THE COURT: Objection is overruled.

8 A. I don't know whether there is any correspondence or
9 not.

10 Q. You do know because you've seen all that's been
11 produced, Dr. Wilson, you've seen all that's in existence,
12 have you not, sir?

13 A. No, sir, I haven't seen all that's in existence.

14 Q. What is there that's in existence you that you
15 haven't seen?

16 A. Several boxes sitting over there in the corner of
17 material that's been produced, that I have not seen all of,
18 lots that I have not seen.

19 Q. Dealing with the correspondence you are technically
20 correct, there is a lot of material you haven't seen. My
21 question for your information was directed at correspondence
22 between Freeman, Shroy and Jury. Again, another technically
23 correct response. You are right, sir. My question again to
24 be more precise, Dr. Wilson, to meet your requirements, you

1 have seen all the written communications that have been had
2 between Jury, Freeman, and Shroy, have you not?

3 A. I don't know whether I have not or. I have only
4 seen what has been described here in the courtroom.

5 Q. And if counsel has sworn under oath that's all the
6 material that exists then you have seen it all, haven't you,
7 sir, unless they are lying?

8 A. If counsel has sworn there is no other
9 correspondence other than what has been admitted, then I have
10 seen it all, that's correct.

11 Q. Then so far as you know from the written documents
12 we have, Dr. Jury's comments about the model and with the
13 equations, and about those draft publications, remained the
14 same as he stated in September 25th, 1984, isn't that
15 correct, sir?

16 A. I have no idea what his state of mind is.

17 Q. My question so far as you know, Dr. Wilson, based
18 upon the documents that we have --

19 A. I know nothing about it, sir, I have no idea.

20 Q. My question is based upon -- you do know something,
21 you have seen the letters, you have seen the document, you do
22 know something about it, and as far as you know, he has not
23 expressed a different opinion so far as you are aware, your
24 knowledge, isn't that correct, sir?

1 MR. MUSGRAVE: Based upon the documents, Mr. Carr?

2 Q. That is exactly correct.

3 A. Based upon the documents I've seen, I know, I have
4 seen him express no other opinion based on those documents.

5 Q. Now, Doctor, referring to the data that you, that
6 Shroy says fits the model, you suggested that there might be
7 something wrong with some of those samples, when they break
8 those core down, they take out the sample that's zero to one
9 inch and put it in a separate container, box, or bag, or jar,
10 or something?

11 A. I believe that's the case.

12 Q. And they take one to two inches and put it in a
13 separate jar or bag or container?

14 A. I believe so.

15 Q. And take out the one eight to nine and put it in a
16 separate container?

17 A. Yes.

18 Q. Take out seven to eight, so there is no, after they
19 get it out of that device that they use to core the soil,
20 they separate, their own separate little compartments, don't
21 they?

22 A. Yes.

23 Q. And if they wanted to spike six to seven, for
24 instance, they would take part of that soil from six to

1 seven, put it in a different container and spike that
2 separate sample, wouldn't they, sir?

3 A. Typically they would, yes.

4 Q. Is there any other way of doing it? You wouldn't
5 spike the whole section, would you, sir, you'd take out that
6 part that you want to spike, spike it, segregate it from the
7 remaining samples, wouldn't you, sir?

8 A. It would depend on how much material were
9 available. They might spike it all.

10 Q. Well, if they do, there is not any left then of
11 seven to eight, they are going to treat all of seven to eight
12 as the spiked sample, they won't report one seven to eight
13 without spike and another seven to eight with spike, will
14 they, sir?

15 A. That would be correct, if they did spike the whole
16 sample.

17 Q. So when you put a spike in the sample of soil that
18 is taken from seven to eight inches, it's not going to get
19 into the sample taken from eight to nine inches, is it, sir?

20 A. It should not, that's correct.

21 Q. And so far as you know, you've never been informed
22 that they mixed up those samples, have you, sir?

23 A. No, sir.

24 Q. So far as you know they followed standard

1 laboratory procedure and kept the spiked samples separate
2 from the unspiked samples, did they not, sir?

3 A. As far as I know they did, yes.

4 Q. There is no way, then, for the contamination, for
5 the spiked samples to get into the unspiked sample, is there,
6 sir?

7 A. If I understand that question correctly, you are
8 asking me was there a way for two separate samples to become
9 mixed --

10 Q. No, I asked you there is no way if you spike one
11 part of the dirt from seven to eight inches, referring to
12 Exhibit 1413 and 1414, they designate, do they not, by
13 various letters which samples they have spiked and which
14 sample they haven't spiked?

15 A. They are supposed to do this, yes.

16 Q. They do do it, don't they, sir? You see that,
17 don't you?

18 A. There are cases like that, yes.

19 Q. And for instance on Exhibit 1413 sample four, three
20 to four inches, they have one sample three to four inches
21 with no letter next to it, and it's got 320 parts per trillion
22 rather of TCDD, you see that, don't you, sir?

23 A. Yes.

24 Q. And, that would be this sample right here on

1 exhibit 1416, wouldn't it, sir?

2 A. Yes.

3 Q. Now, right below that there is another sample three
4 to four inches, "L", that's got an "L", that "L" stands for
5 the spiked, doesn't it, sir?

6 A. Yes, that's what it says, that's the --

7 Q. That has a fall of 1,000, I'm sorry, 100, and --

8 A. You were right, one thousand.

9 Q. 1,170 parts per trillion of TCDD, correct?

10 A. Parts per billion in this case, yes.

11 Q. And, of course, that's not in this graph, is it,
12 sir, that's a spiked sample?

13 A. That's correct.

14 Q. And they don't, and Shroy and Freeman in their
15 papers, they don't describe those spiked samples, do they,
16 they don't treat those as actual values, do they, sir?

17 A. No, they don't, except in one case.

18 Q. Now, the sample, if you look at Plaintiff's Exhibit
19 1314, the sample eight to nine inches, if you would, sir, for
20 4N, you see that, sir?

21 A. I do.

22 Q. It has a value of 100 -- 1,200 parts per trillion of
23 TCDD, does it not, sir?

24 A. Yes, it does, that's represented on that board,

1 isn't it, sir, right here?

2 A. Yes, I believe it is.

3 Q. Now, there is no spike adjacent to that, is there,
4 sir?

5 A. Not marked as a spike, that's correct.

6 Q. And there is no spike on any sample above or below
7 it, is it, sir?

8 A. Yes, as a matter of fact, one section below that is
9 marked as a spike. I'm sorry, on your table or on this
10 table?

11 Q. On Exhibit 1413, that's zero to one inches, sir?

12 A. Looks like a duplicate, and below that is nine to
13 ten inches marked "L" for low spike and then below that there
14 are two which are not.

15 Q. Nine to ten inches, which is a low spike is only
16 820 in any event, is it not?

17 A. That's what it says, yes.

18 Q. Now, Doctor, there is no indication of any sort
19 that this eight to nine inches was mixed up or became
20 contaminated by some sample next to it, is there, sir?

21 A. No case of that, no, that's correct.

22 Q. And there is no physical way, is there, sir, to
23 confuse that?

24 A. To confuse one sample from another? Yes, it's

1 quite possible.

2 Q. And, Doctor, how could that be?

3 A. Well, this chart lists what, three, six, nine,
4 twelve, fifteen, eighteen or nineteen different samples, they
5 are all in identical bottles, or jars, or bags, or boxes,
6 whatever they are in, they all look pretty much the same --

7 Q. Excuse me, stop one moment.

8 MR. MUSGRAVE: May he finish his answer, Your
9 Honor?

10 Q. I would like to interrupt him at that point.

11 MR. MUSGRAVE: Just a second, Mr. Carr, I would
12 like to request that the witness be able to finish the
13 answer, the question that Mr. Carr has asked, there was a
14 question asked, how can that be and then the --

15 Q. He can finish his answer. I want to clarify one
16 point before he goes on.

17 THE COURT: Mr. Carr, you may so clarify.

18 Q. Thank you. At that point of putting in separate
19 bottles, they label those bottles, don't they, sir?

20 A. I believe they do, yes.

21 Q. Proceed on then.

22 A. Even though they are labeled it is entirely
23 possible with all of those sitting in front of one to make a
24 mistake, to mistakenly treat one as it should not have been

1 treated or to mix them up, and unfortunately it happens from
2 time to time.

3 Q. Doctor, you have no indication from anybody at
4 Dayton that a mix-up like that occurred, do you?

5 A. There is no evidence of that, no.

6 Q. When they take the sample eight to nine, for
7 instance, if you'll turn to Exhibit 1413 again, they have
8 sample eight to nine "L", don't they, sir, on the second page
9 of that Exhibit 4N?

10 A. Second page of 1413?

11 Q. Second page of 1413. You are not looking at the
12 second page. You've got a different -- you've got a
13 different -- What's the notebook page number? I'm sorry,
14 you've got the full document, it would be 2637039?

15 A. This one, all right. There is an eight to nine?

16 A. Low spike.

17 Q. Sample there, isn't there, sir?

18 A. That's correct, yes.

19 Q. It's got an "L" behind it, hasn't it, sir?

20 A. That's correct.

21 Q. And they in fact spiked it, did they not, sir?

22 A. That's what it says.

23 Q. How much did they put in it?

24 A. Says they put in 922 parts per trillion.

1 Q. All right. And, how much was detected in the
2 unspiked sample, sir?

3 A. Oh, on that one says it was not detected.

4 Q. Well, on the first page, the 4N sample on the first
5 page, eight to nine?

6 A. On that one it says 1.2 parts per billion, 1200
7 ppb.

8 Q. Just suppose hypothetically there was a mix-up,
9 added 992 but they detected 1200, didn't they, sir?

10 A. That's possible.

11 Q. And you indicated yesterday that one way of
12 determining what was really in the sample is by subtracting
13 the amount that was detected, didn't you, sir, subtracting
14 the amount that was added by a spike?

15 A. I said that's something that could be done in some
16 circumstances, yes.

17 Q. You justified one of those entries as the 310 entry
18 on one of those exhibits as perhaps that's the way it was
19 arrived, did you not, sir?

20 A. I did indeed.

21 Q. Now, if you subtract 992 from the 1200, you would
22 end up with 208, wouldn't you, sir?

23 A. Something like that, yes.

24 Q. And that's a value that would be reported here

1 rather than the 1200 value, in fact the spike had been given
2 to the wrong sample, correct, sir?

3 A. If --

4 Q. If you put in 922 and you get a value of 1200 or
5 value of 2440?

6 A. If you knew how much you put in.

7 Q. Well, they know how much they put in, they measure
8 how much they put in to be precise because they want to
9 measure how much they get back, don't they, sir?

10 A. In each case they do, but they do not consistently
11 add a particular amount, there are three different amounts on
12 this one page.

13 Q. Of course, but they only added one amount to sample
14 4N, eight to eight inches, didn't they?

15 A. As a matter of fact, corresponding to the records
16 doesn't say they added any to it.

17 Q. If you look at the page 2637039 it does say, we
18 just referred to --

19 A. I'm sorry --

20 Q. Says 922 ppt added?

21 A. That's to this sample analyzed here.

22 Q. Eight to nine "L"?

23 A. The one we were talking about says nothing.

24 Q. I'm suggesting that perhaps there was a mix-up as

1 you are saying there was, sir. Would you direct your
2 attention --

3 MR. MUSGRAVE: This is a hypothetical then, Mr.
4 Carr?

5 Q. Direct your attention please to that, sir.

6 MR. MUSGRAVE: We -- oh.

7 Q. If there was a mix-up, they added 992 parts to it
8 and measured it and got 1200, and you would subtract the 992
9 from the 1200, wouldn't you, sir, if there had been a mix-up?

10 A. If I'd known that's how much was added I would, but
11 suppose it was 1.2 parts per billion.

12 Q. Where does it say they added 1.2 parts per billion?

13 A. Doesn't say they added any.

14 Q. Does say added to the sample eight to nine "L" 922
15 parts per trillion, doesn't it, sir?

16 A. Says they added to this one 922, but to the one
17 referred to in this earlier analysis doesn't say they added
18 any, so there is no way to know whether they did or not.

19 Q. Please direct your attention to the thrust of my
20 question, hypothesizing that what you said was correct,
21 somehow or other they mixed up those samples, when they are
22 reading the 1200 sample, they are really not reading unspiked
23 sample but they are reading a spiked sample and the only
24 spiked sample we have of eight to nine that's listed here,

1 sir, is eight to nine "L" where they added 922 parts per
2 trillion, isn't that correct, sir?

3 A. The only one that is labeled as the spike is that
4 one, that's correct.

5 Q. If a mix-up had occurred and they in fact, they are
6 reporting on the spiked sample as you suggested might have
7 occurred, didn't you suggest that, Doctor?

8 A. No, sir, they could not have been reported.

9 Q. Didn't you suggest that, sir, they might have mixed
10 up the samples?

11 A. No, sir.

12 Q. If they didn't mix them up, then we are okay, this
13 is a 1200 sample that was unspiked at that level, correct,
14 sir?

15 A. No, sir.

16 Q. Does it read spiked, sir?

17 A. No, sir.

18 Q. All right. Then it was unspiked, isn't it?

19 A. Certainly believed to be, that's correct.

20 Q. That's what they believed and that's what they
21 reported?

22 A. That's exactly right.

23 Q. And on 1414 for the same sample on the low
24 resolution, they detected 2,440 parts per trillion, didn't

1 they, sir?

2 A. They did indeed.

3 Q. Again unspiked?

4 A. That's what they believed, yes.

5 Q. Over here on samples 5N they read 1120 and 692 on
6 unspiked samples at the depth of 20 to 21 inches, didn't
7 they?

8 A. That's correct.

9 Q. And over on sample 7N read four to ten at a level
10 of three to four inches, didn't they, sir?

11 A. I believe that's what's there, yes.

12 Q. The two above it are not detected, isn't it?

13 A. That's correct.

14 Q. They got a 430 at zero to one inch, no detected one
15 to two, two to three and, 410 three to four, isn't that
16 correct?

17 A. That's correct.

18 Q. Certainly isn't consistent, all the sudden you've
19 got nothing for two inches and then you've got 410 for an
20 inch. Now, that's really kind of odd, isn't it?

21 A. Yes, sir, that's why I believe he didn't use that
22 core at all for that reason.

23 Q. Didn't use a lot of data, did he, used the data
24 that fit his model, didn't he, sir?

1 A. No, sir.

2 Q. Didn't use?

3 A. Yes, of course he did, all fits his model.

4 Q. It all fits his model? Does the 2440 fit his
5 model?

6 A. I believe it does.

7 Q. How does it fit, his model?

8 A. That point his obviously inconsistent with the rest
9 of the data.

10 Q. Excuse me, you say, now you say you throw it out?

11 A. Of course.

12 Q. Then it doesn't fit his model if you throw it out,
13 does it?

14 A. Sir, the data --

15 Q. Doesn't fit his model if you throw it out, does it,
16 sir?

17 A. If you throw it out doesn't fit his model, I think
18 it still fits his model even with it included.

19 Q. Did he include it?

20 A. In what?

21 Q. The 2440, 1200, 1120 and 692?

22 A. I believe we established he did not.

23 Q. Then he disregarded those values, did he not?

24 A. I believe that he did.

1 Q. They did not fit his model, did they?

2 A. I think so, they do, yes.

3 Q. How do they fit his model?

4 A. Quite simple. You look at all of those data even
5 with those points, the data clearly fit the model.

6 Q. How does it fit his model? We drew a curve and we
7 have those exhibits in evidence, you saw it, there isn't a
8 mark way up at the top of the reference range, is there, sir?

9 A. Very easy how they fit the model --

10 Q. Is there a mark up at the top of the --

11 A. Please allow me to answer the question.

12 Q. No, my question, is there a mark up at the top of
13 that curve for 2440 or 1200?

14 A. In the diagram you showed, there is.

15 Q. There is?

16 A. Yes, I saw it on the diagram you showed me.

17 Q. You saw it on the diagram I showed you, not what he
18 did?

19 A. That's correct.

20 Q. I'm talking about his model, sir?

21 A. So?

22 Q. Is the 2440 the 1200, the 1120 and the 692 on the
23 curves, on the graphs that he drew and prepared and put in
24 for publication, sir?

1 A. No.

2 Q. Then he discarded those because they didn't at this
3 time and it's a curve that goes up and down like that,
4 doesn't go way back up, does it, sir?

5 A. No, it does not, that's correct.

6 Q. And so, therefore, those data do not fit his model
7 do they, sir?

8 A. No, sir, I don't agree with that, they do fit his
9 model.

10 Q. Why didn't he use them?

11 A. You'll have to ask him. I believe he didn't use
12 them because he believed them to be contaminated clearly
13 outside the range at points on each side, rejected because
14 they didn't fit the rest of the data, whether they fit the
15 model is irrelevant, they are inconsistent with the rest of
16 the --

17 Q. He drew a simulated curve, went like this, down
18 like that, over like that, isn't that what he drew?

19 A. Had computer do it, yes.

20 Q. That was what the model says should happen to TCDD
21 doesn't it, sir?

22 A. That's correct.

23 Q. Did the model go like this and up like that?

24 A. No.

1 Q. Then this data up like this doesn't fit this model
2 down here?

3 A. That one data point does not, that's correct.

4 Q. That's what I'm asking you?

5 A. You keep asking me about the data, the data are
6 what are on that entire chart, those data as the whole fit
7 the model.

8 Q. 2440 and 1200, show me on that curve where that
9 fits in?

10 A. Those two points do not, that's correct.

11 Q. Those two points are part of the data aren't they,
12 sir?

13 A. Yes, sir.

14 Q. That data doesn't fit the curve?

15 A. Those two points do not but the data fits, the data
16 as a whole fit the model.

17 Q. Is this data part of the whole, sir?

18 A. Yes.

19 Q. Can you use that data and say that it fits on this
20 curve?

21 A. If you use those data and put those two on the
22 points as well as the others, any scientist would look at
23 them and come to the same conclusion that I do, that the data
24 as the whole fit the model.

1 Q. That isn't what I asked you, I asked you whether or
2 not those data, the 2440, the 1200, the 1120 and the 692 fit
3 the model, and you suggest --

4 A. They don't fit that curve.

5 Q. You suggest they fit that curve, the curve is the
6 model?

7 A. No, sir, that curve is a representation of the
8 model, they don't fit that curve.

9 Q. If a scientist is going to ignore some plain
10 evidence, plain evidence here where there is no detected at
11 certain levels, plain evidence here no detected at certain
12 levels, no detected below and above it, and no detected from
13 seven to eight all the way down to 20 to 21 inches, the
14 scientist, if he's going to be honest with his colleagues, is
15 going to say, describe those problems, isn't he, sir, going
16 to let them know the full truth, isn't he, sir?

17 A. If asked, he'll do that, sure.

18 Q. Doctor, in point of fact, you know that the
19 measurements that they did at Dayton are very much bollixed
20 up, how is it possible, sir, that you can have TCDD going
21 through soil and for two inches that it not be there, how can
22 you have TCDD go through soil and for four inches or six
23 inches not be there, it is there, isn't it, sir?

24 A. In the soil?

1 Q. Yes.

2 A. On the site, no, I don't believe it is.

3 Q. You don't think there is TCDD in between the level
4 from zero to one inches and three to four inches?

5 A. Clearly indicated there, of course, it is.

6 Q. No, it says not detected on this little
7 resolution.

8 A. The points --

9 Q. Doesn't it, sir?

10 A. It does.

11 Q. Then it says not detected here from five to six
12 inches all the way down, except to eight to nine inches says
13 that on the low resolution?

14 A. Yes.

15 Q. And it says six to seven inches, says it's not
16 there. Well, the method failed there, but all those levels
17 says it's not there, doesn't it?

18 A. That's correct.

19 Q. Now, we know that it's there, don't we, sir?

20 A. We know it's where? No, we don't in all cases.

21 Q. You don't know that there is TCDD in this, if this
22 model has any meaning at all, sir, it means that it's going
23 up and going down at the same rate, that's exactly what Shroy
24 says, what his curve demonstrates?

1 A. That's correct.

2 Q. So that we know that there has to be higher levels
3 than 410 in between those two points, we know that, don't we,
4 sir?

5 A. No, sir, we don't know that.

6 Q. We don't know that?

7 A. No.

8 Q. Or some levels at least rather than not detected?

9 A. Perfectly good measurements in the righthand column
10 would show how much is there.

11 Q. Which he didn't use, did he?

12 A. No, sir.

13 Q. Didn't use because they didn't fit the model?

14 A. As a matter of fact, they do fit the model.

15 Q. As a matter of fact -- They fit the model when
16 you've got 92 at the surface and 28 at the other level four
17 to five inches away, that fits the model?

18 A. Generally, yes.

19 Q. Nearly four times greater?

20 A. Generally does fit it, yes.

21 Q. What happened here in point of fact isn't it a
22 fact, Dr. Wilson, that he got those figures, those
23 measurements, the low resolution measurements from Dayton and
24 he looked at his model, at that time he hadn't talked to Dr.

1 Jury, didn't know his equations were all fouled up at that
2 time, he looked at those data that he got from Dayton, he
3 said, boy, that sure doesn't fit, I've got to do something
4 about that 2440, that doesn't fit, and those items here don't
5 fit, and those don't fit. I've got nothing on this low
6 resolution that fits my model. I'm going to ask Dayton to do
7 it over again. He asks Dayton to do it over again.

8 MR. MUSGRAVE: Object to this as a speech, this is
9 not a question.

10 Q. This is a question.

11 THE COURT: Overruled. It's a question.

12 Q. And, Dayton does it over again and Dayton still
13 gives figures that are inconsistent. You cannot explain this
14 692, 20 to 21 inches away, you see if it had been
15 contaminated the first time, they studied the first time,
16 surely Shroy would have told Hileman, say, eight to nine
17 level is way off, that 2440 doesn't fit my model?

18 MR. MUSGRAVE: May this be a continuing objection?

19 THE COURT: It is noted as continuing. You may --
20 the objection is in the same question, you don't have to make
21 it as a continuing.

22 MR. MUSGRAVE: I want it to be a continuing
23 objection because he's continuing on with this speech.

24 THE COURT: It's not a speech, it's a question.

1 I've overruled it. You are in the same question, there is no
2 need for a continuing objection. You should know that. Go
3 ahead, Mr. Carr.

4 Q. (by Mr. Carr) The 1120 doesn't fit the model, must
5 be contaminated, make sure when you do them over again that
6 they are not contaminated, wouldn't he have said something
7 like that to him?

8 A. No.

9 Q. He would not?

10 A. None of that is a fact.

11 Q. If he thought that this was a false value, 2440,
12 that it was a contaminated value, surely he would have
13 mentioned that to Hileman so he could avoid the contamination
14 the next time around, surely he would have said that,
15 wouldn't he, sir?

16 A. In fact, there is evidence in here that they did
17 attempt to analyses it.

18 Q. My question is surely he would have told --, would
19 you listen to my question, surely he would have passed onto
20 Hileman his thoughts that this was a false reading, that it
21 was a contaminated reading that he's got, surely he would
22 have said that?

23 A. Not necessarily, no.

24 Q. He would let them go on and contaminate it again,

1 so what he did then, what you are suggesting he did, he took
2 those samples again, worked through the spikes again,
3 contaminated by coincidence the very same level that you had
4 the high readings on two times, is that what he did again,
5 sir?

6 A. No, sir, he did not. What he did was he took the
7 extracted material from those same analyses and went through
8 the last part of the procedure again. Any that had been
9 contaminated in the first work-up of the soil samples and
10 re-analyzed in the last sampling would still be
11 contaminated. I believe that's why he went back and tried to
12 analyze that same sample again and clearly failed because
13 with his spike at 900 and some parts per trillion was analyzed
14 at 80 parts per trillion he did not include that data because
15 obviously there was something wrong with that analysis.

16 Q. That's the point I'm asking making, there is
17 obviously something wrong with all of the analysis?

18 A. No, sir, that's not the case.

19 Q. Well, Doctor, what he did, he had a model that
20 didn't fit the equations. He had data that didn't fit the
21 model. He had data that's physically impossible to have
22 occurred in any scientific means, and all he did was throw
23 out what didn't fit his theory and use what did fit his
24 theory, isn't that correct, Dr. Wilson?

1 A. No, sir, not at all.

2 Q. Did he advise any of the scientists that are going
3 to read this article of actually what went on, did he advise,
4 did he put in this article those other values that he did not
5 use and explain why he didn't use them so that his peers
6 could look at that before it gets published to decide whether
7 or not it meets the criteria for publication? Did he tell
8 anybody that, sir?

9 A. I know that he has talked with nearly all of his
10 peers, I have no idea what he told them.

11 Q. He hasn't written it to them, you haven't seen
12 those values in writing to anybody, have you, sir?

13 A. Those values?

14 Q. Yes.

15 A. All I've seen in writing what appears in the paper.

16 Q. You haven't seen those values in writing anywhere,
17 have you, sir?

18 A. Well, I've seen them there, that's in writing, but
19 I've only seen sent out what's on the paper, just what I said
20 a minute ago.

21 Q. So far as you know what he's advised his colleagues
22 is not what appears on this paper, is it, sir?

23 A. I have no idea what he's advised his colleagues.

24 Q. You do have an idea and I simply do not want to

1 spar with you all day, you've seen what he sent out, you've
2 seen what we have seen, that's all there is according to the
3 sworn oath of your lawyers. Now, you do know, Dr. Wilson,
4 and what you do know is that what was sent out did not
5 contain those values and does not contain an explanation as
6 to why he's not using the total values in the data, isn't
7 that correct, sir?

8 A. That's quite correct, yes.

9 MR. CARR: I have no further questions, Your Honor.

10 THE COURT: Do you have any further questions, Mr.
11 Musgrave?

12 MR. MUSGRAVE: I do.

13
14 CLARIFICATION EXAMINATION

15 BY MR. JOHN R. MUSGRAVE

16 Q. Dr. Wilson, with regard to Dr. Shroy's work and Dr.
17 Hileman's analysis, do you know or were you personally
18 present, do you know if any discussions took place between
19 Dr. Shroy and Dr. Hileman and Dr. Freeman with regard to this
20 data? Let me just shorten that to Dr. Shroy and Dr. Hileman
21 who analyzed those core samples?

22 A. It's my understanding that Dr. Hileman transmitted
23 some of the results by telephone, I know of no other
24 discussions.

1 Q. And so you don't know whether there were other
2 discussions or weren't other discussions?

3 A. That's correct.

4 Q. And, of course, Dr. Shroy would know that or Dr.
5 Hileman would know that, wouldn't they?

6 A. That's correct.

7 Q. Did you know Dr. Hileman was here and testified in
8 this case?

9 A. I knew he was here, yes.

10 Q. Do you know whether Mr. Carr asked him any
11 questions about this data?

12 A. No, sir, I don't.

13 Q. Now, with regard to Dr. Shroy's other peers, you
14 indicated that you knew he had talked with other peers about
15 this data?

16 A. Yes, sir.

17 Q. And do you know, were you present when those
18 discussions took place?

19 A. No, sir.

20 Q. So you don't know what was discussed or what wasn't
21 discussed, may well have been discussed, may not have been
22 discussed?

23 A. That's correct.

24 Q. Now, with regard to this data, you used the word

1 contaminated and you used the word spiked, now, you indicated
2 that you felt that those samples that had been not used were
3 contaminated?

4 A. I believe that was Mr. Shroy's conclusion.

5 Q. In fact, he states that in Defendant's 897, doesn't
6 he, that those were contaminated?

7 A. I believe that's the case, yes.

8 Q. And does the word contamination --

9 MR. CARR: I object to that last statement and ask
10 the jury be instructed to disregard it. It's not an
11 admissible document, counsel knows it, and I've objected to
12 it once, the Court sustained the objection. It's now been
13 completely improper using the document the Court has said he
14 may not use. Ask the jury instructed to disregard it.

15 MR. MUSGRAVE: If I may respond?

16 MR. CARR: And I hope reprimand counsel.

17 MR. MUSGRAVE: I would like to respond. Mr. Carr
18 goes into detail as to whether there were any documents that
19 support any discussions that Dr. Shroy had with regard to his
20 colleagues or Dr. Hileman with regard to this data and that
21 very document is Defendant's 897, and for him to ask that
22 question and then not to permit this to be utilized,
23 misrepresenting the facts to the jury. There are such
24 documents and he went into it and opened it up.

1 MR. CARR: The Court makes the rules as to what is
2 proper evidence and what is not, a self-serving document by
3 Dr. Shroy as the Court has held is inadmissible because it is
4 self-serving, not one of those documents that is properly
5 admitted. Counsel knows that, the Court has objected to it,
6 counsel now had years of experience knew exactly what he was
7 doing when he asked that question. I did not ask a question
8 about Shroy's self-serving documents in which he was trying
9 to back up this phoney study that he put out. I didn't ask
10 those questions because I knew that and counsel is suggesting
11 that I did and I did not. Counsel had acted improper, he
12 knows he's acted improperly. I'd like to have the Court
13 instruct the jury to disregard what counsel said as being
14 improper.

15 MR. MUSGRAVE: The record --

16 THE COURT: The objection is sustained as to the
17 use of the document. I have ruled that it is not
18 admissible. It's clear in the record. You are directly
19 ordered not to refer to it in any way, shape, or form.

20 Q. Now, Dr. Wilson --

21 THE COURT: And the jury is ordered to disregard
22 the remarks.

23 Q. With regard to this work, you indicated again, I
24 believe, your belief that there was a contamination of those

1 data points that were not included, isn't that correct, I
2 believe that's a possibility, yes.

3 Q. And you also talked about spiking in conversations
4 in examination with Mr. Carr, correct?

5 A. That's correct.

6 Q. Now, and spiking being a procedure that would allow
7 you to determine an amount that would be in a particular
8 sample?

9 A. Could be under some circumstances, that's correct.

10 Q. And is that when you know how much you've spiked,
11 how much you put in?

12 A. Yes.

13 Q. Yeah. Now if a sample is contaminated is that word
14 or can that word be different from the word spiked?

15 A. They are very different.

16 Q. Would you explain how they are very different?

17 A. The whole essence of a spike is that you add a
18 known amount, know how much is put in. If it's contaminated
19 there is no way to know how much might be there or might not
20 be there.

21 Q. Spiking is an intentional procedure of a known
22 amount?

23 A. Yes.

24 Q. Contamination is what, how does something become

1 contaminated or how could something become contaminated?

2 A. There is a variety of ways. In this case it might
3 have been unintentionally or mistakenly spiked and not so
4 labeled, that would be one way there is no way to know how
5 much was added. There could be mixtures, a mode of dust
6 might have fallen off the ceiling. Many ways for
7 contamination to occur.

8 Q. How about would there be any way that that could
9 occur that the use of instruments or the use of documents
10 that hadn't been properly cleaned unknowingly or something of
11 that nature?

12 A. Both of those things occur frequently.

13 Q. And, you mentioned something in your testimony
14 about samples being re-analyzed, what did you mean by that?

15 A. The exhibit 14 --

16 Q. Well -- You just mentioned that in your testimony
17 about samples being re-analyzed in answer to a question of
18 Mr. Carr's?

19 A. Yes, there is some data that indicate they were.

20 Q. In which exhibit?

21 A. Plaintiff's 1413.

22 Q. And were those data points at those levels that you
23 believe were contaminated?

24 A. Yes, one of them.

1 Q. And, when you say the data fit, what did you mean
2 by that, sir, in the 4N, for instance?

3 A. I mean each of those data points, zero to one, one
4 to two, two to three and so on, all the way down to the
5 bottom --

6 Q. Uh-huh?

7 A. No one of those except the not detected precisely
8 agree with the curve that was drawn, but they are all cross
9 and the scientist looked at those and either visually or by
10 some statistical technique determines how close they are and
11 the closeness of all of them taken as the whole are what
12 determine what they call the goodness of fit.

13 Q. The curve that Dr. Shroy had, the computer put up
14 on the chart, let me see if I can't find that.

15 A. Dr. Freeman, actually --

16 Q. Dr. Freeman. Well, suffice it to say I can't find
17 it right now, but, in fact the points that were plotted after
18 the corrections weren't exactly on that curve, were they?

19 A. I don't think very many of them, if any, were
20 except those down in the not detected.

21 Q. Generally followed the curve, sir?

22 A. Yes.

23 Q. Would you have expected them to be exactly on the
24 curve?

1 A. No, sir.

2 Q. Why not?

3 A. Well, a couple of reasons, the main reason is that
4 there is uncertainty, there is error, there is the law of
5 averages, things do not work out exactly as they are supposed
6 to be in any situation, in any curve of this type, any
7 exercise of this type where you are looking at the agreement
8 between individual data points and some constructive curve.
9 Some will always be to one side, some will be to the other.
10 Very few of them may be right on the curve. But a scientist
11 typically seeing that all the points fall on a curve begins
12 to wander about the quality of either the data or the
13 equation that fits them.

14 Q. But getting back then to your statement that this
15 data for 4N fits the curve, but you then indicated that 2440
16 and 1200 his individual points, of course this is just the
17 same sample, isn't it, this isn't two different data points,
18 this is the same sample analyzed on two occasions low and
19 high resolution, is that right?

20 A. That's correct.

21 Q. And if it's contaminated at the low resolution, the
22 sample is re-analyzed, still contaminated?

23 A. That's my understanding, yes.

24 Q. Now, why do you say that given this eight to nine

1 level reading at 4N and the variation that it has when you
2 look at readings above and below that it fits the model?

3 A. The point doesn't fit the curve that's drawn, but
4 the data as the whole fit the model because again all of the
5 points with the exception of that one are very close to the
6 curve that was drawn on both sides of it, they are in, they
7 follow the same shape. One of them sticking out, it's a sore
8 thumb, there is something that any scientist looking at would
9 conclude something was wrong with that data point.

10 Q. Is that because none detected above and none
11 detected below?

12 A. Yes.

13 Q. And again, over at 5N, the situation where you had
14 the 20, 21 inch depth where all of the sudden after having a
15 series of none detected above it you find this high level?

16 A. That's correct.

17 Q. Does the data as the whole 5N in your opinion fit
18 the computer model?

19 A. Yes, it does.

20 Q. But this data point down here, would it be logical,
21 would there be an explanation if you were to throw out all of
22 this data and keep that data point in?

23 A. No, sir.

24 Q. Would there be any logical, physical explanation to

1 your knowledge, sir, of how you could have those none
2 detected at this level and then have a 20 or 21 all of the
3 sudden this level?

4 A. You mean in the field? No, sir.

5 Q. Yes, in the field?

6 A. No, sir.

7 Q. Of this that -- in any way being related to what
8 was in fact is buried at the four to five inch level
9 originally?

10 A. No, sir.

11 Q. Mr. Carr, of course, was referring to Plaintiff's
12 1414 and 1413 and asking you about the data that was there.
13 Now, that data that he was asking you about again was the
14 computer printouts?

15 A. Yes, they are.

16 Q. Now, when the computer reads those, does it know
17 whether or not there was a contamination or -- if it's not
18 told that?

19 A. Well, the operator identifies those which were
20 spiked.

21 Q. All right.

22 A. Intentionally, and it knows, otherwise it does not.

23 Q. It does not. And there is no code on here for
24 contamination, is there?

1 A. No.

2 Q. Wasn't intended to contaminate any, was it?

3 A. That is correct.

4 Q. Was intended to spike them, though, wasn't it?

5 A. Yes, some portion of them.

6 Q. Now, Mr. Carr I believe showed you Plaintiff's
7 1432, those were comments made with regard to the Freeman
8 comment on McConnell that he had submitted to Science
9 Magazine, is that correct?

10 A. He showed me one of them, yes.

11 Q. Do you have that there, 1432?

12 MR. CARR: No, I have it here, counsel.

13 Q. How about 1451?

14 MR. CARR: There is no 1451.

15 MR. MUSGRAVE: There is not?

16 MR. CARR: No, we are only up to 1432.

17 MR. MUSGRAVE: Maybe it's 1431, what you marked
18 yesterday then. Yes, 1431.

19 Q. (by Mr. Musgrave) Well, Plaintiff's 1432 and Mr.
20 Carr you didn't show this to me, I thought you were only
21 marking one page but you marked all of those, is that
22 correct?

23 MR. CARR: That's correct.

24 Q. Plaintiff's 1432 has more documents in it, does it

1 not, sir, than simply the first page that Mr. Carr showed
2 you?

3 MR. CARR: I showed him a page in the middle, not
4 the first page.

5 A. Has quite a number of pages, yes. That was the one
6 he showed me.

7 Q. All right, sir. Now, Plaintiff's 1431 is of course
8 the document where you and Dr. Shroy and Freeman were
9 requesting approval to publish the comments with regard to
10 the McConnell article and also included a letter dated March
11 9, where Dr. Freeman in fact sent at the outset the comments
12 to Science Magazine for publication or to be considered for
13 publication, isn't that correct?

14 A. That's correct.

15 Q. That was the 9th of March, wasn't it, sir, of 1984?

16 A. That's correct.

17 Q. Now, referring you to Plaintiff's 1432, if I can
18 find it here, the document in this package which is -- or one
19 of the other documents attached to 1432 that has the number
20 C22296 stamped at the bottom of it, is a response, is it not,
21 sir, to that March 9 letter submitted the article to Science
22 for publication?

23 A. It looks to be that, yes.

24 Q. Yes. And what is the date of that response from

1 Science Magazine?

2 A. It's dated March 23rd, 1984.

3 Q. And, it's from one Phillip H. Abelson?

4 A. Yes, that's correct.

5 Q. And what does the response say, sir, would you read
6 it?

7 A. It says, "Thank you for submitting a technical
8 comment to Science. Because we often receive many technical
9 comments on the same subject, we sometimes wait 3 months
10 after publication of the original paper and send the comments
11 then on hand out for review together. Thus, do not expect to
12 hear from us until at least four months after publication of
13 the original paper."

14 Q. Is there another letter then from Science sent
15 subsequent to this March 23 response, sir?

16 A. I don't know, I haven't looked at all that package.

17 Q. See if I can find it. Yes, the second page of this
18 exhibit that has the number C22294 at the bottom stamped on
19 it, is that another letter from Science Magazine to Dr.
20 Freeman?

21 A. Yes, it looks to be that, it has got Science at the
22 letterhead and is addressed to Dr. Freeman.

23 Q. What is the date of that letter?

24 A. March 26th, 1984.

1 Q. That's some two days after or three days after the
2 sampled date on the first letter?

3 A. Yes, it is.

4 Q. And, what does that letter from Science Magazine
5 say, first of all, who is it from?

6 A. It is from a Lois Schmitt, title, Associate Editor.

7 Q. Of Science Magazine?

8 A. I believe so, yes.

9 Q. Addressed to Dr. Freeman?

10 A. Yes.

11 Q. What does it say, sir?

12 A. Says, "Your letter addressed to Mrs. Christine
13 Gilbert commenting on the report by McConnell et. al. has
14 been referred to me for handling since we have decided to
15 treat as a technical comment. On page 2 you make reference to
16 a figure showing TCDD concentration profile at Times Beach.
17 This figure seems not to have been included with copies of
18 the manuscript. Please forward to missing figure, please
19 forward to missing figure to me, I presume they means the
20 missing figure to me at your earliest convenience so we may
21 proceed with the review process." This is March of '84?

22 A. That's correct.

23 Q. Does the Exhibit Plaintiff's 1432 include a
24 response by Dr. Freeman to that letter requesting the

1 additional figure?

2 A. Yes.

3 Q. And that is a letter dated April 2, 1984 from Dr.
4 Freeman to Lois Schmitt of Science Magazine?

5 A. That's correct.

6 Q. And does it attach the document that she requested?

7 A. Well, it says there is an attachment and there is a
8 copy of a figure that is attached. I don't know that that's
9 what was attached, I presume it might be.

10 Q. All right. But there is a response on April 2 to
11 the letter requesting additional information?

12 A. That's correct.

13 Q. Now, is there a letter dated May 23, 1984 in this
14 exhibit, sir, another letter which would be, oh, almost two
15 months later?

16 A. Yes, there is.

17 Q. From Lois Schmitt?

18 A. Yes, there is.

19 Q. And this letter again is from Lois Schmitt the
20 Associate Editor of Science Magazine addressed to Dr.
21 Freeman?

22 A. That's correct.

23 Q. And its date, sir?

24 A. May 23rd, 1984.

1 Q. What does she say in that letter now addressed to
2 Freeman after this previous correspondence?

3 A. She says, "Thank you for giving us the opportunity
4 to consider your comment on McConnell et. al. I regret to
5 say we have decided not to publish it. We receive many more
6 comments than space is available for and hence must reject
7 most of those submitted. The manuscript is enclosed.

8 Q. Then on this same letter where she says space is
9 not available, are there some notes handwritten notes?

10 A. Yes, there are.

11 Q. And can you identify the writer of those notes?

12 A. Looked like Randy Freeman's hand to me.

13 Q. Do they indicate he had conversations with Lois
14 Schmitt by the telephone?

15 A. Yes.

16 Q. On June 6th, 1984?

17 A. Well, says -- I'm not sure whether it's June 6th or
18 June 1st.

19 Q. But there is an indication that conversations took
20 place?

21 A. Yes.

22 Q. And, do you then have a letter in this packet from
23 Dr. Freeman back to Lois Schmitt after June of 1984 dated
24 September 17, 1984?

1 A. Yes, I do.

2 Q. Uh-huh. And, again, this is addressed to this same
3 lady that Dr. Freeman has been in communication with at
4 Science Magazine?

5 A. Yes.

6 Q. And what does Dr. Freeman, in fact, you signed off
7 on this document too, didn't you?

8 A. Yes, I did.

9 Q. What does Dr. Freeman and Dr. Shroy and yourself,
10 what do you say to Mrs. Schmitt, and this is September of
11 1984, correct?

12 A. Yes.

13 Q. All right, what does the letter read, sir?

14 A. "Per our conversation of June 6th, 1984 --

15 Q. Just a moment is that the same date that's in
16 handwriting of Dr. Freeman on this, on the May 23, 1984
17 letter?

18 A. Yes, it is. "The attached comment on the paper by
19 McConnell et. al. has been rewritten to focus on the
20 environmental transport of TCDD. In addition, suggestions of
21 the peer reviewers have been incorporated pointing out the
22 possible effects of other chemicals contained in the soil on
23 the results obtained by McConnell. Please consider our
24 comment or publication in Science."

1 Q. All right and the rest of it, sir?

2 A. "The following scientists are familiar with our
3 work and the situation in Missouri and are qualified to serve
4 as peer reviewers:" Then he names Dr. Alvin Young of the
5 Office of Science and Technology Policy, and Dr. Paul D.
6 DesRosier of U.S. Environmental Protection Agency.

7 Q. And attached to that September 17, 1984 letter to
8 Lois Schmitt is a --

9 A. Looks like the manuscript.

10 Q. A manuscript?

11 A. Yes.

12 Q. Involving the same topic that was originally sent
13 to Science, is that correct?

14 A. Quite modified, but same topic.

15 THE COURT: Mr. Musgrave, is this a good point for
16 a break?

17 MR. MUSGRAVE: I think it is, Your Honor.

18 THE COURT: Ladies and gentlemen, we will take a
19 recess at this time. I would remind you this will go for any
20 other break we take during the day, that you are not to
21 discuss this matter among yourselves, with anyone outside the
22 jury panel, or as of yet form any opinions or conclusions
23 about the matters on trial. Court will be in recess.

24 (Following a recess, these proceedings were had in open

1 court.)

2 MR. MUSGRAVE: Your Honor, before I proceed, I'd
3 like to straighten out an error that was made in the marking
4 of Defendant's Exhibit, if we can, and if I might, I would
5 like to have the record reflect that the document marked
6 yesterday as Defendant's Exhibit 904, that being the
7 memorandum of Dr. Wilson to S. G. Collins and L. J. O'Neill
8 dated April 1, 1982, should have been marked 905 as we had
9 previously marked a 904.

10 THE COURT: Okay. Fine.

11 MR. MUSGRAVE: Would like the record to reflect
12 that change if we could, please.

13 THE COURT: So reflected. Thank you.

14 Q. (by Mr. Musgrave) Dr. Wilson, when we broke, we
15 were talking about the letter of yourself from Dr. Freeman
16 and Dr. Shroy again to Lois Schmitt of Science Magazine dated
17 September 17, 1984 where there was a resubmission of a
18 manuscript?

19 A. Yes, sir.

20 Q. And, in that letter, I believe you indicated when
21 you read to the jury that it did state that the manuscript
22 had been rewritten to focus on the environmental transport of
23 TCDD, and then it says, "In addition, suggestions of the peer
24 reviewers have been incorporated pointing out the possible

1 effects of other chemicals contained in the soil on the
2 results obtained by McConnell." And then request that the
3 revised manuscript be considered for publication in Science
4 Magazine?

5 A. Yes, sir.

6 Q. Now, Mr. Carr showed you Plaintiff's 1432 which
7 were comments as he indicated from someone, it's
8 unidentified, is it not?

9 A. That's right.

10 Q. But comments, someone from Science Magazine on the
11 manuscript?

12 A. Yes, sir.

13 Q. And, were there not -- well, would you look in your
14 Plaintiff's 1432 and see if there is not also another comment
15 from Science Magazine?

16 A. Here is another one.

17 Q. Yes, and that is again a comment and it's indicated
18 as a comment on the McConnell et. al., and Freeman et. al. is
19 the author?

20 A. That's correct.

21 Q. Entitled also comments for transmittal to the
22 author and other comments there?

23 A. Yes, sir.

24 Q. Now, then it would appear from the exhibit

1 Plaintiff's 1432 that there were at least two individuals
2 unidentified that commented on the manuscript of Dr. Freeman
3 and yourself that had been submitted to Science for
4 publication?

5 A. That's the way it appears, yes.

6 Q. Getting back to September 17, '84 letter that we
7 have just been talking about it, it did refer to suggestions
8 of the peer reviewers have been incorporated?

9 A. Does say that, yes.

10 Q. Do you know whether or not those comments in those
11 two documents where the peer review, peer reviewers comments
12 that were incorporated in the redo of the manuscript?

13 A. Since I know of no others, I assume those were the
14 ones.

15 Q. In any event, after September 17, 1984 when the
16 review of the manuscript with the suggestion of the peer
17 reviews being incorporated was sent to Science, is there then
18 another letter back from Science to Dr. Freeman with regard
19 to this review or revised manuscript?

20 A. Yes, there is.

21 Q. That also appears in Plaintiff's Exhibit 1432, does
22 it not?

23 A. Yes, it does.

24 Q. That is a letter dated what, sir?

1 A. 24 September, 1984.

2 Q. And is it again from Lois Schmitt the same lady
3 there at Science Magazine who Dr. Freeman has been
4 corresponding with in '84 regarding this manuscript?

5 A. Yes, it is.

6 Q. And what does she say in this letter of September
7 24, 1984 to Dr. Freeman?

8 A. She writes, "Thank you for your letter of 17
9 September 1984, resubmitting your technical comment on
10 McConnell et. al. Unfortunately your comment has "grown"
11 appreciably in the revision and now greatly exceeds our
12 length limit of 500 words, including references and notes.
13 Your paper will need to be shortened by at least half before
14 we will be able to consider it. Your manuscript is
15 enclosed. Sincerely."

16 Q. That's September of 1984?

17 A. That's correct.

18 Q. And now is there in Plaintiff's Exhibit 1431 some
19 handwritten notes that bear the document number at the
20 bottom, sir, C22319?

21 A. No, sir, there is not.

22 THE COURT: This one is 906?

23 MR. MUSGRAVE: I hope so. Yes.

24 MR. CARR: This a document you didn't produce?

1 MR. MUSGRAVE: Yes, the document number is right
2 down there.

3 MR. CARR: If it's not in that group, we don't have
4 it. Because you produced it this morning, everything I got
5 the witness has, I gave the witness.

6 MR. CARR: Take it back, here it is, right on top.

7 MR. MUSGRAVE: Show that to his Honor.

8 Q. (by Mr. Musgrave) Handing you now, Dr. Wilson,
9 what's been identified as Defendant's 906, it's a handwritten
10 note, can you identify the handwriting on that?

11 A. Looks like Randy Freeman's handwriting to me.

12 Q. Did it bear a date?

13 A. It does.

14 Q. That's the same Raymond Freeman who's the doctor,
15 the author of this article with regard to the McConnell
16 paper?

17 A. Yes.

18 Q. And, does Lois Schmitt's name of Science Magazine
19 appear in those notes?

20 A. Yes.

21 Q. Her telephone number?

22 A. A telephone number.

23 Q. And what does the document read then, the rest of
24 it?

1 A. Says, "Put all details in the appendix, appendix
2 will not be published, resubmit."

3 Q. That's a note dated November 13, 1984?

4 A. Yes.

5 Q. Now, do you know, Dr. Wilson, whether the
6 manuscript has been redone to be shortened, to be
7 resubmitted?

8 A. I know it has not yet been resubmitted. Randy is
9 supposed to be shortening it. I don't know where he stands.

10 Q. That would be the current status to the best of
11 your knowledge on the comment on the McConnell work?

12 A. Correct.

13 Q. Now, Doctor, going back a moment to the letter from
14 Renate Kimbrough, Plaintiff's Exhibit 1417, to Dr. Shroy, the
15 comments that she had with regard to manuscripts that she had
16 reviewed of Dr. Shroy's, do you have 1417?

17 A. I do not, I don't believe. No, I think not.

18 Q. Let me hand that to you, Plaintiff's Exhibit 1417,
19 Renate Kimbrough's letter, that's dated June of 1984, is it
20 not?

21 A. That's correct.

22 Q. Now, would you mark this, please? Yesterday Mr.
23 Carr asked you questions with regard to the EPA and whether
24 they had agreed with or disagreed with Dr. Shroy's work on

1 volatility characteristics of 2,3,7,8-TCDD, you recall those
2 questions, sir?

3 A. I think so, yes.

4 Q. And if my notes are correct, I believe you
5 indicated, if I can find them here, that you felt the EPA
6 agreed with the theory of transportation as a result of the
7 handling of soils at plants of Monsanto?

8 A. Yes.

9 Q. Could you explain that to us, sir?

10 A. Well, there were two plants where soil became
11 contaminated, one aluminum plant near New Orleans, one the
12 Nitro plant near Charleston, West Virginia, the one, the
13 Luling was a relatively small area, we believe resulting from
14 transfer of material during unloading and loading of railroad
15 cars. At the Nitro plant there was a rather extensive area
16 that became contaminated during the course of production
17 between 1949 and '69, '70, whenever it stopped. In the last
18 two years, the EPA has visited all sites where 2,4,5-T was
19 produced and asked the manufacturers or the owners of the
20 sites to carry out analyses of the soil so that they can
21 determine if there is any environmental hazard being posed by
22 contamination of that soil. In cases where significant
23 contamination has occurred, they have asked or directed the
24 owner of the property to take some action, whatever action is

1 deemed appropriate to prevent some contamination. In the
2 case of the Nitro plant and in the case of the Luling plant,
3 Monsanto agreed to do certain things. In the Luling plant it
4 was a relatively small area and essentially the area where
5 contamination was found, if I recall correctly, was covered
6 with a piece of heavy plastic, and further covered up with
7 the local equivalent of gravel, oyster shell, to prevent any
8 movement of that soil, to prevent any exposure to people. In
9 the case of the Nitro plant where the area of contamination
10 was much more extensive, there were a number of things that
11 were agreed to. Certain areas where contamination was
12 relatively low and that they meant typically broke ten parts
13 per billion in the top several inches of soil, no action has
14 been taken. In areas where it was somewhat higher, one area
15 where there is, it's used only storage for old equipment,
16 that area in gravel or is in the process of being graveled.
17 In another area where there is also a higher degree of
18 contamination up in the hundreds of parts per billion range,
19 an area has been paved and graded so that run-off goes
20 through a sewage treatment system.

21 Q. And, how then, Doctor, in your opinion, does the
22 things that the EPA has proved for the situations at those
23 two facilities, how in your opinion does that indicate your
24 belief that the EPA agrees with this theory of

1 transportation?

2 A. In each case, the data showing contamination were
3 such that the surface layers, the top inch or top two inches
4 showed very small concentrations of TCDD in the low parts per
5 billion or parts per trillion range, and they agreed that at
6 those ranges, if it was less than a part per billion, that
7 that in and of itself constituted no significant threat to
8 the people involved and agreed that it was, that the most
9 likely explanation for that finding --

10 MR. CARR: I object to that unless the witness has
11 a document that says that.

12 THE COURT: I'm sorry, I didn't hear the last part.

13 MR. CARR: I object to his statement, ask the jury
14 be instructed to disregard it unless there is some document,
15 unless he has personal firsthand knowledge about
16 conversations with the EPA that they have said what he says
17 they said. I object to it.

18 THE COURT: Objection is sustained. Will you
19 address the objection?

20 MR. CARR: Documents are of his own knowledge.

21 MR. MUSGRAVE: Do you have personal knowledge of
22 that, Doctor?

23 A. Yes, I do. In this form, under which authority the
24 EPA, according to their documents was entering the plants,

1 authority for setting standards regarded is given to the
2 centers for disease control. They have published an article
3 and published an advisory to the EPA, what they consider to
4 be a level below which no concern is needed.

5 MR. CARR: I object, ask the jury be instructed to
6 disregard it. EPA said no such thing to Dr. Wilson. He is
7 simply interpreting past documents and past studies.

8 THE COURT: Objection is sustained. It is
9 stricken. The jury is ordered to disregard it.

10 Q. (by Mr. Musgrave) You have any other basis then,
11 Doctor, for your belief, though, with regard to the EPA's
12 acceptance of this theory of transportation?

13 A. Yes, I've been involved in at least one meeting
14 including a number of people from the EPA Science Office of
15 Research and Development at which this work was described by
16 Mr. Shroy, at which opportunity for comments were made in
17 which the people there, the scientists were who present,
18 agree that it was a plausible model.

19 Q. And handing you what's now been marked Defendant's
20 Exhibit 907, can you identify that, sir?

21 A. Yes.

22 Q. And what is that, sir?

23 A. That's a memorandum from Dr. Freeman to Mr. Shroy
24 and myself.

1 Q. And what does it reference, what's the date of it,
2 sir, first of all?

3 A. July 17, 1984.

4 Q. July of 1984?

5 A. That is correct.

6 MR. CARR: May I see it, counsel?

7 MR. MUSGRAVE: I just showed it to you, Mr. Carr,
8 before it was marked.

9 MR. CARR: That's that one, okay, go ahead, I'm
10 sorry.

11 Q. That's some month and a week or so after Dr.
12 Kimbrough's letter to Dr. Shroy, Plaintiff's Exhibit 1417, is
13 it not?

14 A. Yes.

15 Q. And, what is the subject of the memo, July of '84
16 there, sir?

17 A. Subject is given as a meeting with CDC in Atlanta.

18 Q. With CDC, does it specifically refer to a meeting
19 with Dr. Renate Kimbrough of the Center for Disease Control?

20 A. Yes.

21 Q. What date was the meeting set up for?

22 A. Meeting was set for August 23, 1984.

23 Q. In Atlanta?

24 A. In Chamblee, outside of Atlanta.

1 Q. Did you attend such a meeting?

2 A. Yes, I did.

3 Q. Who else was in attendance?

4 A. From Monsanto Mr. Shroy and Dr. Freeman. For
5 Centers for Disease Control, besides Dr. Kimbrough, I don't
6 remember their names, but there must have been 12 or 15 other
7 scientists.

8 Q. And those papers of Dr. Shroy, Dr. Freeman were
9 discussed at that meeting, their theory of transportation of
10 TCDD?

11 A. That was the purpose of the meeting.

12 Q. With Renate Kimbrough?

13 A. Yes, sir.

14 Q. And were the questions she addressed in her letter
15 of June 4, 1984, raised, sir, and discussed?

16 A. Plaintiff's Exhibit 1417?

17 A. Yes.

18 Q. And were those decisions with regard to the
19 facilities at Luling and Nitro that were made by and in
20 concert with the EPA done after those meetings?

21 A. No, sir, before.

22 Q. Before. Was there any change after those meetings
23 took place, those decisions that were made as to the handling
24 of the situations at those two facilities?

1 A. Not to my knowledge. There may have been some
2 minor change but not to my knowledge.

3 Q. Now, yesterday, Mr. Carr was talking with you about
4 the body burden of TCDD in the body that is addressed in your
5 handwritten notes, sir, you recall that?

6 A. To some degree, yes.

7 Q. And, he was asking you if there was any studies
8 specifically dealing with 2,3,7,8-TCDD as to its metabolism
9 and what have you, that supported your opinion, do you recall
10 that, sir?

11 A. Not really, no.

12 MR. CARR: No, because that's not what I asked
13 him. I asked him if there was any studies showing half-life
14 in humans being excreted as fast as it comes in.

15 Q. You recall that yes, then, sir?

16 A. Yes.

17 Q. That would be with regard to the movement in or
18 movement out of the body?

19 A. Yes.

20 Q. And he asked you specifically if there were any
21 studies specifically with regard to 2,3,7,8-TCDD?

22 A. I think so.

23 Q. And, do I recall that your answer was you know of
24 no such specific studies with 2,3,7,8-TCDD?

1 A. In humans.

2 Q. In humans?

3 A. Yes.

4 Q. Are those types studies in animals, sir?

5 A. Yes, sir.

6 Q. And, you, I thought, indicated in your testimony
7 that you believe that there were studies that supported the
8 conclusions that you had reached?

9 A. Yes.

10 Q. What are those other studies?

11 A. Well, let me see, there is a study on the
12 metabolism of 2,3,7,8-TCDD by, I think, the first author is a
13 man named McNulty but I could be wrong. Dr. Gross of the
14 University of Nebraska is one of the co-authors, they
15 described the metabolism in species of monkeys. Conclude
16 that a half-life for elimination is about a year or perhaps I
17 concluded that from there data, I can't remember that for
18 sure. There are at least two different studies on the
19 products of metabolism from rats. I think there are at least
20 three studies on the products of metabolism in laboratory
21 rats, and there is at least one on the metabolism in
22 hamsters. There may be others.

23 Q. And are there studies also on the metabolism of
24 other chemicals in animals, in humans?

1 A. Yes.

2 Q. Those play any roll in the opinions and conclusions
3 that you reached?

4 A. Yes.

5 Q. In comparing chemistry of the two chemicals?

6 A. Yes, they did a large number.

7 Q. Now, Mr. Carr also asked you about authority for
8 comments you made yesterday in connection with incineration
9 of paper?

10 A. Yes, sir.

11 Q. Creating 2,3,7,8 or dioxins in any event, you
12 recall that, sir?

13 A. Yes.

14 Q. And were you at that time able to recall any?

15 A. Not that dealt specifically with paper, no.

16 Q. Are you aware, though, of any that deal with wood
17 or were in any way related to paper products or materials
18 involved manufacture of paper?

19 A. I know that there have been some studies that
20 determine the formation of chlorodibenzo-dioxins and furans
21 from burning wood, yes.

22 Q. And how about any type of a material or product
23 related to paper?

24 A. Wood is related to paper, paper is made from wood.

1 Q. Are you aware of a work in 1981 that dealt with
2 paralysis of paper mill lickers?

3 A. No, I'm not aware of that process -- I don't recall
4 that right now, no.

5 Q. Paper that dealt with potentials for creation of
6 TCDD precursors?

7 A. From paper mill waste --

8 Q. Yeah?

9 A. I don't recall seeing that recently, no.

10 Q. You are aware of studies dealing with wood and
11 burning of wood?

12 A. Yes.

13 Q. Paper is made from wood, sir?

14 A. That's correct.

15 Q. Yesterday Mr. Carr asked you several questions
16 dealing with Lysol and 2,4-D, the herbicide, you recall
17 those, sir, and about assuming that there was dioxin content
18 in those and exposure and what have you?

19 A. Some of those questions, yes.

20 Q. Now, sir, has Mr. Carr shown you any document in
21 this case from any source indicating that 2,3,7,8-TCDD was
22 ever found in 2,4-D, the phenoxic acid herbicide?

23 A. I've seen no such document.

24 Q. And has he shown you any document, sir, in any way

1 indicating that 2,3,7,8-TCDD was ever found in any Lysol
2 product?

3 A. Not that I've seen, no.

4 Q. And, would it be a simple matter to analyze those
5 products if 2,4-D is still being sold?

6 A. Yes, that's quite -- well, relatively simple, yes.
7 I know it can be done.

8 Q. And, I believe there is a bottle of Lysol as Mr.
9 Carr showed you at least has the substance that has the
10 chemical name of what is Santophen-1 in it?

11 A. That's correct.

12 Q. He has suggested to you that is Santophen from
13 Monsanto, has he not?

14 A. Yes, I believe he has.

15 Q. Yesterday when Mr. Carr was asking you about
16 various authorities or materials in connection with some of
17 your opinions, there was a mention by you of a poster board
18 that he guffawed at as I recall, do you recall that, sir?

19 MR. CARR: I didn't guffaw at it.

20 MR. MUSGRAVE: Maybe it was just a slight laugh.

21 MR. CARR: I sneered at it. I object to exactly
22 what I did, all things considered.

23 MR. MUSGRAVE: I think sneered is probably an
24 appropriate comment. Do you recall that, sir?

1 A. Yes.

2 Q. What was that in connection with?

3 A. There was a simposium held on the way Canada, I
4 believe, it was middle of October of 1984, at which quite a
5 number of technical publications were displayed in this form
6 of poster board, and I was referring to one of them. Those
7 publications, those posters are slated for publication in a
8 journal some time this year, although they haven't yet
9 appeared, as far as I know.

10 Q. They deal with what?

11 A. One aspect or another of the suspect of
12 chlorodibenzo-dioxins in the environment.

13 Q. Did any of those deal with chlorodibenzo-dioxins in
14 the environment of, from a source of incineration?

15 A. Several of them did, yes.

16 Q. And did any of them deal with that source in the
17 incineration process being paper or wood products?

18 A. I don't remember that specifically, generally they
19 were talking about incineration of mixed municipal trash,
20 which of course includes paper and plastic and a wide variety
21 of other products and materials.

22 Q. Now, while we are talking about incineration of
23 trash, Mr. Carr asked you yesterday, you may recall,
24 questions about or questions related to hypothetically the

1 residents of Sturgeon and whether there were any incinerators
2 nearby?

3 A. I believe that was the case.

4 Q. Asked you whether or not you knew whether there
5 were any incinerators nearby, you recall that?

6 A. I think so, yes.

7 Q. Implying there weren't incinerators nearby that
8 could create dioxins if they did to possibly come into
9 contact with residents of Sturgeon, did you understand that
10 to be the import of his question?

11 A. I believe so, yes.

12 Q. And yet a couple of days ago, you recall him asking
13 you about whether or not dioxin was found naturally in the
14 environment?

15 A. I think so, yes.

16 Q. You suggested to him, if I recall correctly, that
17 there had been a lake in the middle of an island in Lake
18 Superior?

19 A. Yes, sir.

20 Q. Very isolate?

21 A. Yes, sir.

22 Q. Where fish had been taken from and had found to
23 have dioxin in them?

24 A. Yes, sir.

1 Q. And at that time he then, did he not, said well
2 that could have been from the municipal incinerators that
3 carry this stuff from the area, didn't he?

4 A. I believe so.

5 Q. Didn't mention that to you when he talked about
6 the, there not being incinerators near the people in
7 Sturgeon, did he, sir?

8 A. No, sir, he didn't.

9 Q. Now, Mr. Carr also, sir, asked you a lot of
10 questions, as you may well recall with an assumption that a
11 person is exposed to, and has a dose every day of I believe
12 he said five parts per trillion of TCDD and the body burden
13 that builds up, then the half-life, and after how many years
14 how much you have in your body, what have you, you recall
15 those questions?

16 A. Yes.

17 Q. He related that to the people at Sturgeon, you
18 recall that being part of the question?

19 A. I think so, yes.

20 Q. If there was in fact a build-up like that, sir, for
21 a period of five years, and the amounts and levels that Mr.
22 Carr was suggesting by those questions were in fact there,
23 they had been pretty high, wouldn't they?

24 A. Well --

1 Q. If in fact what he was suggesting was true?

2 A. If the assumptions that I believe he was using, I
3 suppose they would be.

4 Q. The assumptions that he asked you to make I don't
5 suggest you agree with them, but the ones he was asking you
6 to make?

7 A. I think so, yes.

8 Q. And if in fact those were true, sir, and you had
9 such high levels in the fat tissue, you could pretty easily
10 take a fat sample and find that, could you not, sir, with the
11 analytical methods that are available and have been since
12 what those papers have demonstrated in 1983?

13 A.. I think so, yes.

14 Q. I think you told us, did you not, sir, that the
15 level, that the amount of fat that you take as the sample,
16 the more you have, the lower the detection level?

17 A. For a given piece of equipment, yes.

18 Q. But if you have a high concentration then it would
19 require even a less amount?

20 A. That would be correct, yes.

21 Q. And, at those concentrations that he was suggesting
22 would be in existence, based upon the information that you
23 read in connection with those other studies where they have
24 taken fat samples, would it take much more than a gram if

1 they were levels at the levels he suggests, to determine if
2 in fact there was TCDD in the fat?

3 A. I don't think so, no.

4 Q. And rather than speculating about all of this, and
5 talking about what might be and what could be and how much is
6 there and how much people get on them, couldn't you just test
7 that fat and find out if it is there or not there?

8 A. That's what I would prefer to do.

9 Q. And if you could spend \$7,500 on medical exams,
10 couldn't you think that you could spend \$400 to have fat
11 samples analyzed?

12 A. If that's all it would cost, yes.

13 MR. MUSGRAVE: That's all I have, Your Honor.

14 THE COURT: Mr. Carr?

15 MR. CARR: It's noon, Your Honor. I could
16 proceed?

17 THE COURT: Oh, it is. Okay. Ladies and
18 gentlemen, we will break for lunch at this time. We will
19 start again at 1:30. And, the admonishments that I've given
20 you earlier will apply during this lunch break also. Court
21 is in recess.

22 (Following a recess, these proceedings were had in open
23 court.)

24 MR. CARR: I think he was finished and I was to

1 start.

2 THE COURT: Yes.

3

4

RE CROSS EXAMINATION

5

BY MR. REX CARR

6 Q. Dr. Wilson, you mentioned to Mr. Musgrave that a
7 study by McNulty, Rose, and others dealing with the rhesus
8 monkey was a study that you said supported your theory that a
9 state of equilibrium would be reached with the intake of TCDD
10 over a period of time, did you not, sir?

11 A. No, I don't think that's what I said.

12 Q. I thought you cited that as a study that supported
13 that view?

14 A. I believe I cited that as the study which dealt
15 with the metabolism with 2,3,7,8-TCDD in test animals.

16 Q. But it had nothing to do with your thesis that the
17 body will, at some point in time the body will excrete TCDD
18 as fast as it's taking it in, so there had been no additional
19 TCDD accumulated, isn't that correct?

20 A. That's not exactly correct.

21 Q. Doctor, I read the study during the lunch hour, all
22 it deals with is the fact that they gave one dose to one
23 monkey one time and checked him a year later and at other
24 times in the interval, isn't that correct, sir?

1 A. You have the advantage of me, sir, I haven't had
2 the opportunity to look at it, that may be what it says.

3 Q. Do you recollect it was anything other than finding
4 out how much was left at the end of one year of one dose to
5 one monkey?

6 A. I don't remember a number of monkeys involved, I
7 remember I think it probably was a single dose experiment and
8 they did follow it over a period of a year or something like
9 that, that's what I recall.

10 Q. Had nothing to do with how the body accumulates or
11 whether or not it reaches a steady state, does it, sir,
12 nothing more than a single dose they went in and measured how
13 much was left at the end of one year and at other times
14 during that interval, isn't that correct?

15 A. No, it's not correct, it does have something to do
16 with that.

17 Q. Dr. Wilson, you hypothesized your theory here, you
18 said that when you reach a state where you take in the TCDD
19 it will be excreted at that same rate. Now, the study that
20 you mentioned in support of that, when Mr. Musgrave asked you
21 the question about this study, you said that that supports
22 your thesis that that occurs, and all it does in fact
23 support, sir, is the fact that there is a half-life in a
24 primate of approximately a year, isn't that correct, sir?

1 A. That's exactly correct.

2 Q. And that's all it says?

3 A. That's exactly correct.

4 Q. Doctor, the other studies, the rat studies that you
5 mentioned all deals with metabolism that is half-life in rats
6 of TCDD as well, do they not, sir?

7 A. Rats and mice and hamsters and dogs or whatever the
8 animals were.

9 Q. And again it was single doses in those animals to
10 determine how much was left, how the body metabolizes that
11 single dose, how much is left after a period of time, isn't
12 that correct, sir?

13 A. That's a description of metabolism study, yes, sir.

14 Q. Again, it has nothing to do with multiple doses of
15 dioxin over a period of time to determine how much is left
16 after a period of time to determine whether or not a steady
17 state is reached, isn't that correct, sir?

18 A. No, sir.

19 Q. It has to do -- did they give more than one dose to
20 those rats and those mice?

21 A. It has to do --

22 Q. Did they give more than one dose to those rats and
23 those mice?

24 A. I don't know whether they did or not, I know in

1 some cases they did not.

2 Q. Do you know of any cases where they did?

3 A. I don't remember the studies in detail, no.

4 Q. Doctor, the only way your thesis can be proved is
5 to conduct a study in which you give the same amount of
6 dioxin to an animal or a human being over a period of -- long
7 enough period of time to reach what you might call a steady
8 state. Now, you've suggested that you can calculate that and
9 given the amount of the dose it might be as much as forty
10 years, as a matter of fact it could be as much as a hundred
11 years.

12 MR. MUSGRAVE: I object to the question because he
13 starts out by stating what appears to be a question and then
14 goes on to another question without permitting the witness to
15 answer the first question, so it becomes testimony of counsel
16 and I object to it.

17 THE COURT: Overruled.

18 Q. The answer is that's not the only way the
19 hypothesis can be tested. It can be tested in other ways.
20 The way to approach the equilibrium is dependent on the
21 half-life. If the half-life for excretion was 50 years or
22 so, yes, you would not reach equilibrium for more than a
23 hundred.

24 Q. You don't know what the half-life for excretion is,

1 sir?

2 A. I believe I do.

3 Q. Oh, how did you learn that, Doctor?

4 A. I believe I learned it by inferring from the same
5 metabolizing experiment that we have been describing and the
6 other experience with other similar chemicals on humans, I
7 believe it's about two years.

8 Q. Well, now, Doctor, I thought you told us yesterday
9 that it could be as much as forty years?

10 A. No, sir, I did not.

11 Q. You did not say that, sir?

12 A. No, sir.

13 Q. Did you -- do you remember using the term forty
14 years, Doctor?

15 A. I do.

16 Q. And do you remember the context that you used it
17 in?

18 A. Yes, sir, it was the context when you asked me to
19 assume that the half-life might be five years and you asked
20 me to guess how long it might take to reach equilibrium.

21 Q. And the half-life you stated in your papers in your
22 handwriting it was three to five years?

23 A. I stated that at one time, I believe that estimate
24 was high now.

1 Q. Well, based upon your then estimate in 1984 that it
2 was five years, could be as much as five years, didn't you
3 say that it could take forty years for that steady state to
4 be reached?

5 A. Yes, sir, I did.

6 Q. Yes. And, it could be a hundred years for that
7 steady state to be reached, couldn't it, sir?

8 A. If the half-life were long enough it could be.

9 Q. If it's a half-life of five years?

10 A. No, sir.

11 Q. Oh, no? It could be forty but not a hundred?

12 A. That's correct.

13 Q. How much could it be? How much closer to a hundred
14 could it get, fifty?

15 A. No, sir, it actually -- it would depend in part on
16 how close to equilibrium you wanted to obtain, and
17 mathematically is one of those described as infinite series
18 one-half plus one-half and one-quarter, one-quarter plus
19 one-eighth, and so on and, so on, in about five periods you
20 reach 95 percent of the way to equilibrium.

21 Q. Half-life for five years, you would say I would
22 reach essentially the equilibrium in 25 to 30 years? 25 to
23 30 years. So to prove your theory what you would have to do,
24 subject an animal, of course, they don't live this long

1 unless they are elephants and tortoises, you'd have to
2 subject a human being to this dioxin for whatever measured
3 amount you want to give for a period of 25 to 30 years?

4 A. No, sir.

5 Q. No? You could prove it some other way other than
6 that, sir?

7 A. Yes.

8 Q. And that would be what, sir?

9 A. If there existed a subject who would be willing to
10 undergo the biopsy serially over a period of two to four
11 years, you could test that quite directly by that method. If
12 there were any change or significant change, that would
13 enable you to show approximately what the half-life might be.

14 Q. So somebody would have to agree to take biopsies
15 serially over a period of four years to test your hypothesis,
16 to prove your hypothesis?

17 A. Or some period of time consistent with the
18 half-life.

19 Q. Doctor, have there been any studies of which you
20 are aware that even remotely suggests that biopsies have been
21 taken from humans or animals over a period of time that could
22 even come close to proving your theory?

23 A. I believe the McNulty study analyzed --

24 Q. We got through the McNulty study, that was one dose

1 in one animal for one year?

2 A. I believe you told me that he sampled the animal
3 over the period of the year, did he not?

4 Q. He did, he took more than one test in the period of
5 a year.

6 A. If the half-life in the monkey is about a year, a
7 year would suffice to show if that's approximately the
8 half-life.

9 Q. Yes, but that doesn't show anything about the state
10 of equilibrium that the excretion equals, the amount of the
11 intake, sir?

12 A. Yes, it does.

13 Q. Oh, Dr. Wilson -- you have no judgment at this
14 point in time how additional dioxin in a body is going to
15 effect, and you are not using any health effects of this
16 dioxin in the body, as you take in more dioxin there are
17 going to be more health effects, are there not?

18 A. Not necessarily, no.

19 Q. Oh, not necessarily? Sir, isn't dose and health
20 effects, isn't there a relation in many instances, sir?

21 A. I believe it's generally accepted to be the case,
22 yes.

23 Q. And the more your body accumulates, the more
24 dilatorious health effects there will be from that dioxin or

1 any other poison for that matter that's accumulated in the
2 body, isn't that correct, sir?

3 A. I don't know that to be a fact, no.

4 Q. You don't know that to be a fact, sir? Didn't we
5 go through with you on the arsenic accumulation? Didn't we
6 ask you about that, how you can kill somebody with little
7 bitty doses of arsenic that accumulate over a period of time?

8 A. I don't think so.

9 Q. You do know that to be a fact?

10 A. What I know to be a fact, there are doses of
11 arsenic that you can give for that that will cause no ill
12 effects.

13 Q. Small enough doses?

14 A. Yes, sir.

15 Q. But you also know, Doctor, that if you give doses,
16 small doses, not enough to kill you, but over a period of
17 time it will gradually make you sicker and sicker because it
18 accumulates in the body and will gradually kill you, you know
19 that, don't you, sir?

20 A. I'm not sure.

21 Q. You don't know that either?

22 A. I don't know whether that's true or not, it might
23 be.

24 Q. You don't know that people have been convicted of

1 murder for doing just that very thing?

2 A. No, sir, I don't.

3 Q. You haven't heard of any disgruntled wives that got
4 rid of their husbands, and again visa versa, where they fed,
5 where the wife put a little bit of arsenic in the food every
6 day and they got sicker and sicker over a period of time.

7 MR. MUSGRAVE: Object to counsel's questioning
8 along this line unless he intends to bring in evidence as to
9 the amounts involved here so there is some relevancy and
10 materiality to the issue here in this lawsuit, Your Honor.
11 Speculation and conjecture on Mr. Carr's part.

12 MR. CARR: The only point I wish to establish by
13 this line of questioning by this witness is that toxic
14 substances that accumulate in the body can have additional
15 harmful effects because of the additional accumulation of
16 toxic substances. The witness apparently doesn't want to /
17 agree with that.

18 THE COURT: Objection is overruled.

19 Q. (by Mr. Carr) Doctor, I take it then your feeling
20 is that no matter how much TCDD is accumulated in the body,
21 that that additional TCDD is not going to have a harmful
22 effect on that person or that animal that has the additional
23 TCDD given to it or him or her?

24 A. You asked me no matter how much? No, sir, I don't

1 agree with that.

2 Q. Then do you agree that you can accumulate doses of
3 dioxin in the body, sir?

4 A. You can to a point, yes.

5 Q. And, during that time that you are accumulating
6 that dose will not the greater amount have more harmful
7 effects than the lesser amount, sir?

8 A. Not necessarily.

9 Q. Well, not necessarily, I guess that's another
10 technical answer. Can it be ordinarily, sir?

11 A. It depends entirely on how much that larger amount
12 is. If the larger amount enough is to cause effects, then it
13 will cause effects. If it's not, it won't, depends entirely
14 on the size.

15 Q. The amount added to the smaller amount, gets
16 larger, doesn't it, sir?

17 A. Depends entirely on the circumstances and entirely
18 on the amounts involved.

19 Q. Doctor, the answer to my question can be yes or no,
20 that the amount -- you do accumulate amounts, that you add,
21 when you add one amount to another you have a greater amount,
22 don't you, sir?

23 A. That statement is correct.

24 Q. Yes, when you add something to that you have an

1 even greater amount, don't you, sir?

2 A. Depends on how long has occurred between the first
3 addition and the second addition. If a long time has
4 occurred, you may have less than you had before.

5 Q. The next day we were talking about bio-accumulation
6 of TCDD in tissue, we weren't talking about a dose a year, we
7 were talking about every day of your life exposure to TCDD,
8 every day of your life in the case of experimental monkey,
9 you are putting TCDD in there, that's what we are talking
10 about, Doctor. Did you not understand that's what my
11 questions were directed to?

12 A. That's correct, I did not understand that.

13 Q. You did not understand that?

14 A. I did not understand.

15 Q. You did not understand that?

16 A. That's correct.

17 Q. Dr. Wilson, we are talking about testing your
18 thesis in which you said accumulation of dioxin through food
19 in human beings, because you know they eat food every day,
20 you had to be talking about ingestion or accumulation of
21 dioxin on a daily basis, did you not, sir?

22 A. I was in that instance, yes.

23 Q. You recall that's what we are talking about, that's
24 what this cross examination this afternoon thus far has been

1 about, are you aware of that now, sir?

2 A. I understand that.

3 Q. Do I have to re-define that every time I ask you a
4 question about it, sir?

5 A. It may be.

6 MR. MUSGRAVE: Are you suggesting, counsel, that
7 every time you ask a question now he's to suppose that you
8 are talking about a daily intake?

9 Q. Dr. Wilson, you do understand we are talking about
10 your theory, right?

11 A. I understand that now, yes.

12 Q. Your theory was based upon daily intake, right?

13 A. Yes, it was.

14 Q. You didn't understand that before, is that correct,
15 sir?

16 A. You were talking about arsenic, no, sir, I didn't
17 understand that.

18 Q. You were talking about accumulation of toxic
19 substances in your body that it will have a dilatorious
20 effects, the more you add the more likely it is to have a
21 harmful effect, isn't that correct, sir, isn't that what we
22 were talking about? You wouldn't agree with that? You
23 recall that, sir?

24 A. No, sir, I don't recall that.

1 Q. All right.

2 A. I don't think that's what you asked.

3 Q. Well, let me remind you, we were talking about
4 that, sir, whether or not adding additional amounts of toxic
5 substances on a daily basis to a person would add to the
6 harmful effects of that toxic substance to that person, are
7 you with me now, Dr. Wilson?

8 A. Are you asking me --

9 Q. I just want to know if you understand what I'm
10 asking you about, Dr. Wilson? =

11 A. I think I do, but I'm not sure.

12 Q. Dr. Wilson, then do you -- do you not agree that
13 adding amounts of any poison and especially the most toxic
14 synthetic substance known to man, TCDD, added to that person
15 or an animals diet on a daily basis, whether it's on a diet
16 are take it in, be more likely to cause harmful effects to
17 that person than if the additional amounts were not added?

18 A. That's true, that's correct, yes.

19 Q. And, Doctor, do you not agree then that the
20 additional effect of dioxin could effect the rate of
21 metabolism, could effect your enzymes, could effect your
22 immune system, could effect all kinds of things, couldn't it,
23 sir?

24 A. It is possible that all those things can happen,

1 yes.

2 Q. As a matter of fact, you know that the monkey, just
3 that one dose, lost forty percent of its weight in the first
4 three months? You know that, too, don't you, sir?

5 A. I don't remember for sure if that was the paper
6 where that was discussed, but I remember reading a paper
7 where that effect was described, yes.

8 Q. Doctor, you know then that the rate of metabolism
9 of TCDD in your body simply won't work on a mathematical
10 formulation that the metabolism of the TCDD in the body is
11 going to be affected by what that TCDD has done to that body,
12 isn't that correct, sir?

13 A. I'm not sure that that is correct, no.

14 Q. Well, you do know the studies have been done on
15 immune and cancer and weight loss, and neuro, neuropathy,
16 these and all those things in the animals had bad effects,
17 you do know those things, don't you, sir?

18 A. I've read some of those, yes.

19 Q. You believe those bad things happening to those
20 animals, making them sick might effect the way their body
21 reacts to poisons and the way their body will metabolize
22 poisons?

23 A. It might do that, yes.

24 Q. Might have an effect on their liver, which is the

1 detoxifying organ, might it not, Doctor?

2 A. Well, it might have an effect on the liver, but the
3 liver is not the only detoxifying organ.

4 Q. Did I say it was the only detoxifying organ? It is
5 the major organ, is it not, sir?

6 A. I don't know that that's necessarily the case.

7 Q. You don't know that. All right. Doctor, you do
8 know dioxin will have an effect and it will effect thereby,
9 if it makes the animal or the human sick, that will effect
10 the ability of that body to metabolize, excrete, detoxify,
11 get rid of that poison, won't it, sir? Or do you know that?

12 A. I'm not sure that it will. I don't know.

13 Q. You don't know. You simply don't have an opinion
14 one way or the other?

15 A. My opinion is that eventually, if a person or
16 animal were near death, it might effect the rate, but that
17 lower dose is that it probably would have little effect, in
18 fact, what I've read suggests that because of the stimulation
19 of the same detoxifying enzymes, that it might rid itself of
20 larger amounts faster than it would rid itself of smaller
21 amounts.

22 Q. On a daily dose basis, Doctor?

23 A. Yes, sir.

24 Q. Doctor, are you suggesting that your theory now is

1 taken into account all the ramifications from a metabolic
2 involvement, liver, kidney, and all that viewpoint when you
3 talk about your steady state --

4 A. All those ramifications.

5 Q. Yes?

6 A. I don't know that it has, no.

7 Q. Now, Doctor, Mr. Musgrave asked you about the
8 incineration at Sturgeon. If I meant to suggest to you that
9 the people of Sturgeon are not subject in some way or another
10 from the incineration of chlorinated phenols from St. Louis
11 or Kansas City or some other large city that incinerates its
12 phenols, please rest assured that I made no such thesis. As
13 a matter of fact, I believe and it is my thesis here that the
14 incineration of the chlorinated phenols that Monsanto and
15 other chemical companies have manufactured for a long period
16 of time is causing TCDD to be spread in one way all over the
17 country, including Sturgeon, so if Mr. Musgrave suggested to
18 you that I didn't include Sturgeon in that contamination of
19 their area, please believe me, I do. And, the TCDD that's in
20 the body tissue, Dr. Wilson, you know it's in the body
21 tissue, at least you know based upon the studies that you
22 made, but you know it's in the body tissue of the people at
23 Sturgeon? You know that, don't you, sir?

24 A. I don't know that it is, I believe that it probably

1 is.

2 Q. Well, I used too strong a word when I said no,
3 because you don't know, but you assume from the evidence you
4 have as to what has happened to the human population, at
5 least the American population and the Canadian population to
6 being exposed to TCDD, you know that it's very likely that it
7 would be in their body whether that tank car spilled or not,
8 don't you, sir?

9 A. Yes, sir, that's correct.

10 Q. And the spilling of the tank car adds to that body
11 burden, if there was TCDD in that tank car to which they were
12 exposed, doesn't it, sir?

13 A. You are asking me to assume. If you assume those
14 things, yes, it would.

15 Q. Doctor, as a matter of fact, you hypothesized once
16 upon a time that the farmer burning, having a burning barrel
17 on his farm, would be a source of his own contamination,
18 didn't you?

19 A. Something to that effect, yes.

20 Q. And, you dropped that, Doctor. I didn't see that
21 in any more papers after the one. Are you suggesting now
22 that the farmers of Sturgeon who might burn wood on their
23 farms are not contaminating themselves now with TCDD?

24 A. First of all, I don't understand which one you are

1 referring to. But -- and I believe that people who are
2 burning trash contaminated themselves, I don't know, but they
3 are producing dioxins, and they could be exposing themselves,
4 yes.

5 Q. Doctor, the trash, and you suggested that a poster
6 supported your theory, Mr. Musgrave talked to you about that,
7 the point of fact the poster that you talked about this
8 morning was one that was asking municipal incineration, was
9 it not, sir?

10 A. No, sir.

11 Q. All kinds of wastes?

12 A. No. There were several that we were talking about
13 this morning, I think.

14 Q. He asked you in talking about the poster that he
15 said I guffawed at, and as a matter of fact I objected to the
16 reference to it, you said it was a writing, I suggested that
17 wasn't the kind of writing I was talking about. In any
18 event, he brought it out, that poster that you were talking
19 about then. You got it in context now what I was talking
20 about, that context that you described this morning was one
21 that was dealing with municipal incineration of waste, was it
22 not, sir, trash?

23 A. I don't think it was.

24 Q. Doctor, isn't that what you just testified to this

1 morning with that poster?

2 A. I believe what I testified to this morning is that
3 there were other posters given at that same session which
4 discussed municipal incineration and an output of
5 chlorodibenzo-dioxins and dibenzo-furans, the one I was
6 referring to that talked about accumulation in the human body
7 was one, if I recall correctly, talking about environmental
8 fate of chlorodibenzo-dioxins and fusans released to the
9 environment.

10 Q. And the question that Musgrave asked you was
11 whether or not you had any evidence that burning anything
12 other than chlorinated phenols would cause TCDD's to be
13 formed in the municipal incineration. And you suggested to
14 him that you saw a poster.

15 A. I don't think that's correct.

16 Q. Well, if that's not correct, we won't spend any
17 more time on that. But you do know in every case where they
18 have found TCDD in the ash and in the fumes, the result of
19 the municipal incinerations, they have been incinerating
20 among other things products that have contained chlorinated
21 phenols, haven't they, sir?

22 A. I really don't know, possibly.

23 Q. Doctor, insofar as you mentioned that burning wood
24 was somewhat similar to burning paper, wood burning that you

1 were discussing, they have burned the wood from forests that
2 have been treated with various chlorinated phenols at one
3 time or another, have they not, sir?

4 A. I don't think that's the case, no.

5 Q. You don't think that's the case. Don't you know
6 that's exactly what Dow, the Dow study you are talking about,
7 isn't it, sir?

8 A. No, sir.

9 Q. Whose study is it?

10 A. Some work that was reported by Dr. Tiernan, as I
11 understand he scraped the soot from his fireplace and
12 measured chlorodibenzo-dioxins of some kind in them. He
13 lives in Southern Ohio, I assume --

14 Q. He found 2,3,7,8-TCDD in his fireplace?

15 A. All I know is that he was reported in another
16 document to have his results were quoted as finding
17 chlorodibenzo-dioxins in the soot in his fireplace, not in
18 the ash, and not --

19 Q. Doctor, what you are talking about you saw a
20 second-hand report of Dr. Tiernan's, you didn't even see Dr.
21 Tiernan's report, you are quoting here as evidence in this
22 court when Mr. Musgrave asked you the question, you are
23 quoting a third-hand report of Dr. Tiernan's. You've never
24 seen it published by Dr. Tiernan -- seen somebody that gave

1 you a document that you said quoted Dr. Tiernan's to have
2 found dioxins in his fireplace soot, is that what you are
3 saying, sir?

4 A. I didn't follow all that, but I think that's what
5 I'm saying.

6 Q. And you are not even -- didn't even describe it as
7 being 2,3,7,8-TCDD, did it, sir?

8 A. I don't know what it describes it as,
9 chlorodibenzo-dioxins.

10 Q. Do you have any other -- you can't cite me to an
11 article that says that, can you, sir?

12 A. I can't right offhand, no.

13 Q. You can't cite me to an article that Dr. Tiernan
14 wrote that says that, can you, sir?

15 A. I cannot, not right now. I would have to find it.

16 Q. Doctor, you do know that the, the studies that have
17 been published dealing with dioxins found as a result of
18 burning wood was where the wood had been treated with
19 pentachlorophenol or the forest had been treated with silvex
20 or some other chlorinated phenol based herbicide, you do know
21 that, don't you, sir?

22 A. No, sir.

23 Q. You don't know that?

24 A. I don't know that.

1 Q. Isn't that what do you did, sir?

2 A. I don't believe.

3 Q. Well, if you don't, do you have any document, do
4 you have any knowledge of any studies where they found it in
5 wood that had not been treated with some form of chlorinated
6 phenol?

7 A. I recall something in one of the Dow articles where
8 again they did what Dr. Tiernan has reported third-hand to
9 have done, scraped soot from somebody's fire place, what is
10 ordinarily burned in fireplace wood is oak, elm, hard woods,
11 those are not typically forest that silvex is used to treat
12 because the silvex kills the oak and elm and so on.

13 Q. Now, you are talking about somebody scraped soot
14 from somebody elses fireplace?

15 A. I believe that's the case.

16 Q. That's a study also that Dow put out?

17 A. I believe that's quoted in one of the Dow studies
18 as well.

19 Q. Well, Doctor, you can't direct us to it at this
20 point, is that right?

21 A. Not right offhand, no.

22 Q. Now, Doctor, Mr. Musgrave also talked to you about
23 2,4-D. No document ever -- nobody ever found dioxin,
24 2,3,7,8-TCDD in 2,4-D, do you recall that, sir?

1 A. I believe so, yes.

2 Q. Do you know whether or not anyone has ever tested
3 2,4-D that has been made with Monsanto 2,4-dichlorophenol?

4 A. Yes, I believe so.

5 Q. And who is that?

6 A. The Canadian government.

7 Q. Canadian government tested 2,4-D made by Monsanto's
8 2,4-dichlorophenol? Do you have a document that supports
9 that, sir?

10 A. There was a paper published by Dr. Cochran and two
11 of his associates, I can't remember the journal right
12 offhand, which described testing of all of the different
13 2,4-D herbicides which were imported into Canada, I believe
14 in 1981, reported finding no 2,3,7,8-TCDD. I know that
15 Fallek-Lancro or Diamond-Shamrock 2,4-D was imported into
16 Canada at that time. Therefore, conclude that there was
17 Monsanto 2,4-DCP that was tested by the government of Canada
18 in that herbicide.

19 Q. Well, if that's so, you don't know whether it was a
20 batch of 2,4-D that was made from Monsanto 2,4-dichlorophenol
21 that had TCDD in it, do you, sir?

22 A. No, I don't.

23 Q. Because you do know that most of the batches, as
24 you've testified to that were produced in 1980, of

1 2,4-dichlorophenol had no detectable 2,4-dichlor, TCDD in it,
2 do you recall that, don't you, sir?

3 A. I believe that's the case, yes.

4 Q. So it could well be that the 2,4-D, if what you say
5 is correct, that the 2,4-D that the Canadian government
6 tested was made from one of the batches of Monsanto
7 2,4-dichlorophenol that did not contain TCDD, isn't that
8 correct, sir?

9 A. That's correct, yes.

10 Q. May well be they did not test a batch of Monsanto's
11 derived from Monsanto's 2,4-dichlorophenol that contained
12 those levels of TCDD that we have in those exhibits, isn't
13 that correct, sir?

14 A. Yes, sir. It was such a rare occurrence that might
15 very well have happened.

16 Q. Yes, and it was a rare occurrence after you learned
17 that using caustic created TCDD, we don't know how rare it
18 was before 1979, do we, sir?

19 A. That's correct.

20 Q. We don't know but what the caustic that you used
21 before 1979 made levels of TCDD and 2,3,7,8-TCDD in
22 the hundred parts per billion for years and years and years
23 in the 2,4-D that went on our lawns, we don't know that, do
24 we, sir?

1 A. I don't think we know very much about that, that's
2 correct.

3 Q. We do know caustic was being used in all those
4 years, and we do know that caustic created TCDD's. We do
5 know that for a fact, don't we, sir?

6 A. We know it did sometimes anyway, yes.

7 Q. And we do know that counsel talked about the Lysol,
8 you don't know whether or not any Lysol has ever been tested
9 that had Monsanto Santophen in it where the Santophen had the
10 levels of TCDD, you don't know that either, do you, sir?

11 A. I have seen no reports of Lysol being tested, no.

12 Q. So as far as you know, the batches of Santophen
13 that were made before the Sturgeon spill acquainted you with
14 the nature of the problem that existed, all the Santophen
15 that was, that was created had those same levels of TCDD as
16 shown in those exhibits that we have had introduced here
17 earlier for the pre-1979 tests, isn't that correct, sir, you
18 remember the Tom Tauli test, October 15th, 1979?

19 A. I believe those are probably repetitive of early
20 production, yes.

21 Q. We don't know that any Lysol or hospital herbicide
22 made with the pre-1979 Santophen has ever been tested for
23 TCDD, do we, sir?

24 A. I don't know of any, that's correct.

1 Q. Now, Doctor, Mr. Musgrave asked you some questions
2 about the fat sample testing at Sturgeon, did you -- when I
3 was hypothesizing with you, sir, that five parts per trillion
4 added on a daily dosage would accumulate in certain amounts
5 so that over a long period of time there would be a lot there
6 and it would not be excreted, you didn't consider that I was
7 suggesting that the -- that in fact the people of Sturgeon
8 were taking in five parts per trillion every day, you didn't
9 understand that to be the case, did you, sir?

10 A. I really don't know, I don't know --

11 Q. You do know that I was using that as a hypothetical
12 example to establish that there would be a lot of TCDD
13 accumulated in that person or the people of Sturgeon, if they
14 were taking in five parts per trillion, but not that I was
15 suggesting that in fact they were taking in five parts per
16 trillion, you understand that, sir?

17 MR. MUSGRAVE: If it was a hypothetical has no
18 basis in fact, Mr. Carr.

19 A. I guess I assumed you probably were talking about
20 the people in Sturgeon, yes.

21 Q. Well, if I was talking about the people at
22 Sturgeon, you know that at the end of one year, they would
23 have what, nearly two parts per billion of TCDD in their fat
24 tissue if they were taking in five parts per trillion daily?

1 They wouldn't even be alive if they were taking in that much
2 on a daily basis.

3 A. Of course they would.

4 Q. If you were talking about five parts, take in five
5 parts per trillion daily, if it has a half-life of five years
6 for convenience we can use that even though you might not
7 agree to it, that means that the end of the first year,
8 one-tenth of that first day's TCDD has been excreted, doesn't
9 it, sir?

10 MR. MUSGRAVE: You are asking him to assume that as
11 hypothetical fact?

12 MR. CARR: Yes.

13 A. Would you say that again, one-tenth would be
14 excreted.

15 Q. If it has a half-life of five years?

16 A. Uh-huh.

17 Q. So that fifty percent of it will be gone at the end
18 of five years, that means at the end of one year, one-tenth
19 of it would be gone, ten percent would be gone at the end of
20 one year?

21 A. What it really means is that 20 percent of what had
22 been accumulated in the first year would be gone, a fifth of
23 the period you are accumulating at rates of 20 percent of --

24 Q. Then it would all be gone at the end of five years,

1 Doctor, it's ten percent?

2 A. But it's not a linear, it's not a direct linear
3 relationship, it's something that --

4 Q. It's an average?

5 A. No, it's an inverse relationship, and you can't
6 draw the conclusion that way, the mathematics are more
7 complicated than that. It's some sort of -- the amount would
8 be gone after the first fraction is dependent on one over the
9 half-life or the anti-logarithm of one over the half-life and
10 it's not necessarily equal to a fifth or a tenth. I can't
11 tell you what it would be offhand without going through the
12 calculation.

13 Q. What you do know if you took in five parts per
14 trillion on a daily basis and had no logarithms to contend
15 with, you would be taking in on an average of four, if you
16 reduced it by ten percent, it would be an average of 4.75 for
17 all that you had taken in during that year.

18 MR. MUSGRAVE: Are you asking this as a
19 hypothetical question?

20 MR. CARR: Indeed I am.

21 MR. MUSGRAVE: Because you are saying you do know
22 that if you don't have logarithm to contend with, which is
23 contrary, so I'd appreciate it if you'd now ask him to assume
24 hypothetical facts, and if you are asking him to assume

1 hypothetical facts, there are no facts in evidence to support
2 that assumption, Your Honor, I object to it.

3 THE COURT: Objection is overruled.

4 Q. Doctor, the five parts per trillion that was taken
5 in on the first day, at the end of the first year, it will
6 have lived one-fifth of its five year half-life, would it
7 not, sir?

8 A. I think that's correct, yes.

9 Q. And if a half-life is five years, that would be,
10 you could say that's one-tenth then at the end of that first
11 year, couldn't you, sir, one half of one-fifth, is one-tenth,
12 isn't it, sir?

13 A. No, sir, because of the nature of the mathematical
14 relationship, more disappears in the first fraction than in
15 the second, than in the third, in the fourth, bigger,
16 smaller, smaller, smaller, like that.

17 Q. So what you are saying is it would be less than
18 one-tenth would disappear by the end of the first year?

19 A. No, sir, more than.

20 Q. How much more, sir?

21 A. I can't answer that without going through the
22 calculation.

23 Q. Would it be for just rough calculation, would it be
24 significantly greater than one-tenth, could we say that the

1 average you took in five parts per trillion on the first day,
2 and then five parts per trillion the second day, and on
3 through the 365 days, can we not say for our purposes here
4 today, that we could say you have an average of 4.75 daily
5 intake for that year, sir?

6 A. We can assume that, yes.

7 Q. Would that be fairly close, wouldn't it, Doctor,
8 without being mathematically precise?

9 A. I don't know, somewhere in there.

10 Q. 4.75 times 65 would be 1733? I did it earlier.

11 A. Something like that, yes.

12 Q. 1733 parts per trillion is 1.7 parts per trillion
13 that would be in the body at the end of that first year if
14 you took in five parts per trillion on a daily basis that had
15 a half-life of five years?

16 A. You are talking about five parts per trillion in the
17 food supply?

18 Q. Yes, that's right.

19 A. I think that's making those assumptions.

20 Q. So that at the end of one year that would have
21 accumulated take into account the. Half-life factor so that
22 there is 1.7 parts per trillion in the tissue, isn't that
23 correct right, sir?

24 A. If all those assumptions are correct, yes.

1 Q. At the end of five years it would still be reduced
2 but every day of those five years you are taking in more, so
3 that by the end of five years, you actually got nearly seven
4 parts per billion in the fat tissue?

5 A. If that's the way arithmetic comes out making all
6 those assumptions, I'd accept that.

7 Q. Now, Doctor, there has been no human anywhere
8 that's ever found to have as much as seven parts per billion
9 in there fat tissue, isn't that correct, sir?

10 A. The lady at Seveso was three, I think.

11 Q. 1840 parts per trillion in her?

12 A. Two, all right. Two is the highest that I know.

13 Q. And, hers was on a doseage that lasted I think six
14 weeks before they finally got her out of there?

15 A. Several weeks, whatever it was.

16 Q. Now, Doctor, the suggestion that Mr. Musgrave would
17 make that our people are taking in five parts per trillion on
18 a daily basis, that would be something that just would be
19 absolutely incredible.

20 MR. MUSGRAVE: Object to that, that's a total
21 mischaracterization and done intentionally, I made no
22 suggestion. I suggested that Mr. Carr suggested it, Your
23 Honor. I think he knows that.

24 THE COURT: Objection is overruled.

1 Q. (by Mr. Carr) Doctor, the fat sample tests that
2 were taken, you are aware of the fact that there is no
3 medical reason for the people at Sturgeon to have their fat
4 sample, their fat tissue tested, are you aware of that,
5 aren't you, sir?

6 A. No, sir, I don't know anything about that.

7 Q. You know of any doctor that would have ever
8 suggested other than in the case, of course, you don't even
9 know that, in the case of Gary Mason they had, the doctor
10 recommended it be tested, do you know of any doctor that has
11 ever recommended that the fat tissue the people at Sturgeon,
12 or the workers at Nitro, or workers at Krummrich, or workers
13 anywhere be tested for dioxin in the fats?

14 A. Do I know of any doctors that recommended that?
15 No, I don't.

16 Q. Now, Monsanto in 1979 went through a study of its
17 Krummrich plant workers that were in the chlorophenol
18 department, you do know that, don't you, sir?

19 A. I've heard something about that, yes.

20 Q. Nobody recommended there that those people go
21 through a fat sample test to find out whether or not they got
22 dioxin in their fat, did they, sir?

23 A. I don't know whether they did or not, I know very
24 little about that.

1 Q. Haven't you seen the report?

2 A. No, I haven't.

3 Q. Went through the standard laboratories, but nobody
4 suggested they take the fat tissue from them, you don't know
5 that either, sir?

6 A. No, I don't know anything about that.

7 Q. You do know how much Roush says that you need for a
8 test, don't you, 125 grams is required?

9 A. I know that's what we requested from the cadavers.

10 Q. No, you wanted a pound, but you said 100 -- minimum
11 of 125 grams is needed for analysis. Could you get exhibit
12 1397?

13 A. Yes, that's what we requested, the minimum of 125
14 grams.

15 Q. Possible a pound of fat needed specimens are to be
16 taken from -- I'll wait until she gets it for you. 125 grams
17 is four ounces, isn't it, sir?

18 A. Approximately.

19 Q. And, he says if dioxin is not found in the 125 gram
20 specimen, analysis would be repeated using the remainder of
21 the fat specimen, that is whatever they can get over 125
22 grams up to a pound to insure that a concentration below ten
23 parts per trillion has not been missed, do you see that, sir?

24 A. Yes.

1 Q. What he's talking about with 125 gram specimen from
2 those cadavers, that they could test down to 10 parts per
3 trillion?

4 A. No, sir.

5 Q. No?

6 A. What he says that --

7 Q. Doctor, let's look at that.

8 A. All right, let's.

9 Q. The sentence says if dioxin is not found in the 125
10 grams specimen, then analysis will be repeated using the
11 remainder of the fat specimen to insure that a concentration
12 below 10 parts per trillion has not been missed. The method
13 of analysis with this size sample is sensitive to less than
14 one part per trillion, isn't that exactly what he said?

15 A. That's exactly what he said.

16 Q. He's talking about the 125 gram specimen, if they
17 don't find it in that specimen then you are going to have
18 analysis with the remainder of that pound of fat?

19 A. That's what he says.

20 Q. And with that remainder of the pound of fat, that
21 would be, if 125 grams is four ounces, that would be twelve
22 ounces left, with twelve ounces you can get sensitive down to
23 one part per trillion, is what he's saying, isn't he?

24 A. That's not the way I interpret that, I mean it to

1 say at four ounces you can get it less than one part per
2 trillion.

3 Q. He just got through saying in the sentence above
4 it, dioxins not found 125 gram specimen, then the analysis
5 would be repeated using the remainder of the fat specimen to
6 insure that concentration be below ten parts per trillion has
7 not been missed. Isn't he talking about his ten parts per
8 trillion based upon the 125 grams specimen?

9 A. I don't think so, no.

10 Q. Doctor, isn't that what he's saying? You have the
11 exhibit in front of you?

12 A. I do.

13 Q. Isn't that what he's saying?

14 A. I think you read it correctly, yes.

15 Q. Now, Doctor, do you know how painful it would be to
16 take 125 gram specimen, four ounces from a human body?

17 A. No, sir.

18 Q. You have no idea of that? Do you know any doctor
19 anywhere that would recommend taking 125 grams of fat from
20 somebody to test to see whether or not they got dioxins in
21 the fat?

22 A. I don't know that I know any doctor who would make
23 such recommendations at all of any quantity.

24 Q. Doctor, the only purpose to take fat samples from

1 the people at Sturgeon would be to find out whether or not.
2 TCDD is there, isn't that right, sir?

3 A. No, sir.

4 Q. Oh, no, what other purpose could there be?

5 A. The only purpose that I could imagine, sir, could
6 be to see if the amount there were significantly different
7 from what everybody else has. The fact that it was there
8 would show only that they were like everyone else.

9 Q. Well then, what you are saying, is the purpose for
10 it to be to prove your theory or disprove your theory of
11 accumulation in steady state, wouldn't it?

12 A. No, sir.

13 Q. Isn't that what would happen?

14 A. No, sir, what that would allow someone to show is
15 whether or not they had had significant exposure different
16 from the rest of the population?

17 A. No, Doctor, what it would show whether or not they
18 had a massive one-time exposure, whether or not they have had
19 a small amount of exposure over a long period of time.

20 Q. And you could not differentiate between the two,
21 could you, sir?

22 A. That's what I said, it would only show whether or
23 not they were different from the rest of the population.

24 Q. Now, Doctor, you do know that fat tissue from the

1 people at Sturgeon have been tested' or did you know that?

2 A. I'm not sure I did know that, no.

3 Q. Did you not know that orthochlorophenol and phenol
4 was found in the fat tissue of two people at Sturgeon?

5 A. I had not heard that, no.

6 Q. Doctor, we know that the TCDD was in the tank car,
7 we know that, don't we, sir, the OCP?

8 A. I believe we have agreed there was some, yes.

9 Q. And we know that the OCP -- I want you to assume
10 that testimony in this case, that OCP was found in the fat
11 tissue of Joyce and Frances Kemner, would you assume that,
12 sir?

13 A. All right.

14 Q. One of the two, or both, I'm not sure, I know one
15 of the Kemners had, I don't recall which one right now, if
16 not both. Now, if the OCP is in the fat tissue and they
17 tested that down to parts per million, I believe, then,
18 dioxin would be there as well, wouldn't it, sir?

19 A. I believe that's probably true, yes.

20 Q. So we actually don't need to test the fat samples
21 to know that dioxin is in the fat tissue, the people at
22 Sturgeon, do we, sir?

23 A. To know whether there is, I think we can assume
24 there is, yes.

1 Q. And, Doctor, if you know that the fat sample taken
2 by Dr. Zabek for testing for dioxin was one gram, very little
3 bit, you know that, don't you?

4 A. No, sir, I didn't know that Dr. Zabek was involved
5 in any such tests.

6 Q. You didn't know that either?

7 A. No.

8 Q. I want you to assume that he was and he took one
9 gram of fat.

10 MR. MUSGRAVE: Dr. Zabek operated on those folks,
11 Mr. Carr, made those biopsies?

12 MR. CARR: Dr. Zabek analyzed the fat tissue, Mr.
13 Musgrave, if you are not aware of that.

14 MR. MUSGRAVE: I didn't ask that question, Mr.
15 Carr.

16 Q. (by Mr. Carr) Dr. Wilson, you are aware, or are
17 you aware of the fact that Zabek analyzed the fat tissue one
18 gram sample taken from those folks?

19 A. I was not until you just mentioned it, no.

20 Q. Do you know what the detection limits Zabek
21 established, it's an exhibit in evidence, you don't know
22 that?

23 A. I don't know what it is, no.

24 Q. You could not -- his detection limit was 72 parts

1 per trillion for one person and 47 parts per trillion for
2 another person, sir, assume that. That means that you could
3 have as much as 40 parts per trillion in the fat tissue of
4 those people and it would not have been detected in that
5 test, doesn't it, sir?

6 A. That's exactly what it means.

7 Q. The highest amount of TCDD or 2,3,7,8-TCDD was
8 detected in Viet Nam veterans with what, 35 parts per
9 trillion, heavily exposed to Agent Orange?

10 A. I believe the gross study cited one example of 99.

11 Q. The others had 35 and 26 parts per trillion, didn't
12 they?

13 A. I believe that's correct, yes.

14 Q. And they were described as heavily exposed to Agent
15 Orange, weren't they, sir?

16 A. There were three so described, yes.

17 Q. Agent Orange to which they were exposed, Monsanto
18 part of Agent Orange to which they were exposed, had as much
19 as 26 parts per million of TCDD in the 2,4,5-T, didn't it,
20 sir?

21 A. I don't know that it did that, no.

22 Q. Doctor, didn't we go through -- I don't have the
23 exhibit in front of me, but where your people analyzed the
24 production from 65 through 69 under Agent Orange and that

1 there was varying levels at parts per million, 7, 12, 26
2 parts per million?

3 A. My recollection might be faulty but I believe they
4 were analyzing 2,4,5-T which is half the Agent Orange.

5 Q. That's what I said.

6 A. Half the Agent Orange so even if there were
7 approximately 26 in one sample that the highest in Agent
8 Orange would be 10 parts per million.

9 Q. All right, 10 parts per million, and the veterans
10 that got said one sample of 99 parts per trillion in their fat
11 tissue being exposed to dioxin, are you with me so far,
12 Doctor?

13 A. Yes.

14 Q. They were exposed to Agent Orange that has in the
15 parts per million contamination, weren't they, sir?

16 A. I believe that's the case, yes.

17 Q. Now, our people at Sturgeon, sir, of course the
18 veterans in Viet Nam were exposed during the period of time
19 they were using it, and then they came out of that
20 environment, didn't they, sir?

21 A. I believe so, yes.

22 Q. They didn't have chronic long-term, low-dose
23 exposure, did they, sir?

24 A. Well, I guess it depends in part on what all you

1 mean by all of those things, but some of them were exposed
2 for up to a year and a half, I think, I regard that as a
3 fairly long time but certainly not a long time type of
4 exposure.

5 Q. Doctor, the only reason of which you might be aware
6 for the one moment, please -- The fat samples for the heavily
7 exposed people were 23, 35, 99 and 63 parts per trillion.

8 A. That sounds correct.

9 Q. We have the exhibit. Whereas the controls had it
10 down to 4, 3, 5, and 44 and 14, you recall that, sir?

11 A. Yes.

12 Q. And, the controls were people that theoretically at
13 least were not out in the field in being exposed to dioxin,
14 they were people at the Veterans Hospital, we have been
15 through that already, sir?

16 A. Yes, I believe that's the case.

17 Q. Doctor, then the only reason that you could
18 possibly want to subject the plaintiffs in this case, if Mr.
19 Musgrave is serious in his suggestion, the only possible
20 reason you could have to inflict this very painful process on
21 those plaintiffs, women, men, children, would be to establish
22 not whether or not they have got dioxin in their fat tissue,
23 but simply how much is there, is that right, sir?

24 A. How much?

1 Q. How much dioxin is in their fat tissue?

2 A. To establish whether they are different from
3 anybody else, yes.

4 Q. Well, that's to establish how much there is there,
5 isn't that right, sir?

6 A. That's correct.

7 Q. Now, there is no medical reason to do that, simply
8 to prove what in effect might be. Musgrave is serious about
9 it a legal point, because it sure wouldn't be a medical
10 point, would it, sir?

11 A. I don't know whether any medical purpose would be
12 served or not.

13 Q. Well, you know medically speaking what's wrong with
14 those people, you've heard about that, haven't you?

15 A. No, I have not.

16 Q. You don't know, Dr. Wilson, I cannot believe that
17 you have been working on this dioxin problem associated with
18 Sturgeon for all these years, you are not aware of the
19 afflictions that the plaintiffs in this case have, sir?

20 A. My impression was they are regarded as quite
21 normal.

22 Q. Dr. Wilson, you wrote a memo in which you talked
23 about the possibility of a result in this case, I don't
24 intend to get into what you thought would be the result, but

1 you had to have investigated at that point in time for you to
2 make such a suggestion, you would have had to have been aware
3 of the fact that they had very serious ailments, wouldn't
4 you, sir, to make that suggestion that you made?

5 A. I guess it's accurate to say that I was aware that
6 allegations were made of that, yes.

7 Q. Now, Doctor, you know that simply because we say
8 something in a complaint, that's not proof that it's so? I
9 can say anything in that complaint, I can make any allegation
10 as their attorney that I want to. You know that's not proof,
11 don't you, sir?

12 A. I believe that's the case.

13 Q. The result has to be based upon evidence that comes
14 into this courtroom in the form of exhibits, form of sworn
15 witnesses, and all that evidence is subject to cross
16 examination, Monsanto gets to put on its doctors, put on its
17 evidence, if I ever get finished, and before the jury ever
18 makes a decision, and one of the things they have to look at
19 is the afflications, the ailments that the plaintiffs have,
20 whether I've alleged or not, you know that, don't you, sir,
21 what the proof is?

22 A. I think that's the case, yes.

23 Q. Sir, your analysis of this case, based without
24 knowing what the medical evidence, what the laboratory tests

1 show, what Mayo's have said, what immunologists have said,
2 your knowledge is based without knowing anything about those
3 plaintiffs.

4 MR. MUSGRAVE: May I object to any questions
5 directed to this witness to provide any situation of this
6 case which obviously is directed toward questions that are
7 the province of the jury and invading the province of the
8 jury, and if overruled to be a continue objection.

9 THE COURT: Objection is overruled.. It is a
10 continuing objection.

11 A. I really know nothing about the details of the
12 state of health of the people involved in this case.

13 Q. Well, Doctor, then on another point, and the work
14 that you've done, and I know you've done work in toxicology,
15 I know that you've read and studied because you've testified
16 to it. You do know that the reaction that each human has to
17 TCDD, or toxic substance varies from human to human, that I
18 could have in anybody, for instance, perhaps 25 parts per
19 trillion of TCDD, and because of the way my immune system is
20 made and my metabolism rate is made, I may go along and have
21 no effects at all, whereas the next person might have two
22 parts per trillion in their that tissue and very very bad
23 results, you know that, don't you, sir? Human response
24 varies from person to person?

1 A. My impression is that at those levels, nobody would
2 be effected, but I do know that the susceptibility does vary
3 from person to person.

4 Q. So you could find five parts per trillion in most
5 human bodies and that might not effect most humans, isn't
6 that right, sir?

7 A. My impression is it would effect nobody, yes.

8 Q. Well, do you know that it would effect no one, Dr.
9 Wilson, do you know that, sir?

10 A. I say it's my impression.

11 Q. I know what your impression is, but do you know
12 that it won't, sir?

13 A. No, sir.

14 Q. Do you know whether or not the cancer rate that
15 this country has had in the last twenty years can be directly
16 connected with the fact that we now have in our bodies
17 2,3,7,8-TCDD?

18 A. I know that's not the case, yes.

19 Q. You know that's not the case?

20 A. That's correct.

21 Q. How do you know that's not the case, Dr. Wilson?

22 A. The rate of cancer in the last twenty years, last
23 forty years in fact for males is effected, has changed only
24 because of the effect of cigarette smoking and the rate of

1 lung cancer.

2 Q. Doctor, how do you know that? Don't you know that
3 TCDD is not just an initiator but it's a promoter? We know
4 that cigarette smoking is harmful to the health and that it
5 causes cancer, no question about that, we know that, don't
6 we?

7 A. That's correct.

8 Q. We also know that TCDD can promote the harmful
9 effects of other toxic substances, we know that, too, don't
10 we, sir?

11 A. Experiments have been done in animals which suggest
12 that might be the case under certain circumstances.

13 Q. Dr. Wilson, it may well be that the high rate of
14 lung cancer that we have today in human males and is now
15 raising in the women can well be because of a synergistic
16 effect or the co-promoting effects between the cigarette
17 smoke and TCDD, isn't that correct, sir?

18 A. No, sir.

19 Q. You don't think that's correct?

20 A. I think that is not correct, sir.

21 Q. Well, you said TCDD does promote, you said in
22 animals, don't you, sir, you don't accept that it is
23 extrapolable over the humans?

24 A. It only promotes in certain strains and under

1 certain circumstances, it promotes certain kinds of tumors in
2 skin and apparently retards the formation of tumors in liver,
3 I know that's not extrapolable to lung.

4 Q. You know that TCDD, the fact that it promotes
5 cancer is not extrapolable to lung?

6 A. Doesn't promote cancer in liver, what is it going
7 to do in lung, how can you tell?

8 Q. What you are saying is no way to tell, I'm asking
9 you whether or not you know. You don't know, do you, sir?
10 For all you know, Dr. Wilson, in our bodies, this TCDD can be
11 promoting, might not show up for 30 years from now, 30 years
12 from the exposure, promoting a cancer in everybody, every
13 human being as far as you know, isn't that right, sir?

14 A. No, sir, I know that's not the case.

15 Q. How do you know that's not the case, Dr. Wilson,
16 nobody else knows that's not the case, how do you know that?

17 A. I believe other people have made very similar
18 statements. The basis worldwide, the rate of deaths from
19 cancer in people aged under seventy is very similar.
20 Approximately 25 to 30 percent of the population dies from
21 cancer worldwide, the nature of the cause is the kind of
22 cancer, but roughly that number of people die from cancer.
23 The other two-thirds to three-quarters do not under any
24 circumstances.

1 Q. Doctor, then I don't see where that falls at all.
2 How does it fall, sir, that TCDD is not promoting the cancer
3 in the bodies of those people that die from the cancer?

4 A. It falls that it's not promoting cancer in
5 everybody, because not everybody gets cancer or dies from it.

6 Q. Oh, I see your point. All right. Again, you were
7 technically correct, I agree, I'm sorry, Dr. Wilson. I keep
8 forgetting that, you are technically correct, everybody is
9 not dying from cancer. I agree with that. Doctor, do you
10 have any study to support a theory that the TCDD that we now
11 have in our bodies is not going to cause serious human
12 ailments to the people at Sturgeon when they have added to
13 that the TCDD that came from the tank car?

14 A. I believe that there are two lines of evidence
15 which lead me to that conclusion. Yes, the first one is that
16 as we discussed a few minutes ago the amount of extra
17 exposure that the people in Sturgeon are getting is so small
18 that you believe apparently it would not be detectable by
19 analytical methods, and therefore they represent the
20 population no different from the rest of the United States
21 population. Second line of evidence is that by Professor
22 Hites at Indiana who suggests that the amount of
23 chlorodibenzo-dioxins present in the environment to which we
24 are all exposed has been approximately uniform since about

1 1950, thirty-five years ago by my calculation, perhaps as
2 early as 1945. He believes that it started rising fifty
3 years ago, reached a plateau at that time, hadn't been the
4 same since. If they were going to be the same since from
5 those chlorodibenzo-dioxins in the environment they would
6 have shown up by now, and there is no sign of them.

7 THE COURT: Mr. Carr, is this a good point for a
8 short break?

9 MR. CARR: Yes, Your Honor.

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

14 (Following a recess, these proceedings were had in open
15 court.)

16 Q. (by Mr. Carr) Dr. Wilson, at the recess, you made
17 a suggestion that somebody had deduced that the TCDD level
18 had not increased since 1950, that is the TCDD in the
19 environment. Who was that that said that?

20 A. Professor of Chemistry at Indiana U., H-i-t-e-s,
21 Ronald Hites.

22 Q. Did he publish that, sir?

23 A. I believe -- I believe that he has published it, I
24 know I also heard him describe the theory in lectures that he

1 has given for instance at this --

2 Q. Your Honor, if it hasn't been published in an
3 authorative article, we can't find it, never found it,
4 because you mentioned it before, I ask the statement be
5 disregarded and the jury be instructed to disregard the
6 statement because it's hearsay on the part of the doctor.
7 Have no way of checking whether the doctor is telling us the
8 truth or not.

9 MR. MUSGRAVE: Your Honor, just because Mr. Carr
10 states he believes he's not authorative does not speak for
11 what the witness said, and he has asked the witness about his
12 basis for those beliefs and he has given him the basis for
13 his beliefs of an individual Professor of Chemistry who gave
14 this at the lecture.

15 THE COURT: Do you have it, a copy of it?

16 MR. MUSGRAVE: Right here, no, I don't.

17 THE COURT: Do you know it has been published?

18 MR. MUSGRAVE: I didn't even know about its
19 existence until Dr. Wilson mentioned it today.

20 THE COURT: Objection is sustained. It's stricken
21 and ordered to be disregarded by the jury.

22 MR. MUSGRAVE: My objection to that be noted?

23 THE COURT: Your objection is noted in the record.

24 Q. (by Mr. Carr) Now, I'd like to inquire into the

1 suggestion of yours, based on what you have now that we know
2 what it's based upon, that it was a statement from Professor
3 Hites to you and not a published article, so now I do want to
4 discuss that with you based upon that. Now, did Dr. Hite
5 come to the conclusion, if he is a doctor, and in
6 conversation that he had with you, now did he tell you that
7 he arrived at a conclusion that the TCDD had not risen in the
8 environment since 1950?

9 A. Dr. Hites, and he is a doctor, he was a student of
10 Professor Beeman's at M.I.T. and mass spectromotist basically
11 by profession, has studied and has reported on those studies.

12 Q. But I'm asking you how did he come to the
13 conclusion that TCDD had not increased in our environment
14 since 1950?

15 A. He came to that conclusion by studying sediments in
16 lakes in which he analyzed for chlorodibenzo-dioxins and
17 chlorodibenzofurans as a function of depth within the
18 sediment. It's well known in the science of limnology that
19 sediments are deposited at a more or less constant rate.
20 There are methods for dating the deposition of those
21 sediments and he concluded from studying the sediments at
22 different depths, that there was an approximately constant
23 deposition of chlorodibenzofurans and chlorodibenzo-dioxins
24 since about 1950. That before that period, if you are

1 looking backward there was a diminishing amount, or if you
2 are looking forward from about 1930 and increasing.

3 Q. Doctor, though, what he's talking about then, is
4 sediment in lakes, not talking about the environment, is he,
5 sir? Sediment in a lake is a far cry than my lawn on at my
6 home here in town?

7 A. I suspect that the lawn in your home is built on
8 what were once sediments, sir, so it is not a far cry.

9 Q. Doctor, so much of the rangeland that the cattle
10 graze upon are not even near lakes and 2,4,5-T and the
11 herbicides sprayed over the vast ranges and it wasn't even
12 used at great extent until the late 50's?

13 A. Well, I believe it was used starting in about 1948.

14 Q. That's when it was used, but wasn't even started to
15 use great in extent until the '50's, all those 2,4-D, the
16 herbicides, all those things, I don't think Monsanto even
17 started making it until --

18 A. '47.

19 Q. Sir?

20 A. 1947.

21 Q. Well, in any event, so how on earth most of the
22 germicides and herbicides that were being made had been
23 produced, have been produced since 1950, how can anybody
24 reach a conclusion that three years after you started making

1 it it reached a steady state, didn't increase over that?

2 A. All I can describe is the work that he has done and
3 the conclusions he has drawn from it, you'll have to ask him
4 why he came to that conclusion.

5 Q. Now, Doctor, it's based on that article that you
6 say then as you said before the break, that we are not going
7 to be subjected to greater risk of cancer because of a TCDD
8 that is being found now in the fat tissue of Americans and
9 Canadians, is that correct, sir.

10 MR. MUSGRAVE: May I object to this line of
11 questioning about cancer generally from the background levels
12 that have been found in the environment generally, has
13 nothing to do with the alleged illnesses that those
14 plaintiffs contend to have as per the testimony of Dr.
15 Carnow, and I object to them going into this area as being
16 irrelevant and immaterial.

17 THE COURT: Objection is overruled. It's noted as a
18 continuing objection.

19 MR. MUSGRAVE: Thank you.

20 THE COURT: You're welcome.

21 A. I believe I said that was one of two lines of
22 evidence that led me to that conclusion. There have been
23 articles published.

24 Q. The other line of evidence is the fact somehow or

1 another you concluded there was a minimal amount of TCDD in
2 the fat tissue in the bodies of my clients, the other line of
3 reasoning and I was going to get to that in a moment.

4 A. I believe that was an inference I drew from what
5 you said, actually.

6 Q. What I said, Doctor, you know in Kidwell, who is
7 also a client of mine, he had 31 parts per trillion in his
8 blood?

9 A. No, sir, I don't know that, I believe we
10 established before that I have some doubt about that
11 analysis. In fact, I thought if he did he'd be dead.

12 Q. You know Wright State University report regarding
13 --, laboratory reported that to be the case, you know that,
14 Dr. Wilson?

15 A. I've seen a letter to that.

16 Q. Doctor, how can you sit there and say that the
17 additional TCDD that my clients had in their body over and
18 above what other people have in their body is not going --
19 has not caused them already serious health effects and will
20 not cause them more serious health effects in the future when
21 you don't even know what's wrong with them.

22 MR. MUSGRAVE: Object to that. It assumes facts
23 not in evidence, that his clients have any additional TCDD
24 over and above the general background of the population.

1 THE COURT: Objection is overruled.

2 A. Very simply. First of all, I don't believe they
3 have any more TCDD in them than the general population.
4 Second of all, the measurements that you cite were capable of
5 detected amounts in excess of what was found to be in a woman
6 in Seveso who showed no ill effects from TCDD exposure,
7 therefore, it's quite easy to conclude that of those clients
8 whose fat analyses you described a few moments ago were less
9 by two orders of magnitude than this Seveso woman, and she
10 had no ill effects, they won't either.

11 Q. Doctor, first of all, the fat samples that were
12 tested in my clients were tested in 1979 that they have had
13 six more years of exposure since then, do you understand
14 that, sir?

15 A. No, sir.

16 Q. That was in 1979, just July, June of '79, just
17 four, five months after the spill occurred, years ago,
18 Doctor, so to compare then and we have never contended except
19 for individuals in this case now, we have never contended
20 that there have been those massive doses that occurred at
21 Seveso, and, Doctor, for you to suggest that there wasn't
22 anything wrong with that lady at Seveso, boggles the
23 imagination. She died of cancer and there were a number of
24 other things wrong with her at the time.

1 MR. MUSGRAVE: Object to counsel's question as
2 being a speech and argumentative and not a question.

3 THE COURT: Overruled..

4 Q. (by Mr. Carr) Doctor, back to my question again,
5 now, since you now know that the -- there is only a one gram
6 fat sample, 47 parts per trillion, and this was back in 1979,
7 we have had six more years of exposure since then?

8 A. No, sir, I don't know that.

9 Q. You don't know that?

10 A. No, sir.

11 Q. Dr. Wilson, you know the facts of this case, don't
12 you, sir?

13 A. I certainly don't know -- I know only a very few of
14 them. There are very many to which I'm not familiar.

15 Q. Given the facts to you that the TCDD contaminated
16 soil was not all removed, that it went into a pond, spread
17 through town, we have given you those facts, Dr. Wilson,
18 although you may not agree that it's the truth, but it is the
19 truth and those are the facts --

20 MR. MUSGRAVE: Object to counsel's speech as to
21 what's true and what's not true, and object to it as being
22 phrased as facts. Whether they are facts or not are for the
23 jury to determine, Your Honor, not for counsel, and I request
24 it be stricken and the jury instructed to disregard it and

1 counsel asked not to state what are facts and what are not
2 facts. That's for this jury to determine not for Mr. Carr.

3 THE COURT: Mr. Carr, will you rephrase the
4 question?

5 MR. MUSGRAVE: May the jury be instructed to
6 disregard it, Your Honor?

7 THE COURT: It's going to be rephrased.

8 MR. MUSGRAVE: Is my question overruled?

9 THE COURT: Your objection is overruled.

10 Q. (by Mr. Carr) Dr. Wilson, those are items of
11 evidence that have come into this case and testimony that's
12 come into this case as I've stated it to you, and assume for
13 the sake of this question that those are indeed facts, will
14 you do that?

15 MR. MUSGRAVE: Same objection.

16 THE COURT: Same ruling. Overruled.

17 A. If directed I will do that, yes.

18 Q. Doctor, if those are true facts, then the people of
19 Sturgeon are to some extent continuing to have exposure to
20 2,3,7,8-TCDD, weren't they, sir?

21 A. No, sir, doesn't necessarily follow.

22 Q. They are not. Doctor, are you assuming now that
23 the 2,3,7,8-TCDD is in the soil, is in the pond, spread
24 through the creek, in the dust and trucks that went through

1 town and carried the contaminated soil on their wheels? Have
2 you assumed all those things?

3 A. Yes.

4 Q. And the people still living there, are you assuming
5 also that TCDD is evaporating from the soil as Shroy and
6 Freeman's model suggestion that it does, it's in the
7 atmosphere?

8 A. Yes, that's correct.

9 Q. Are you saying now that that TCDD is not going into
10 those people?

11 A. Of course not, if it's evaporating from the soil
12 and photodegrading as we establish that it did, entirely
13 likely most possible that they have not be exposed, certainly
14 not to any significance since the very first year, if they
15 were exposed then to any significance.

16 Q. Doctor, what you are saying, you are taking those
17 facts and saying while it might be that they have exposure,
18 you don't know for sure that they don't, you can't state
19 positively, can you, Dr. Wilson, that they are not
20 continuously getting it into their system, based upon the
21 facts I've given you?

22 A. I can say it's extremely unlikely that they are
23 not, yes.

24 Q. You are not saying positively, you are just saying

1 in your judgment it's extremely unlikely, aren't you, sir?

2 A. That's correct.

3 Q. Dr. Wilson, Mr. Seigfreid reminded me of some
4 testimony you gave before you broke your leg, that the
5 children in Sturgeon that were playing in the park that had
6 been flooded with the contaminated water, that the TCDD
7 evaporated in that park, that those children would be
8 exposed, would be getting TCDD in their system, you recall
9 testifying to that?

10 A. In that very first year they might, that's correct.

11 Q. If that TCDD at all has a half-life, doesn't it,
12 sir?

13 A. Yes, sir, your question to me was continued
14 exposure in the years since then. I will submit there was no
15 continued exposure.

16 Q. Children still play in that park to this day?

17 A. Yes, as we established the TCDD in the surface of
18 the soil disappears very rapidly.

19 Q. We didn't establish that at all. You established
20 it had a half-life but that it continues to come. We showed
21 is it -- TCDD is still there, Times Beach, TCDD is still
22 there, still evaporating. Young Air Force Base still there
23 in the original amounts, didn't evaporate at all according to
24 Dr. Young?

1 A. Buried underneath the ground that's true, that's
2 correct.

3 Q. It's still there to this day, is it not?

4 A. Underneath the surface of the ground it is, but at
5 the surface of the ground, it's gone.

6 Q. Doctor, it evaporates through the ground, comes up
7 through the ground?

8 A. Disappears very rapidly thereafter.

9 Q. Doctor, if a child happens to be in that park when
10 that vapor is coming up, he's taking it in, isn't he, sir?

11 A. Not necessarily.

12 Q. Doctor, not necessarily, can he or can he not be
13 taking it in?

14 A. Can he or can he not? Yes. One or both of those
15 are correct.

16 Q. He can be taking it in, can he not?

17 A. That's a possibility, yes.

18 Q. And, Doctor, if he is taking it in, then he's
19 accumulating it in his body to some extent, isn't he, sir?

20 A. To some extent, yes.

21 Q. Now, Doctor, do you know anything about porphyria?

22 A. I have heard the phrase. I know that it refers to
23 aberrations of porphyrin metabolism.

24 Q. And, have you done any checking to see how many of

1 the plaintiffs in this case have got a form of porphyria
2 according to Mayos?

3 A. Have I done that? No.

4 Q. Do you know about their immune systems?

5 A. I know nothing about them.

6 Q. Doctor, if you don't know what's afflicting those
7 people at this point in time, how can you conceivably say,
8 knowing the facts that you know, that I've given you here in
9 this case, how can you conceivably say that the TCDD is not
10 affecting them and causing them problems?

11 A. As I answered before, the amounts involved are so
12 small, and that they are people who were clearly exposed to
13 greater amounts were not harmed and it's easy to conclude
14 they were not harmed either.

15 Q. Doctor, what people were you talking about, the
16 Krummrich workers, Nitro workers?

17 A. Krummrich Workers, basic workers and so on and so
18 on.

19 Q. Are you really prepared to sustain a cross
20 examination on the health effects on the people at Krummrich
21 and Nitro?

22 A. No, sir.

23 Q. I didn't think you were. So how can you possibly
24 say that those Krummrich workers, do you know how many of the

1 Krummrich workers have got abnormal porphyrins?

2 A. I have -- I know nothing about the porphyrins.

3 Q. Do you know how many of the people at Nitro have
4 got?

5 A. My recollection one of those that were tested.

6 Q. You haven't seen --- well, I'll get to that with
7 Doctor -- you haven't seen the number of abnormal porphyrins
8 reported --

9 A. I have seen the data, yes.

10 Q. Have you seen the data then, you know that 24
11 percent or 28 percent of the people at Nitro that were
12 exposed have got abnormal porphyrins?

13 A. No, sir, that's not the case, I know that's not the
14 case.

15 Q. Well, I'll get into that with Dr. Roush. How about
16 the 26 abnormal porphyrins that Mayos reported for the Nitro
17 workers, you know about that?

18 A. I've seen those data, yes.

19 Q. That's 26 out of 112, isn't it?

20 A. No, sir, my recollection of the Mayo data is that
21 one was abnormal, sir.

22 Q. You haven't seen the data where 26 had abnormal
23 porphyrins?

24 A. 26 of the workers at Nitro who were examined, yes.

1 Q. Yes, where the urine was sent, the Plaintiff's that
2 were sent. I was going to use it with Dr. Roush, I'll be
3 glad to show it to you here today, sir, see if you recognize
4 it. Showing you now what's been marked Plaintiff's Exhibit
5 1433, do you recognize that as the Mayo report on the
6 porphyrin abnormalities of the people at Nitro, the workers
7 at Nitro?

8 A. No, I don't recall that I have seen that document.

9 Q. You've never seen that? Dr. Roush didn't tell you
10 about that?

11 A. Dr. Roush didn't show me that compilation that I
12 recall.

13 Q. He told you just one person at Nitro that had
14 abnormal porphyrins?

15 A. What I remember seeing --

16 Q. Is that what I said?

17 A. No, sir, that's a conclusion I draw.

18 Q. How many did he say had abnormal, from the 112 at
19 Nitro that were tested?

20 A. I don't believe he said.

21 Q. I thought you just said he said one?

22 A. No, sir, I said one based on my examination of the
23 data. It's Mr. McCoy there at the top.

24 Q. Then you have seen the data, did you examine all

1 those data?

2 A. No, sir, I have not seen that chart. I have seen

3 --

4 Q. Have you seen the day, too, for all those workers?

5 A. I have seen another depiction of those data, yes.

6 I've seen a chart, a diagram, a graph.

7 Q. You have seen the data then on those workers that's
8 shown on this chart?

9 A. I have seen some of it, yes.

10 Q. There are 26 people on this chart, aren't there?

11 A. I didn't count -- I'll take your word for that.

12 Q. And porphyrin abnormalities listed, isn't it, sir?

13 A. Yes.

14 Q. Of those 26 listed you say there is only one?

15 A. That's my conclusion.

16 MR. MUSGRAVE: I object to -- continuing objection
17 to the document, one, the witness has not seen before and
18 can't identify, and that he did not author, and that has not
19 been offered into evidence.

20 THE COURT: Objection is overruled.

21 Q. (by Mr. Carr) Doctor, would it change your opinion
22 as to the afflictions if I were to tell you that we will have
23 evidence here that this chart shows 26 people with porphyrin
24 abnormalities as shown by Mayos, would it change your opinion

1 when you say a little bit of dioxin doesn't hurt anybody?

2 A. No, sir.

3 Q. You still stick to the same opinion?

4 A. Yes, sir.

5 Q. All right. That's your right.

6 Q. Doctor, what about the immune system, do you
7 believe that dioxin would effect the immune system of my
8 clients?

9 A. The evidence that I have -- I have read about that
10 suggests that it will, little or no effects on adults, no.

11 Q. Doctor, are you using the same reasoning for the
12 immune system as you have used in describing, in interpreting
13 the porphyrin abnormalities of the workers at Nitro?

14 A. No, sir.

15 Q. Using that same reasoning, sir?

16 A. I'm not sure what you mean by that question, but
17 what I'm relying are articles that I've read that are on the
18 general topic.

19 Q. Are you aware of the OKT 10 abnormalities that are
20 in the people at Sturgeon?

21 A. I don't even know what that is.

22 Q. All right. Now, I take it then, Doctor, the
23 judgment that you are making as to whether or not low doses
24 or chronic low-dose exposure of people to TCDD, is being

1 based not upon the facts as they relate to the medical
2 history of the plaintiffs in this case, is that correct, sir?

3 A. That's correct.

4 MR. CARR: All right, I have no further questions.

5 THE COURT: Mr. Musgrave.

6 MR. MUSGRAVE: Just a couple, Your Honor.

7

8

CLARIFICATION EXAMINATION

9

BY MR. JOHN MUSGRAVE

10 Q. Dr. Wilson, Mr. Carr asked you about medical
11 doctors advising that fat tissue samples can be taken,
12 whether you knew of any medical reason why fat sample tissues
13 should be taken, for instance, of the people of Sturgeon, why
14 any doctor would advise that, you recall those questions?

15 A. I think so.

16 Q. And, do you know, do you recall what your response
17 was, whether you knew why any medical doctor would so advise?

18 A. I think my response was that I didn't know any
19 medical reason why that would be done, but I didn't really
20 know.

21 Q. Now, Mr. Carr also asked you if you were aware of
22 the fact that three of the plaintiffs in this case had had
23 fat sample analysis done back in '79, Gary Mason, Joyce
24 Kemner and Frances Kemner. You remember him asking you those

1 questions?

2 A. Something like that.

3 Q. Now, did their medical doctors advise that those,
4 or do you know whether their medical doctors advised that
5 those fat samples be taken of those people?

6 A. No, I have no way of knowing that.

7 Q. If their doctors didn't advise them to have those
8 fat sample tissues taken, do you know who did advise that
9 they have those fat sample tissues taken and analyzed?

10 A. I don't know anything about that.

11 Q. You think they would know enough themselves to go
12 in and say, gee, take a fat sample of me, I want it analyzed
13 see whether it's got any dioxin in it?

14 A. I don't know. I suppose they might do that if they
15 wanted to.

16 Q. Do you know whether their lawyers advised them to
17 do that for legal reasons?

18 A. No, of course not.

19 Q. Now, Mr. Carr has been questioning you about
20 low-dose exposure over a long period of time, has he not?

21 A. He's asked some questions about that.

22 Q. Did he not ask you a question just a moment ago
23 when he said how do you know whether the additional TCDD that
24 his clients have over and above the background levels from

1 the general population is not causing the ill effects that
2 they complain about, you remember that question?

3 A. Not very well. Something like that.

4 Q. So, would it appear that he is contending, sir,
5 that the spilled material out there has increased, the levels
6 of dioxin that he believes his clients have in their bodies
7 over and above the general background level?

8 A. That's what I -- that's what I infer, yes.

9 Q. With regard to low level exposures over a long
10 period of time, we have looked, sir, at those Viet Nam
11 studies, looked at the Canadian study, those other studies
12 that you've talked about where in almost all instances those
13 low levels of dioxin in the body have been found, you recall
14 those, sir?

15 A. Yes.

16 Q. And no correlation of health effects, you recall
17 that, sir?

18 A. Well, the only one where that was mentioned was the
19 Air Force study and that conclusion was term.

20 Q. In the Canadian study they said all the people that
21 died, died from common causes?

22 A. Said something to that effect, yes.

23 Q. Usual causes. And, those background levels, would
24 you consider those low-dose exposures over a low, over a

1 period of time?

2 A. Very low dose.

3 Q. And no reported correlation of health effects, at
4 least so far in the literature, is there?

5 A. I have seen that.

6 Q. Now, sir, then if that is the case and there are in
7 fact then what appear to be some low-dose exposures over long
8 periods of time out there from those studies, if Mr. Carr is
9 contending that his clients have greater levels of TCDD than
10 general background, wouldn't a post-tissue study demonstrate
11 that if they had 15, 20, 30, 40, 50 parts per trillion?

12 A. Or you could demonstrate that, yes.

13 Q. If you took a fat sample?

14 A. Yes.

15 Q. And this general information about how much you
16 need, the Viet Nam study, did we not point out, sir, that the
17 samples taken there were five to ten grams?

18 A. I believe that they reported two to ten or
19 something like that.

20 Q. Their level of detection at least on one indication
21 was down to one part per trillion, was it not?

22 A. I thought the lowest was two, but, in the low parts
23 per trillion.

24 Q. Well, detection limit on this one indication was

1 one part per trillion, wasn't it?

2 A. There is one there, yes, that's correct.

3 Q. The Canadian study I think we established the
4 samples of 1 to 20 grams and they were detected certainly
5 down at least to the lowest detection of 4.8 parts per
6 trillion?

7 A. Four is the lowest they report, there.

8 Q. Four. So if in fact those people from Sturgeon
9 have, as Mr. Carr suggests, TCDD in them, over and above the
10 general background levels, that he says are causing ill
11 health effects, wouldn't you suspect that those they had of
12 post-tissue tests could show that if that's in fact what he
13 believes?

14 A. Ones done now with current methods could certainly
15 show that, yes.

16 MR. MUSGRAVE: No other questions.

17 THE COURT: Mr. Carr?

18 MR. CARR: Yes, Your Honor.

19

20 RECROSS EXAMINATION

21 BY MR. REX CARR

22 Q. Mr. Wilson, do you understand that Mr. Musgrave --
23 that I should have my clients submit to an extremely painful
24 operation in order to prove something we have already proven

1 by the facts?

2 MR. MUSGRAVE: Do you understand that the facts are
3 for the jury to decide, not for what Mr. Carr --

4 MR. CARR: I thought that's what you were just
5 asking, proving something.

6 MR. MUSGRAVE: I was asking what you were asking
7 Mr. Carr.

8 THE COURT: Objection is overruled.

9 Q. (by Mr. Carr) Doctor, do you understand that the
10 reason two of the three had fat samples tested in 1979 was
11 because in 1979 Monsanto said no 2,3,7,8-TCDD in the tank car
12 and in documents filed in 1983 they said no 2,3,7,8-TCDD in
13 the tank car. The first time they admitted that it was in
14 the tank car was in this courtroom in front of the jury.

15 MR. MUSGRAVE: Object to that. There is no
16 evidence of that.

17 MR. CARR: Most certainly is.

18 THE COURT: Overruled.

19 Q. (by Mr. Carr) Now Doctor, you understand why the
20 Kemner's would follow to have fat samples tested at that time
21 in order to try to prove that Monsanto was not telling the
22 truth? You understand that would be a good reason then,
23 wouldn't it, sir?

24 A. If it's as painful as you say, no, sir, I don't

1 think that would be.

2 Q. They only took one gram for that purpose, sir, they
3 didn't take the 125 grams, you understand that, sir?

4 A. I only know what you told me about what they took.

5 Q. And, Dr. Wilson, Gary Mason's sample was taken
6 because he was having blackouts and having difficulty and he
7 had it splashed on his body and that's the reason his doctor
8 suggested he have it taken, try to show whether there was or
9 was not enough TCDD in his fat sample to account for those
10 serious problems that he was having. You understand that,
11 sir?

12 A. No, sir, I don't know anything about that.

13 Q. Then, would you say that I should ask the 65
14 clients to submit to this in order to prove that TCDD is
15 having health effects?

16 A. I wouldn't care to give you advice one way or at
17 all, sir.

18 Q. Doctor, if they submitted to it and it showed
19 higher levels of TCDD in their fat, in their ordinary
20 background, would you then concede in this case and by you, I
21 mean Monsanto, would you then agree that we are entitled to
22 the damages to that, we can stop this trial?

23 A. No, sir.

24 Q. Might agree to do that, Doctor?

1 A. I wouldn't agree to that, no.

2 Q. You wouldn't agree to that, would you, sir, because
3 what you would say well the farmer burned the barrel, or he
4 did something else, or ate some cattle from some other place,
5 or he drank alcohol, or he did something else to cause those
6 problems? That's exactly what you would say, isn't it, sir?

7 MR. MUSGRAVE: Object to that as a speech by
8 counsel, not a question. It's argumentative.

9 THE COURT: Overruled..

10 MR. CARR: I have no more questions.

11 MR. MUSGRAVE: Just one.

12

13 CLARIFICATION EXAMINATION

14 BY MR. JOHN MUSGRAVE

15 Q. Dr. Wilson, Mr. Carr just told us it would appear,
16 would it not, about a medical reason that a doctor told one
17 of Mr. Carr's clients to have the fat sample taken, I believe
18 he said to see if the blackouts he was having were caused by
19 TCDD that he couldn't find?

20 A. I'd interpret that that way, yes, sir.

21 MR. MUSGRAVE: No other questions.

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RECROSS EXAMINATION

BY MR. REX CARR

Q. You understand that was again in June of '79, before Monsanto admitted that there was 2,3,7,8-TCDD in the tank car and in the soil at Sturgeon, do you understand that, sir?

A. I don't know anything about when it was done or anything.

MR. CARR: That's all I have.

MR. MUSGRAVE: Nothing further, Your Honor.

THE COURT: Okay. Gentlemen, could I see you at the bench for a minute?

(Following a side bar conversation which was outside the hearing of the jury and the Court Reporter, the following proceedings were had in open court.)

THE COURT: Dr. Wilson, you may step down.

MR. CARR: Call Dr. George Roush to the stand as an adverse witness, Your Honor.

DR. GEORGE ROUSH

(being called as a witness on behalf of the Plaintiff under Section 2-1102, upon being duly sworn, testified as follows)

CROSS EXAMINATION

BY MR. REX CARR

1 Q. Would you state your name please, sir?

2 A. George Roush, Jr.

3 Q. And how old a man are you, Dr. Roush?

4 A. 64.

5 Q. And by whom are you employed, sir?

6 A. Monsanto.

7 Q. And, how long have you been so employed, Dr. Roush?

8 A. Could you speak up just a little bit?

9 Q. How long have you been employed by Monsanto?

10 A. Twelve years.

11 Q. You started working for them in 1974, I believe?

12 A. '73.

13 Q. I'm sorry?

14 A. '73.

15 Q. All right. And, the Medical Director at Monsanto

16 and you have a department that has a name, do you not, sir?

17 A. Yes, sir.

18 Q. What is that name?

19 A. Department of Medical and Environmental Health.

20 Q. Now, all during the time you worked for Monsanto,

21 have you been director of that department?

22 A. No, sir.

23 Q. In what capacity did you first join Monsanto?

24 A. I was Associate Director.

1 Q. And where had you been before that, Dr. Roush?
2 A. I was at Tulane University.
3 Q. In what?
4 A. In New Orleans.
5 Q. In what position?
6 A. I was Professor of Medicine.
7 Q. How long have you been Professor of Medicine?
8 A. Five years.
9 Q. Had you practiced medicine before that?
10 A. While I was at Tulane I was also Medical Director
11 of Ethyl Corporation. I had two jobs.
12 Q. Okay. That's Ethyl Corporation, the company that
13 makes additive to gasoline?
14 A. Yes, sir, tetra ethyl lead.
15 Q. And how long had you been with that company?
16 A. Ten years.
17 Q. Had you practiced medicine then before that, sir?
18 A. No, I taught at University of Cincinnati before
19 that.
20 Q. Same University of Cincinnati that Dr. Suskind is
21 associated with?
22 A. Yes, sir.
23 Q. And I take it then that you knew Dr. Suskind from
24 your University of Cincinnati association?

1 A. He wasn't there when I was there.

2 Q. All right. Doctor, have you practiced medicine in
3 the past at any time?

4 A. No, sir, always been at a university.

5 Q. Never been -- you've never practiced medicine at
6 all at any time?

7 A. Just university hospital.

8 Q. Well, then you did practice medicine in the
9 university hospital?

10 A. Yes, but not private practice.

11 Q. But did you treat people, sir?

12 A. Yes.

13 Q. What was your field?

14 A. Internal medicine.

15 Q. I'm sorry?

16 A. Internal medicine.

17 Q. Was it just while you were at Tulane University
18 that you practiced medicine?

19 A. No, I practiced at Cincinnati.

20 Q. Cincinnati also. You are located at the
21 headquarters or your offices right across the river at Creve
22 Coeur, Missouri, is it not, sir?

23 THE COURT: Okay, Mr. Carr, we need to take a short
24 recess at this point. THE COURT: All right. The court is

1 in a short recess.

2 (Following a recess, these proceedings were had in open
3 court.)

4 Q. (by Mr. Carr) Dr. Roush, could you relate for us
5 your duties as Director of the Department of Medicine and
6 Environmental Health for Monsanto?

7 A. Our department has a responsibility of monitoring
8 the health of the workers who work for Monsanto at all of our
9 locations. That means to watch over them, to make sure they
10 aren't adversely affected by the work that they do. That's
11 one thing we do. We also monitor the work environment at
12 each of the other locations so that each and every worker is
13 not exposed to a concentration of the chemical in any way by
14 skin or my inhalation, that he won't suffer adverse effects;
15 and, thirdly, we do toxicology on our products so that we can
16 define the biologic effects of those products so that we can
17 decide what we have to protect our workers from. And then
18 using all of that data, we write safe data sheets and write
19 descriptions of the how those products can be handled
20 safely. Doesn't mean they are not toxic, but it means by
21 handling them correctly means they can handle them safely.

22 Q. Now, the last aspect of the title of your
23 department, environmental health, you have duties broader in
24 scope than just the workers at Monsanto, do you not, Dr.

1 Roush?

2 A. Our responsibility is to insure that our products
3 are used safely, and in order to do that, we write safety
4 data sheets that describe how they are to be handled. We do
5 not have responsibility to go out and monitor the environment
6 outside of Monsanto.

7 Q. Well, you do have the responsibility insofar as the
8 public is concerned, that live in the outside environment
9 outside of the Monsanto plant to see to it that the products
10 that are produced and manufactured by Monsanto are used in
11 such a fashion that they will not have injurious health
12 effects, isn't that correct, sir?

13 A. That's correct, we write a safety data sheet that
14 will describe how that product can be used safely.

15 Q. If there are hazardous substances in your products,
16 it's one of your obligations to see to it that the public,,
17 the ultimate consumer, gets knowledge of that, isn't that
18 correct, Dr. Roush?

19 A. We write that safe handling instructions for all of
20 our chemicals so that they can be followed correctly. We do
21 not follow the product into our customers locations and
22 insure that they use them safely.

23 Q. No, but what you do do, or at least what you are
24 supposed to do, is to make sure that your customers are aware

1 of the toxic substances that may be, not may be, that are in
2 fact in Monsanto products, so that they can be aware of the
3 health problems that may arise from the use of those
4 products, isn't that correct, sir?

5 A. That's right, we write safe handling instructions
6 to insure that they can do that.

7 Q. Well, my question goes beyond that, not just to
8 safe handling instructions but safe handling instructions
9 would be, say, how to use it, my question makes sure that you
10 understand me, my question goes beyond that, is it not your
11 obligation to let the customer know what is in the product
12 that might be harmful to them so that they would have the
13 knowledge and more specific knowledge as to not be exposed to
14 it or not use it in an inappropriate fashion?

15 A. We do describe what the product is, so that, and
16 tell them how toxic it is, and tell them what the effects are
17 from other exposure, and then tell them the safe handling so
18 they can keep that all from happening.

19 Q. Well, more specifically, do you not and isn't it
20 your department's responsibility to see to it that customers
21 are aware of and are apprised of the toxic contents of your
22 various products?

23 A. Yes, we call them material safety data sheet that
24 describes that.

1. Q. Now, insofar as that obligation is concerned, you
2 have toxicologists that work in your department and under you
3 and you have medical doctors that work in your department and
4 under you, do you not?

5 A. Yes, sir.

6 Q. What other kind of professionals do you have in
7 addition to toxicologists and medical doctors?

8 A. We have a section of industrial hygienists who have
9 responsibility for monitoring environment in the work place
10 to insure that we don't have other exposures there and meet
11 all regulations. In addition to that we have a section
12 called epidemiology, in which we take the data from our
13 health examinations and look at the total experience and do a
14 study, a statistical study, of the health of our employees.

15 Q. Now, when did this part of your department that is
16 dealing with epidemiology come into being, sir?

17 A. Well, as soon as I came to Monsanto we started to
18 do what I call amateur epidemiology, done by
19 non-professionals. I had toxicology work, every occupation
20 of physician does epidemiology, because you look at the work
21 force and look at the population and see if there are
22 abnormalities in such a group, but six years ago we hired a
23 professional Ph.D. epidemiologist who has built up the
24 department since then.

1 Q. Who would that be?

2 A. Dr. Gaffey.

3 Q. Dr. Gaffey?

4 A. Gaffey.

5 Q. Yes. And you had, of course, Dr. Zack in your
6 department before you had Gaffey, did you not?

7 A. Yes, sir.

8 Q. Sir?

9 A. Yes.

10 Q. And Gaffey, I'm sorry, Zack she was an
11 epidemiologist by profession or toxicologist?

12 A. Epidemiology, she had a Master's degree in
13 epidemiology.

14 Q. She was there before Gaffey?

15 A. Yes.

16 Q. But when you hired Gaffey you became more
17 formalized in your department for epidemiology, is that
18 correct, sir? Is that what you are saying in effect?

19 A. Yes.

20 Q. Not that you didn't have epidemiologists before
21 Gaffey was hired, wasn't formalized as such?

22 A. That's right.

23 Q. Now, what other duties do you have in your
24 department or have you pretty well related them?

1 A. We provide direction for Monsanto for change in
2 procedures, we are going to handling of chemicals, provide
3 guidance for them on environmental matters.

4 Q. Now, when a particular department, say
5 manufacturing department, asks you what are the adverse
6 health effects of a certain property or a certain chemical or
7 a certain constituent of a product, it's one of your
8 obligations to so advise them, isn't that correct, sir?

9 A. Yes, sir.

10 Q. Now, do you recall being asked in writing, in 1979
11 on more than one occasion by Dr. Wilson to give him the -- a
12 safe limit level for various chlorinated phenol products
13 including Santophen?

14 A. Yes.

15 Q. Did you give a response to him in writing, sir?

16 A. No, I did not.

17 Q. You are aware of what Dr. Paget told Dr. Wilson in
18 July of '79 with regards to Santophen, are you not, sir?

19 A. Yes.

20 Q. Now, is that -- and that document was in writing.
21 Is there any other document, sir, that you know of that
22 exists in which your department or anybody in your department
23 advised the chlorinated phenol manufacturing in as to safe
24 levels for dioxin contaminants in your chlorinated phenol

1 products?

2 A. No, we did not.

3 Q. Now, Doctor, the requests were made of you in
4 writing, and I've seen literally thousands of documents in
5 writing and I've seen, and there has been in evidence those
6 requests of you in writing, two or three in a row in November
7 of '79, all of which was in writing, and I see no written
8 response from your department. Should you not have responded
9 in writing so there would be a record of what you said, Dr.
10 Roush?

11 A. No, we went to talk to them. We said that was
12 satisfactory, the one part per billion.

13 Q. All right. Now, somewhere along the line, you got
14 from somebody information that a spill had taken place at
15 Sturgeon, did you not, sir?

16 A. Yes, sir.

17 Q. Now, at that point in time did your duties and your
18 Department of Medical and Environmental Health include the
19 problem that existed then at Sturgeon, the occurrence at
20 Sturgeon?

21 A. There are two ways that that can be my response,
22 either because I thought it was or because the company would
23 call me and ask for an opinion.

24 Q. And both things happened?

1 A. Yes.

2 Q. So the occurrence at Sturgeon, you became connected
3 with, at least you are, perhaps not you personally but your
4 department became connected with it, actually from the very
5 beginning of the episode?

6 A. Yes, sir.

7 Q. Was it not, sir?

8 A. Yes, sir.

9 Q. And it has been associated with it and connected
10 with it down to and including the present time, isn't that
11 correct?

12 A. Yes, sir.

13 Q. Dr. Paget, of course, was the person from your
14 department that was originally assigned to work on the
15 Sturgeon incident, isn't that correct, sir?

16 A. Yes, sir.

17 Q. And he was so assigned and did so work until some
18 time moderately late in 1979, is that correct, sir?

19 A. Yes, sir.

20 Q. Now, after that, who became the person from your
21 department that would have been assigned to the Sturgeon
22 problem if anybody?

23 A. I didn't assign anyone, it was my responsibility.

24 Q. It was your responsibility from that point on, is

1 that correct, sir?

2 A. Yes, sir.

3 Q. Sir?

4 A. Yes, sir.

5 Q. Now, in line with your responsibility and to
6 execute your duties properly, you of course have to know what
7 contaminants might be in the tank car that spilled at
8 Sturgeon, Missouri, isn't that correct, sir?

9 A. Yes, sir.

10 Q. Now, you asked in your responsibility those persons
11 that should know, you asked whether or not the dioxin that
12 was found to be in the tank car, you asked whether or not
13 that could be 2,3,7,8-TCDD, did you not?

14 A. Yes, sir.

15 Q. And you were told that it was not, weren't you,
16 sir, 2,3,7,8-TCDD?

17 A. We were told that it should not be.

18 Q. You were told more than that, Dr. Roush, I beg to
19 differ with you, you were told that it probably was not or
20 more than that, it was not, weren't you, sir?

21 A. It's hard for me to recall the words at that time.

22 Q. Well, let me show you your deposition that you gave
23 in this case on December 22nd, '83, to refresh your memory,
24 if you would. I've underlined the answer that you gave to

1 that question?

2 A. That it probably was not.

3 Q. No, more than that, it probably was not, it was
4 not?

5 A. Right.

6 Q. Yes. Now, at that point in time, sir, and how long
7 from that point on when you were told that, that it was not,
8 were you ever advised from that point on, up until today,
9 that indeed it was 2,3,7,8-TCDD in the tank car, ever been
10 told that, Dr. Roush?

11 A. We have had many discussions since then about
12 whether it was 2,3,7,8 or not?

13 A. But my question is, have you ever been told, sir,
14 up to the present time that indeed it was 2,3,7,8-TCDD that
15 was in the tank car?

16 A. I was told that it could be after that.

17 Q. Then is the answer to my question, is that still to
18 this date, you have never been told that it was in fact
19 2,3,7,8-TCDD in the tank car?

20 A. That's right.

21 Q. Were you ever told that Professor Rappe, in Sweden,
22 confirmed that it was 2,3,7,8-TCDD in the tank car?

23 A. I heard later that he had said that was correct.

24 Q. How much later did you hear that, Dr. Roush?

1 A. I don't recall that.

2 Q. Has it been since the start of this trial?

3 A. I know it's been since then.

4 Q. Yes. Doctor, when you -- your department became
5 involved early on, are you aware of the fact, you know Dr.
6 Kaley in Monsanto, analytical chemistry department, don't
7 you, sir?

8 A. Yes, sir.

9 Q. Did anybody ever tell you that Dr. Kaley at that
10 point, right shortly after the spill occurred, within a month
11 of the time the spill occurred, that he estimated that 90
12 percent of the TCDD in that tank car was 2,3,7,8-TCDD?

13 MR. HEINEMAN: Object, Your Honor, that's a total
14 misrepresentation of Dr. Kaley's testimony and Mr. Carr knows
15 that it is.

16 THE COURT: Overruled.

17 A. Could you ask the question again, please?

18 THE COURT: Let me explain the ground rules. If I
19 overrule an objection, you have to answer the question.

20 A. I understand I just asked for the question again.

21 THE COURT: I'm sorry.

22 (Court Reporter read back the question.)

23 A. No.

24 Q. Have you ever seen -- could you get Exhibit 1142 A,

1 I suppose it will be, I've got 1142 here. I hand you now
2 what's been marked Plaintiff's Exhibit 1140, ask you if
3 you've ever seen that before, sir? And you recognize that
4 this document I hold in my hand, 1142, is a blow-up of that
5 which you have in your hand?

6 A. Yes, sir.

7 Q. Now, could you tell me whether or not you've ever
8 seen that?

9 A. I've seen it recently.

10 Q. Just recently?

11 A. Yes, sir.

12 Q. Again, prior to the time you were coming here to
13 testify in this case?

14 A. (indicates affirmatively.)

15 Q. Sir?

16 A. Yes, sir.

17 Q. But you were not aware what Dr. Kaley estimated
18 back in 1979, isn't that correct, Dr. Roush?

19 A. Yes.

20 Q. Dr. Roush, had you asked anybody recently why they
21 told you that it was not 2,3,7,8-TCDD in the tank car when in
22 fact it was, ever ask anybody that, sir?

23 A. Well, we talked about it often.

24 Q. My question is, you said that you were told that it

1 was not 2,3,7,8-TCDD in the tank car, now my question is, now
2 that you've learned that it was 2,3,7,8-TCDD in the tank car,
3 you ever ask anybody why they didn't tell you that it was
4 2,3,7,8 in the tank car?

5 MR. HEINEMAN: Object, Your Honor, the witness just
6 said that we have talked about it often, I think that is
7 responsive to the question. I don't think it needs to be
8 reiterated, and the witness already said, which Mr. Carr has
9 failed to point out in his answer, that he was told that it
10 could be 2,3,7,8 in the tank car.

11 THE COURT: Overruled. I don't think the answer
12 was responsive to the question. That's not what it asked
13 for.

14 A. We discussed this and chemically I was told --

15 Q. No, Doctor, that isn't what I'm asking you, what
16 I'm asking you now that you know that it was 2,3,7,8-TCDD in
17 the tank car, now that you know that, sir, have you asked
18 anybody why you were told back in '79 that it was not
19 2,3,7,8-TCDD?

20 A. As I read this, this doesn't say there is 2,3,7,8.

21 Q. Doctor, I'm asking you another question now
22 altogether, all right?

23 A. Yes, sir.

24 Q. You understand that your lawyer has stood in front

1 of this jury and said that it was 2,3,7,8-TCDD in the tank
2 car, all right? Do you understand that, sir?

3 A. Yes.

4 Q. Now, you were told in '79 that it was not
5 2,3,7,8-TCDD in the tank car. Now, my question is you now
6 know, sir, since this trial started that it was 2,3,7,8-TCDD
7 in the tank car. My question to you, Dr. Roush, is have you
8 asked anybody why you weren't told that fact?

9 A. No.

10 Q. Doctor, you know from experience -- first of all
11 let me ask you this, do you know the extent of the clean-up
12 that took place at Sturgeon, Missouri?

13 A. I've been told recently how it took place.

14 Q. Well, were you told that part of the contaminated
15 dirt remained in Sturgeon, was not removed?

16 A. Yes.

17 Q. When did you learn that, sir, for the first time?

18 A. Recently.

19 Q. Again, just recently. Now, how recently, Dr.
20 Roush?

21 A. In the last year.

22 Q. Dr. Roush, that means some time in the past twelve
23 months, after this trial commenced, you were told that all
24 the contaminated dirt had not been removed, did you ask

1 anybody why you weren't told before that that the
2 contaminated dirt had not been all removed?

3 A. No, sir.

4 Q. Did anybody tell you why they didn't tell you, sir?

5 A. No, sir.

6 Q. Did everybody at the company knows that it's your
7 responsibility, the head of your title is Department of
8 Health and, Department of Medical and Environmental Health,
9 everyone knows that, don't they, sir?

10 A. Yes, sir.

11 Q. And, they also know that for you to make
12 appropriate decisions you have to be advised of the full
13 factual situation, they should know that, shouldn't they,
14 sir?

15 A. Yes.

16 Q. And you do have to know the facts in order to make
17 appropriate decisions, don't you, sir?

18 A. Yes, sir.

19 Q. Did you learn that instead of removing the
20 contaminated soil, that they commenced washing it in mid
21 1979.

22 MR. HEINEMAN: You suggesting to him that none of
23 the contaminated soil was removed, Mr. Carr?

24 Q. Did you hear my question, Dr. Roush?

1 A. Yes.

2 MR. HEINEMAN: I'll object to the question as being
3 outright fabrication and misrepresentation of weeks of
4 testimony in this case, Your Honor.

5 THE COURT: Objection is overruled. Answer the
6 question, please, Doctor.

7 Q. Could you ask that question again, please?

8 (Court Reporter read back the question.)

9 A. No, I wasn't told that.

10 Q. And I don't want you to -- if counsel's objection
11 is -- if you really think that I meant that none of the
12 contaminated soil was removed, rest assured that a good deal
13 of it was removed. You understand, I'm not representing to
14 you that no contaminated soil was removed, what I'm telling
15 you is that all the contaminated soil was not removed and
16 what you are telling me is that you did not know that.

17 MR. HEINEMAN: Thank you.

18 Q. You did not know that and you did not know that
19 they had washed it?

20 A. That's right.

21 Q. Sir, if they had, you know from your work, although
22 you are not strictly a toxicologist, you have toxicologists
23 working under you, don't you, sir?

24 A. I'm a clinical toxicologist.

1 Q. All right, clinical toxicologist means that you
2 treat those people who come in or you have knowledge on how
3 to treat or what the clinical science of toxic poisoning is,
4 isn't that correct?

5 A. I also evaluate the likelihood of a hazard.

6 Q. That's part of your job?

7 A. Yes.

8 Q. It's something that you, oh, I guess on the job
9 learned how to do or learned to do after you started doing
10 those things at Ethyl Corporation, I take it?

11 A. I started doing that and teaching it back in
12 Pittsburgh back in 1957.

13 Q. That's fine, Doctor. Then you are indeed a
14 toxicologist?

15 A. Yes, sir.

16 Q. So you knew at the time, then, that washing soil
17 doesn't remove the dioxin if there is dioxin in that soil,
18 you knew that back in '79, didn't you, sir?

19 A. No, I didn't know that in '79.

20 Q. You did not know that in '79, when did you learn
21 that, Doctor, because you know it now, don't you?

22 A. Yes, sir.

23 Q. When did you learn that you can't remove dioxin
24 from soil by washing it?

1 A. I can't give you a time, I suspect some time in the
2 last four or five years.

3 Q. Well, the last four or five years would put it back
4 in 1980 or '81?

5 A. Right.

6 Q. Have you ever learned that any washing of that soil
7 took place at Sturgeon?

8 A. I didn't know it until preparation for this trial.

9 Q. Again, just recently?

10 A. Well, in the last year.

11 Q. Well, when you learned that the soil was washed,
12 was it then that you went out to investigate or explore to
13 determine whether or not washing the soil would remove the
14 dioxin? Did those two things, one follow the other, sir, if
15 you get my meaning?

16 A. No, it did not.

17 Q. Which did you learn first, that the soil was washed
18 or that dioxin can't be removed from the soil by washing?

19 A. I knew that it couldn't be removed before I heard
20 about the washing.

21 Q. All right. Now, when you learned that it had been
22 washed, the wash had long since ceased, didn't it, sir,
23 hadn't it, sir?

24 A. Yes.

1 Q. And you knew at that point that the soil that was
2 washed still had the dioxin contaminant in it, if the dioxin
3 was in that soil to start with?

4 A. Yes.

5 Q. Now, did you also have knowledge then, sir, did it
6 coincide at that time that you had the knowledge that it was
7 confirmed that it was 2,3,7,8-TCDD in the soil, or had you
8 not yet learned that?

9 A. I'm still not aware that it's been confirmed that
10 2,3,7,8 was in the soil.

11 Q. Well, in the tank car?

12 A. In the tank car.

13 Q. Sir, you still don't know that it's confirmed?

14 A. That's right, I assumed that it is.

15 Q. Dr. Roush, you mean to say that up to this date, no
16 one has told you, even yet today, coming into this courtroom,
17 that Mr. Heineman agreed that it was 2,3,7,8-TCDD in the tank
18 car, you still don't know that, sir?

19 A. We assumed right from the beginning --

20 Q. That's not what I asked you.

21 A. I understand.

22 Q. I'm asking you even to this date it's not been
23 confirmed to you by the lawyers or by the toxicologists or by
24 the chemists or anybody else that it was 2,3,7,8-TCDD in that

1 tank car in fact? Still haven't told you that?

2 A. That's right.

3 Q. Doctor, the knowledge that you had that dioxin
4 can't be removed from soil by washing it then, when you had
5 that knowledge and when you learned that the soil was washed,
6 you really didn't know at that point because you still don't
7 know that it was for sure 2,3,7,8-TCDD in the tank car, is
8 that correct, sir?

9 A. (indicates affirmatively.)

10 THE COURT: You have to answer verbally so she can
11 get it down, Doctor.

12 A. Yes, sir.

13 THE COURT: Thank you.

14 Q. Now, Doctor, you do know now that dioxin in soil
15 has a half-life of about ten years, you know that, at least,
16 don't you, sir?

17 A. Yes.

18 Q. Okay. And you do know that dioxin in soil will to
19 some extent vaporize, you know that, too, don't you, sir?

20 A. I'm not sure how it gets out of the soil.

21 Q. Well, let me -- is this an uncertainty or
22 unsureness that you have just recently arrived at or is it
23 one that you knew for some time?

24 A. I don't think it's been established how it gets out

1 of the soil by there are theoretical ways in which they think
2 it can get out, but it hasn't been established as a fact.

3 Q. Hasn't Dr. Wilson or Dr. Shroy or Dr. Freeman ever
4 told you that they did terrific experimentation and they got
5 models to prove that the TCDD in the soil would evaporate and
6 disappear?

7 A. That's an explanation of how it gets out, yes.

8 Q. Well, then, they did tell you that it does
9 evaporate?

10 A. They told me what the model fits the data that they
11 have, that doesn't mean that's the way it takes place, they
12 haven't proved it yet.

13 Q. Well then, what you are saying, you don't accept
14 what they told you?

15 A. No, I didn't say that. I said they have an
16 explanation that fits the way in which the dioxin leaves the
17 soil. They have a model, and mathematics enables them to
18 take a model that fits the data quite well, that's what they
19 have done.

20 Q. And did you not read Dr. Shroy and Dr. Freeman's
21 work?

22 A. Yes.

23 Q. And do they not say in that work that it will
24 vaporize and disappear?

1 A. They say volatilization will explain how it gets
2 out.

3 Q. Are you aware of the fact that Wilson, Shroy, and
4 Freeman, wrote a letter to Science Magazine saying that the
5 Times Beach TCDD soil, the TCDD in that soil, 99 percent of
6 it evaporated in the period of time since it spilled at Times
7 Beach?

8 A. Said it's been removed and can be explained by
9 evaporation, yes.

10 Q. You are aware of the fact they it does evaporate?

11 A. They do say it evaporates, that's right.

12 Q. But you don't accept that as proof?

13 A. I didn't say that.

14 Q. Well, I must concede then I am confused, do you
15 believe what Wilson, Shroy, and Freeman have stated, that is
16 TCDD evaporates from the soil?

17 A. I have read the article. I know their explanation
18 for it, and I know they have a model for it, but that doesn't
19 mean they prove that it disappears by volatilization.

20 Q. Dr. Roush, I don't want to misdirect you, but that
21 isn't what I asked you, I asked you do you believe it, sir?

22 A. I don't know whether to believe it or not.

23 Q. Then the answer is that you don't really believe
24 it?

1 A. No.

2 Q. Because you don't know whether to believe it or
3 not?

4 A. No, I didn't say that either.

5 Q. I'm confused.

6 A. I said that volatilization can take place. The
7 fact that volatilization can take place and have a model to
8 show it, doesn't mean that's the way it gets out. That's one
9 explanation for how it can get out.

10 Q. Well, what I'm asking you, subjectively, Dr. Roush,
11 do you believe that that's the way it gets out?

12 A. I don't know.

13 Q. Then I take it you have no belief one way or the
14 other as to how it gets out, is that correct, sir?

15 A. It's possible it's volatilization, I do know it
16 comes out.

17 Q. Doctor, I don't want to quarrel with you on this
18 point, but I'm simply asking you do you have a believe as to
19 how dioxin gets out of the soil, and if so, is volatilization
20 or evaporation that belief?

21 A. I don't know how to answer any better than I have,
22 I've said that I know it comes out, and they have a model
23 that will explain how it comes out, using volatilization, and
24 that may be the way it gets out but they haven't established

1 the way it really takes place.

2 Q. All right, then I understand you correctly, they
3 have said it, it may be true, it may not be true, you simply
4 have no belief one way or the other as to whether what they
5 say is true or not?

6 A. At this stage, we can't.

7 Q. That's really what I was asking you, but you do
8 know there is, notwithstanding their work, you do know that
9 there is a vapor pressure and that so evaporation does take
10 place, maybe not to the extent that they say that it does.

11 A. That's true.

12 Q. But you do know there is a vapor pressure and that
13 evaporation does take place?

14 A. Yes, sir, that's true.

15 Q. And, while that -- if that occurs in a town where
16 the dioxin has not be washed out of the soil, and the soil
17 has not been removed that has the dioxin in it, the
18 townspeople will have some kind of exposure to that vapor,
19 won't they, sir?

20 MR. HEINEMAN: Let me object to the form of the
21 question. It assumes no dioxin has been washed out.

22 THE COURT: Objection overruled.

23 Q. Could you answer that question?

24 A. You'll have theoretical exposure, I'm not sure how

1 much it is. It can't be measured.

2 Q. I understand that, Doctor, all I want to get from
3 you is acknowledgment that there is an exposure that at least
4 theoretically takes place?

5 A. Yes, sir.

6 Q. And, while that exposure is taking place, that
7 dioxin, if it is in the vapor, if the dioxin is evaporating,
8 that can go into the residents bodies, can't it, sir?

9 A. If they are exposed to it.

10 Q. Dermal contact with the vapor or inhalation of the
11 vapor, isn't that correct, sir?

12 A. Yes.

13 Q. And, that vaporization will continue all -- if it
14 does exist, it will continue all during the life of dioxin in
15 soil, won't it, sir?

16 A. Yes, over that ten-year period.

17 Q. Ten-year period is the half-life?

18 A. I understand.

19 Q. So it will continue beyond that ten-year period,
20 won't it, sir?

21 A. That's right.

22 Q. It will continue during the next ten-year period
23 and next ten-year period and next ten-year period and the
24 next ten-year period, will it not, sir?

1 A. Yes.

2 Q. And all during that time, that vapor, during those
3 years and years will be, if it does vaporize, it will come up
4 and the people will be exposed to it, won't they, sir?

5 A. Yes.

6 Q. Now, Doctor, the problems that exist with the
7 exposure to dioxin, you have studied those problems now at
8 least since you joined Monsanto, have you not, sir?

9 A. Yes, sir.

10 Q. Or at least since 1979, let me back up, how long
11 have you studied the problem of human health effects from
12 dioxin exposure?

13 A. Since 1979.

14 Q. Since '79?

15 A. Yes, sir.

16 Q. All right. Then it started with the Sturgeon
17 spill, is that correct?

18 A. Except for the pentachlorophenol problem with
19 dioxin.

20 Q. Well, the pentachlorophenol problem was not a
21 2,3,7,8-TCDD problem, was it, sir?

22 A. That's right.

23 Q. And, I did use the word dioxin rather loosely, but,
24 your knowledge as to the health effects of 2,3,7,8-TCDD,

1 exposure commenced in '79, did it not, sir?

2 A. Yes.

3 Q. Now, at that time after the Sturgeon spill, you
4 became aware of the fact that Monsanto entered on to a
5 program to exam it's chlorinated phenols to see what dioxins
6 might be present in those chlorinated phenols?

7 A. Yes, sir.

8 Q. And you, of course, learned that 2,3,7,8-TCDD was
9 found in the Santophen or that which coelutes with
10 2,3,7,8-TCDD, did you not, sir?

11 A. Yes.

12 Q. And you learned that it was found in
13 2,4-dichlorophenol, did you not, sir?

14 A. Yes, sir.

15 Q. Sir?

16 A. Yes, sir.

17 Q. And you learned that it was found in
18 parachlorophenol, did you not?

19 A. Yes, sir.

20 Q. Now, after you learned that then, it became
21 important to you in the job that you had to find out the
22 human health effects, isn't that right, sir?

23 A. Yes, sir.

24 Q. And one of the things that you did in that respect

1 was to a very -- well, you examined first of all the records
2 that Monsanto had relative to the health effects of its
3 Nitro, West Virginia workers and of its Krummrich plant
4 workers, did you not, sir?

5 A. Yes, sir.

6 Q. Yes, and along the line of that, a Dr. Raymond
7 Suskind came in contact with you, did he not?

8 A. Yes, sir.

9 Q. And some time in '79, he asks for and he received
10 from you and Monsanto permission to do a study, a mortality
11 study for the workers exposed to the 1949 TCP accident, isn't
12 that correct?

13 A. Yes, he asked that in 1977.

14 Q. Well, you didn't respond to him until '79, you
15 didn't agree to it until '79, isn't that correct, sir?

16 A. We had difficulty in finding a cohort that he could
17 study.

18 Q. So, actually in 1979, you agreed to finance the
19 study to pay for the study that Suskind, the Zack-Suskind
20 study took place of the deceased workers associated with the
21 1949 Nitro accident, isn't that correct, sir?

22 A. We didn't pay for his study on that.

23 Q. Well, let me back up, you are correct. Let me back
24 up on that. Actually the study was undertaken by your

1 employee Judith Zack, and the mortality study and she
2 incorporated and brought in Dr. Suskind, isn't that correct,
3 sir?

4 A. Yes, sir.

5 Q. So, Dr. Zack at that time was a full-time paid
6 employee of Monsanto?

7 A. Yes.

8 Q. Wasn't she, sir?

9 A. (indicates affirmatively.)

10 Q. And she, as a matter of fact, wrote up, prepared
11 the original draft article and took it to Dr. Suskind so that
12 he might comment on it and make certain revisions, isn't that
13 correct, sir?

14 A. Yes, sir.

15 Q. And as a matter of fact, the so-called Zack-Suskind
16 study of the mortality people of the deaths associated with
17 this accident was in fact a Judith Zack study which Dr.
18 Suskind gave some input, isn't that correct, sir?

19 A. Yes, he did more than some.

20 Q. Well, we can get to that later, but I've compared
21 her draft with the final draft. Have you done that, Dr.
22 Roush?

23 A. Yes.

24 Q. Compared her first draft with the final draft?

1 A. Yes.

2 Q. All the findings, the basic findings were Judith
3 Zack's?

4 A. Yes.

5 Q. And all that Dr. Suskind did was to add a little
6 prestige to the document, isn't that correct, sir?

7 A. No, it was his idea to do it in the first place, it
8 was his idea to do the study.

9 Q. But Judith Zack did the study?

10 A. But then he defines the cohort, helped to define
11 the cohort that we were unable to do without his help. So we
12 couldn't have got started without goes input.

13 Q. Dr. Roush, I don't want to quarrel with you on the
14 point, but, the cohort were those workers who had a history
15 of being exposed to the accident that occurred in 1949?

16 A. Yes, sir.

17 Q. And that is a very simple definition, isn't it,
18 sir?

19 A. Yes, sir.

20 Q. And you surely didn't need his assistance in
21 arriving at the definition of, we want to study the death
22 rate of the people exposed in that accident, what you do is
23 study the people who were exposed in that accident, that's no
24 big problem, is it, sir?

1 A. That's a simple statement but it's difficult to
2 find the people on whom you are going to do the study.

3 Q. Maybe difficult to find the people but again that's
4 not something Suskind did, that's something Judith Zack did?

5 A. It was his input. His input was the basis that
6 started the definition of that cohort.

7 Q. Dr. Roush, in point of fact, Judith Zack examined
8 the records to find out who was exposed, Dr. Suskind didn't
9 examine those records, did he?

10 A. He sent us the names of those that he saw back at
11 that time that were involved in the accident.

12 Q. Of the 112?

13 A. Not all of them, no.

14 Q. Part sir?

15 A. He started the definition of that cohort.

16 Q. And Judith Zack added names?

17 A. She completed it.

18 Q. Now, insofar as the Suskind morbidity study is
19 concerned, that's the one that human health effects during
20 contaminants of 2,4,5-T manufacturing process published in
21 the Journal of American Medical Association in 1984, you know
22 what I'm talking about?

23 A. Yes, sir.

24 Q. Now, that study was paid for by Monsanto, was it

1 not, sir?

2 A. Yes, sir.

3 Q. And, you paid Suskind, well, you didn't pay him
4 directly or did you pay him directly?

5 A. No, we pay the University.

6 Q. Paid the University of Cincinnati?

7 A. Yes.

8 Q. And the so-called Zack-Gaffey study, that too, was
9 paid for by Monsanto, wasn't it?

10 A. It was done in the department.

11 Q. Well, by Monsanto employees on Monsanto time,
12 dealing with Monsanto workers, correct, sir?

13 A. Yes, sir.

14 Q. And the study on the Krummrich plant workers in
15 1979, that was published in 1980, that too was paid for
16 entirely by Monsanto, wasn't it, sir?

17 A. Which study are we talking about?

18 Q. The study of the Krummrich plant workers?

19 A. Yes.

20 Q. That Dr. Suskind did in 1979?

21 A. That wasn't published.

22 Q. Well, it was published in the sense that the
23 reports were given to Monsanto?

24 A. Oh, we had a report of it, yes.

1 Q. But it wasn't published in any peer review?

2 A. No, it wasn't published.

3 Q. That study was paid for by Monsanto, wasn't it,
4 sir?

5 A. Yes, sir.

6 Q. So, all of the studies dealing with the dates and
7 health of the people, the employees of Monsanto who have been
8 exposed to 2,3,7,8-TCDD, has been in fact paid for by
9 Monsanto, isn't that correct, sir?

10 A. Not completely.

11 Q. Well, all but the morbidity study was paid for
12 completely by Monsanto?

13 A. Yes.

14 Q. And the morbidity study, all of the costs of
15 Suskind paid for, all the examination paid for, all the
16 reports, he sent you a bill, you paid it, isn't that right?

17 A. Yes.

18 Q. Now, Doctor --

19 A. But Dr. Rolls from N.I.H.S. insisted that he
20 contribute as much as we paid for that study.

21 Q. They contributed that to the University of
22 Cincinnati, didn't they?

23 A. Yes, just like we did.

24 Q. Not just like you did because what you did, Dr.

1 Suskind sent you a bill for the examination and his time and
2 you paid that bill, didn't you?

3 A. Yes, sir.

4 Q. Doctor, all of the studies now -- strike that for a
5 moment. You know as head of this department, you know that
6 the Zack-Suskind study, the Zack Gaffey study, and the
7 Suskind morbidity study, all of those things have been
8 published for wide dissemination, don't you, sir?

9 A. Yes, sir.

10 Q. And you know that of the human health effects
11 insofar as 2,3,7,8-TCDD is concerned, is that those documents
12 are nearly the only, might be one or two others, but it
13 certainly covers more people who have been exposed to
14 2,3,7,8-TCDD of any other study with the exception of the
15 Seveso accident, isn't that correct, sir?

16 A. Except for the study of Moses on the same
17 population.

18 Q. Moses and Selikoff on the same population?

19 A. We didn't pay for that.

20 Q. I understand that the union paid for that?

21 A. Yes.

22 Q. The Nitro, the union for the workers at Nitro?

23 A. Steal Workers Union.

24 Q. Correct?

1 A. Yes, sir.

2 Q. But, you were aware of, and you knew all during
3 this time that those studies, if they were published, they
4 would be cited and relied upon by people that are interested
5 in whether or not 2,3,7,8-TCDD has adverse health effects,
6 isn't that correct, sir?

7 A. We did it for that purpose.

8 Q. Yes. Now, along that line, it is your belief, is
9 it not, sir, that acute exposure to 2,3,7,8-TCDD will cause
10 Chloracne and in the long-run basis, that Chloracne is the
11 only adverse human health effect from exposure to
12 2,3,7,8-TCDD?

13 A. Yes.

14 Q. Now, you don't believe, do you, Dr. Roush, that the
15 immune system can be adversely affected in the longer run,
16 you don't believe that cancer can be caused by exposure to
17 2,3,7,8-TCDD in the long run, you don't believe that liver
18 problems can be caused in the long run, you don't believe
19 that porphyrin problems can be caused, you don't believe that
20 any problems can be caused by 2,3,7,8-TCDD on the long-term
21 basis, except Chloracne, isn't that correct?

22 A. Based on my knowledge to date, yes.

23 Q. Sir?

24 A. Based on my knowledge to date.

1 Q. That is also the position of Monsanto, isn't it?

2 A. Yes, sir.

3 Q. And you have used and you have cited those studies
4 that I have referred to as support for the position that you
5 and Monsanto have taken, that is that Chloracne is all the
6 bad stuff that's going to come out of exposure to
7 2,3,7,8-TCDD, isn't that correct, sir?

8 A. That's what those studies would indicate.

9 Q. Yes, and you have seen those studies of Monsanto's
10 being relied upon, and used and cited by other people who are
11 studying health effects of 2,3,7,8-TCDD, you've seen that,
12 haven't you, sir?

13 A. I believe that's right.

14 Q. Now, it becomes important, doesn't it, sir, that if
15 those articles, those articles have become important to start
16 with, haven't they, sir?

17 A. Yes.

18 Q. And it's the center of, or it's the substance of a
19 major part of the printed medical knowledge that we have in
20 this world, if you will, as to the human health effects of
21 exposure to 2,3,7,8-TCDD, isn't that correct, Dr. Roush?

22 A. Yes.

23 Q. Now, all of those studies have been conducted under
24 your supervision, haven't they, sir?

1 A. Yes. Yes.

2 Q. Yes. And it is your belief all during that time,
3 that Chloracne is the only adverse result from dioxin
4 exposure, isn't that correct, sir?

5 A. Is the result of those not before -- my conclusion
6 is the only long-term effects was the result of those studies
7 rather than the basis for the studies.

8 Q. You didn't have that belief then until those
9 studies were completed?

10 A. I had no basis for drawing those conclusions.

11 Q. Now, Doctor, I take it since you are an intelligent
12 man and obviously he had had that since you were influenced
13 to believe that from those studies and the conclusions
14 reached in those studies, you were influenced and you
15 accepted as true the statements made in those studies, didn't
16 you, sir?

17 A. That's the reason we did the studies, so we could
18 believe what we got out of them.

19 Q. Well now, it becomes important, though, the
20 honesty, the ability to accurately interpret the results,
21 that becomes important when you are relying on this study,
22 isn't it?

23 A. It's true of any study.

24 Q. Of any study that's the way it is, you have to rely

1 upon the honesty and integrity of the people that's doing the
2 work, don't you, sir?

3 A. Yes.

4 Q. Now, in this instance, Dr. Roush, in this instance,
5 would you say that Monsanto had a stake in presenting and
6 maintaining a position that Chloracne is the only long-term
7 adverse effect that will come from exposure to 2,3,7,8-TCDD?

8 A. I am sure it would have an influence on what the
9 results were going to be, but remember that in 1977 before we
10 knew about the Sturgeon spill, before there was anything
11 else, Suskind had gone to Seveso and participated as a part
12 of the W.H.O. study of what are the long-term health effects
13 of dioxin and he came from W.H.O. saying to that study see if
14 you can do that study in that population, we did it for
15 Seveso, so we might know the long-term health effects for
16 them, not us.

17 Q. But, that's?

18 A. Wait a minute. At that time we had no knowledge of
19 the long-term health effects, we were through making the
20 Agent Orange, it was a past issue. At that time we had no
21 knowledge of what the effects were going to be and we were
22 going to find so that the people in Seveso wouldn't have to
23 worry, like we worried.

24 Q. Dr. Roush, didn't you know at that time that

1 Monsanto chlorinated phenols had been spread and used
2 throughout the world with a half-life of ten years, that it
3 contained 2,3,7,8-TCDD?

4 A. What chlorinated phenols?

5 Q. 2,4,5-T, manufactured at Nitro, West Virginia,
6 2,4-D manufactured at Sauget, Illinois, Santophen
7 manufactured at Sauget, Illinois, 2,4-dichlorophenol
8 manufactured at Sauget, Illinois, you were aware of those
9 facts, weren't you, sir?

10 MR. HEINEMAN: Are you telling this witness that
11 2,4-D contains 2,3,7,8-TCDD?

12 Q. You are aware of those facts, weren't you?

13 MR. HEINEMAN: Your Honor, I object to that as
14 outright fabrication and Mr. Carr knows it.

15 THE COURT: Objection is overruled.

16 A. When we talk, I don't think of 2,4,5-T as being a
17 chlorinated phenol.

18 Q. You don't?

19 A. No, I think of that as being a distinct one from
20 chlorinated phenols.

21 Q. Distinct what?

22 A. Distinction from our chlorinated phenols as we use
23 them in Monsanto. But 2,4,5-T certainly is has 2,3,7,8,
24 that's quite clear, but don't -- I don't put them all

1 together with the other chlorinated phenols.

2 Q. Doctor, the thrust of my question is that you are
3 aware of the fact -- I'm sorry, Your Honor, we can stop.

4 THE COURT: You can finish that last question.

5 Q. The thrust of my question is that you at Monsanto,
6 are you aware of the fact that your products that may contain
7 2,3,7,8-TCDD had been spread throughout the world, and that
8 is that products may contain 2,3,7,8-TCDD which has a
9 half-life of ten years?

10 A. Yes.

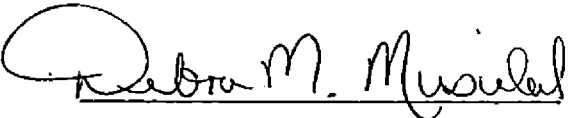
11 THE COURT: All right. Okay. Ladies and
12 gentlemen, we will end the testimony at this time and we will
13 resume again tomorrow morning at 9:30. I would remind you as
14 I do for any overnight break that you are not to read, listen
15 to, or watch anything about this case in particular, or
16 subject matter in general. Thank you for your attention and
17 cooperation. Court is adjourned.

18 COURT ADJOURNED:
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1 STATE OF ILLINOIS)
2 TWENTIETH JUDICIAL CIRCUIT) SS
3 COUNTY OF ST. CLAIR)
4

5 I, DEBRA M. MUSIELAK, certify the foregoing to be a
6 true and accurate transcript of the testimony and proceedings
7 in the above-entitled cause.

8 Dated this 6th day of May, 1985.
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Debra M. Musielak

1 STATE OF ILLINOIS)
2 TWENTIETH JUDICIAL CIRCUIT) SS
3 COUNTY OF ST. CLAIR)
4

5 I, RICHARD P. GOLDENHERSH, one of the Judges in and
6 for the Twentieth Judicial Circuit, do hereby certify that I
7 have examined the aforesaid transcript of proceedings, and
8 certify the foregoing to be a true and accurate transcript of
9 the testimony and proceedings in the above-styled cause.

10 Dated this _____ day of May, 1985.

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HON. RICHARD P. GOLDENHERSH

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