

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

4 FRANCES E. KEMNER, et al.,)

5 Plaintiffs,)

6 v.)

CAUSE NO. 80-L-970

7 MONSANTO COMPANY,)

8 Defendant.)

9
10 REPORT OF PROCEEDINGS

11 Before the HONORABLE RICHARD P. GOLDENHERSH

12 Testimony of Dr. Frank Dost

13 December 17, 1985

14
15
16 APPEARANCES:

17 MR. REX CARR, Attorney at Law, and
18 MR. JEROME SEIGFREID, Attorney at Law,
On behalf of the Plaintiffs;

19 MR. KENNETH HEINEMAN, Attorney at Law, and
20 MR. JOSEPH NASSIF, Attorney at Law,
On behalf of the Defendant.

21
22
23 PATRICIA A. GANDY, CSR, RPR

24 Official Court Reporter

INDEX

WITNESSES:

DR. FRANK DOST

Redirect Examination by Mr. Heineman 14

Recross Examination by Mr. Carr 90

EXHIBITS:

	Marked	Offered	Admitted
Defendant's No. 1326	34		
Defendant's No. 1327	34		

IN CHAMBERS CONFERENCES, Pages 2 and 52

1 BE IT REMEMBERED AND CERTIFIED, that heretofore, on
2 to-wit: December 17, 1985, the matter as hereinbefore set
3 forth came on for hearing before the Honorable Richard P.
4 Goldenhersh, Circuit Judge, and the following was had of
5 record, to-wit:

6 * * * * *

7 (The following proceedings were held in chambers.)

8 THE COURT: I have reviewed the documents, the pleadings
9 that were filed the other day and the reply and the arguments
10 that were made as well as the authorities cited. I am denying
11 the motion, except for those parts that are agreed upon, and due
12 to the nature of this and the extent of it, in the exercise of
13 my discretion in denying it, I am going to submit a memorandum
14 which I hope I can give you tomorrow for the reasons, and make
15 those a matter of record. However, as a practical matter, I'm
16 taking care of these. I note that apparently there is agreement
17 of counsel that certain matters can be testified to by
18 Dr. Kimbrough, certain business records of the CDC, some "factual
19 matters" in the question of her participation or non-participation
20 as far as peer review of Plaintiff's Exhibit 1655. Based on the
21 past history on the track record of these things as to what
22 happens in the courtroom, I want to take a few minutes here, and
23 I mean literally a few, investigating back here what in fact is
24 going to happen if those matters go in front of the jury as far

1 as her testimony is concerned and the question of how long this
2 offer of proof would take, so I have some idea of what to do with
3 this jury and when to bring them back.

4 I also want to find out what in fact these business
5 records are and what these factual matters are so that we
6 don't have to, five minutes into testimony, come back here and
7 fight for a half hour. I would rather do it beforehand rather
8 than in the middle of her testimony. And I also understand as
9 a practical matter she's been told by the people at CDC that she
10 can be here Wednesday and Thursday morning and that's it, is
11 that correct?

12 MR. HEINEMAN: All I know about is Wednesday.

13 THE COURT: Wednesday? Okay, Wednesday, period. So I
14 think the time to take care of these things would be today. And
15 normally I wouldn't do it during jury time, but I need to be
16 able to tell the jury when to come back Wednesday, if at all.
17 So since she's your witness, I suppose that the question ought
18 to be directed to you. What exactly are these business records
19 and what are these matters, and first of all, how long will your--
20 in view of my order, how long will your offer of proof take?

21 MR. HEINEMAN: I would say that the offer of proof would
22 take at least two hours.

23 THE COURT: Okay. It will take two hours?

24 MR. HEINEMAN: On my examination.

1 MR. CARR: That's based upon the subject matter that
2 they've mentioned. I can't envision my cross examination taking
3 less than a day or two, because they are offering her, the proof
4 that they are offering will run the entire gamut of this lawsuit.
5 They're offering opinions on every issue that I know of that
6 others have already testified to in this case, health effects
7 on people, and I see no way that I could allow an offer of proof
8 like this to go in without doing what I would do in ordinary cross
9 examination of a witness and all these issues. So it could be
10 that their offer will be meaningless, that the lady will not
11 say that which they represent, or I assume that she will say,
12 and it may be that I won't have to cross examine at all. But
13 based on what Joe said last night, it was a very extensive shopping
14 list they had of topics that they were going to touch with this
15 lady.

16 THE COURT: Okay, next question. And of course there will
17 be redirect after that, depending upon what goes on in cross.

18 MR. HEINEMAN: Yeah, I would expect so.

19 THE COURT: Okay, next question. What are these business
20 records and how long will that take?

21 MR. HEINEMAN: I haven't seen them all, and maybe Joe
22 will know better than I because he's reviewed them.

23 MR. NASSIF: I've seen them, but some of them we just
24 got which we just got sent to us by her and we are producing what

1 hadn't been produced, most of it had been produced already, we
2 had gotten through the EPA. But there were a few handwritten
3 notes that we are producing today to Mr. Carr. It is not more
4 than a stack like this, but I can't think--the only couple of
5 items that come directly to mind and what I'd like to do is get
6 back to you after the noon hour. We can be a little more expeditious
7 and more specific. Someone else is outlining that testimony while
8 I'm in Court, and it would be better if I got back to you right
9 after lunch and let you know the documents. Don't you think that
10 would be the best way to do it? And we can check with the person
11 working in there.

12 THE COURT: And if you can bring those specific documents
13 and Mr. Carr can look at them and see how quickly this is going
14 to be.

15 MR. NASSIF: But it would be more expeditious than me
16 trying to describe them to you. I might not even be right,
17 that's the crucial thing.

18 THE COURT: All right. What factual matters are you
19 talking about, after we discuss what they are, how long will
20 those take?

21 MR. HEINEMAN: Well, I'm not sure, Judge, on the scope of
22 what the limitation is and what has been permitted in terms of,
23 see, I haven't read--

24 THE COURT: Well, the limitation is basically the only

1 parts that were agreed upon, and because I'm denying, I'm
2 saying in effect if, that those other things that you want to
3 talk about or getting in by an expert by the back door, and,
4 number two, in the exercise of my discretion, I am not allowing
5 you to call her as an expert.

6 In the Plaintiff's response to your motion, or objection
7 to the motion, there were certain matters in Paragraph 3 that
8 it was agreed there was no objection to her testifying to, and
9 under those circumstances, I'm trying to flush out what those
10 are so we have some idea of what we're doing.

11 MR. NASSIF: Can we also provide you a little list of
12 the factual matters at the same time we give you the documents?
13 I think that that will be a little more productive, too. I
14 didn't bring my papers with me.

15 THE COURT: Okay. And then while you're at it, if there
16 is any amplification that needs to be made, any flushing out of
17 what this question of peer review status, on 1665, you can add
18 that in there also. Those were the three matters that were
19 agreed upon according to the objection, and so that would be
20 the scope of your testimony under my ruling, and I need to know
21 what those are, and we have to resolve overall differences back
22 here first, both so that we don't waste our time in there, and
23 also so I know what to do with the jury. So we will meet right
24 after lunch and do that then.

1 MR. NASSIF: That would be the fastest way to do it.
2 We can work on it over lunch.

3 MR. CARR: Excuse me, Judge, I'm sorry.

4 THE COURT: No, that's really all I had.

5 MR. CARR: The next witness will be this Kelly Odneal.
6 I'd like to make a motion in limine consistent with the objections
7 that we made to the past depositions, material that have been read
8 by defendants to date, we do have an evidence deposition of
9 Mr. Odneal, and assuming that they are going to ask the same
10 questions or very nearly the same questions that they did in
11 this deposition, I would like to move that they be prevented
12 from asking questions relating to whether or not the Sturgeon
13 High School or school was a winner of State tournaments or
14 play-offs or the number of games they won or lost in any given
15 year, or their athletic record in any given year as not being
16 material to any of the issues in this case, would tend to
17 prejudice the jury and might tend to make the jury think that
18 the plaintiffs in this case who may have been on the team were
19 in excellent physical condition and that nothing was wrong
20 with them simply because the team was a good team or the other
21 way around. I see no relevance, there would be no relevance if
22 it was the world's worst team. I don't think the plaintiffs
23 would be allowed to show the loss of record in the year in order
24 to have any bearing on the health of one of the plaintiffs.

1 The other area that I would ask the Court limit would be the
2 questions that the Court has consistently prevented them from
3 asking, from reading is did Tim Bowne ever claim to you of being
4 ill during the practice of any sport? Did Tim Bowne ever appear
5 to be ill? Did Tim Bowne ever clutch or grab his abdomen?
6 Questions of that sort which are asked throughout this deposition
7 I would object to, throughout the deposition, not just with
8 Tim Bowne, but Doug Bowne and Tim Robinson and Greg Rush. Also
9 the questions about did their parents ever send any notes to
10 school, or did they hear from any physicians, the same questions
11 that we have previously objected to and the Court has previously
12 sustained objections. We would ask the Court limit the defendant
13 here with this witness to the same extent.

14 THE COURT: Has his evidence deposition been read yet?

15 MR. CARR: It has not.

16 THE COURT: What's your reply to the motion in limine?

17 MR. HEINEMAN: Well, I haven't heard the grounds for
18 the second aspect. The first one he stated it was irrelevant,
19 the second one he said questions about complaints of illness,
20 appearance of illness, clutching or grabbing abdomen, parents
21 send notes to school and hear from physicians. Those were the
22 items that he listed.

23 MR. CARR: Same objection we made before in fifteen
24 depositions that have been gone through.

1 MR. HEINEMAN: Excuse me if I don't remember those
2 objections at the present time since it has been quite a while
3 since we have gone over those. What are the objections to those?

4 MR. CARR: Much of it was immateriality, some of it was
5 ability to be a health expert to determine whether or not
6 somebody was or was not in ill health. Much of it was it creates
7 an issue where there is no issue, did the parent send a note. It
8 makes a suggestion that the parent should have sent a note. Did
9 he clutch his stomach in pain? It suggests that perhaps he
10 should have clutched his stomach in pain, all that kind of
11 objection that we've made with the same kind of--exactly the
12 same questions I might say.

13 MR. HEINEMAN: Well, your Honor, first of all, whether
14 or not the school team was a winner or the athletic record in
15 any particular year, we believe is relevant in terms of the
16 contribution made by particular plaintiffs to that effort, not
17 in and of itself an important matter, but the fact that two of
18 these plaintiffs have participated actively in those athletic
19 endeavors and were very dedicated athletes, that's certainly
20 true of the baseball team. There were others that were involved
21 in the basketball program and baseball, I am thinking of Mike
22 Burks and Tim Bowne, who were excellent athletes and whose
23 participation in the program was very instrumental in the success
24 of the team.

1 The second aspect is that--and I am not sure of the extent
2 to which Mr. Carr is saying, is requesting that this evidence be
3 limited--

4 THE COURT: Well, I think you can figure out the extent
5 from the evidence deposition, because I think it is one of them
6 that we went through the last time. We just didn't get to it
7 as far as reading.

8 MR. HEINEMAN: What this witness is prepared to say has
9 to do with the fact that he was able to observe on a daily basis
10 each of the individual plaintiffs whom he will discuss, that he
11 observed them in the locker room stark naked, therefore could
12 see whether or not they had rashes, and observed them virtually
13 on a daily basis. He observed their demeanor, observed their--
14 whether they were irritable or not irritable, whether they were
15 able physically to perform the very rigorous training and exercises
16 that he put them through, whether in fact they complained, some
17 of them have testified directly as to things they told him which
18 he is able to refute. Clearly that's relevant.

19 MR. CARR: It most certainly is, if you ask that question,
20 if you single out the person that--and there's testimony in this
21 case that Tim Bowne said he complained to the coach so and so
22 and such and such a day, they had bad headache or bad stomach
23 ache. I think you have every right to ask the Court did Tim
24 Bowne make such a statement, but that's not what I am objecting to.

1 I'm objecting to these general questions, did he ever make a
2 complaint to you of pain or did you ever see him having a
3 persistent or continuing cold? Did you observe his hands and
4 arms? Did you see blotches on his hands and arms? We've never
5 claimed that Tim Bowne had blotches on his hands and arms.
6 We never claimed that he had a--oh, I'm sorry, Jerry reminds
7 me and I had forgotten that Tim did have a rash on his arms at
8 one time, so that would be relevant and material, but it would
9 have to be things like that that would be relevant and material.

10 MR. HEINEMAN: Well, clearly, Judge, it is relevant
11 considering the closeness of the relationship between Coach
12 Odneal and these athletes and the kids he had in his physical
13 education classes day after day that he was able, first of all,
14 he was a person who had a confidential relationship with these
15 young people, he was a person who saw them virtually daily, a
16 person who was able to observe their behavior to whom they
17 complained when they had a complaint.

18 MR. CARR: Let me interrupt. I am not objecting to those
19 things that you described here. He can describe Tim Bowne as a
20 wonderful athlete, well-trained and like he is on Page 40, that
21 he did the sprinting with the rest of the athletes and did all
22 those things, that's not the point of my objection, Mr. Haineman.

23 MR. HEINEMAN: Well, what I am getting to is that in
24 the course of his observations to that nature, if he is able

1 to describe what an excellent athlete the young man is, he is
2 also able to describe whether the young man ever complained to
3 him of having headaches, whether he ever complained to him of
4 having illnesses, whether the young man was absent from school,
5 the school records have certainly been relevant.

6 MR. CARR: We are not quarreling with that, again,
7 you miss the point.

8 THE COURT: Okay, I think I've heard all this out of
9 the evidence depositions, Odneal has been one that has been
10 gone through in chambers, we just hadn't gotten to it in reading
11 in the courtroom.

12 MR. CARR: There's been other coaches that we have gone
13 through.

14 THE COURT: I thought his had been.

15 MR. CARR: But this particular one, I don't think we had.

16 MR. NASSIF: He wasn't on our list, Judge, as those 15.

17 THE COURT: My mistake. I am granting the motion in
18 limine to the same extent and on the same basis and covering the
19 same things as my rulings have been in the--going through the
20 evidence depositions, I think they have been consistent, I
21 think they're fairly well delineated, we have gone through about
22 12 or 15 depositions in preparation for that other day that we
23 spent reading evidence depositions, and I don't think it is
24 really hard to divine what the limits are out of those and to

1 that extent I am granting the motion in limine and would expect
2 you to be governed accordingly.

3 MR. HEINEMAN: All right. Now, as I understand it, what
4 Mr. Carr is not objecting to is in the case of a particular
5 plaintiff when there's been evidence offered by the plaintiffs
6 with respect to this particular person, he had this, that, and
7 the other thing, or he complained to Carnow of this, that, or
8 the other thing.

9 MR. CARR: No, no, no, that he complained to the rash, if
10 he had a rash on his arm. I think it is permissible or proper
11 for you to ask did you ever see him with a rash on his arm
12 after having first shown that he had an opportunity to see it
13 during that particular point in time that he claimed he had a
14 rash on his arm, not at any time in general, but at that
15 particular time. He said the rash would come and go, and as
16 far as the other complaints are concerned, there had to be some
17 evidence that he complained to the coach about a particular problem
18 before you can ask him did he ever complain. That makes a
19 suggestion, if you were here you remember that, that makes a
20 suggestion that he should have complained.

21 MR. HEINEMAN: Well, it seems obvious to me, Judge,
22 that rather than to the admissibility, it would certainly go to
23 the weight of the evidence, that if he was indeed suffering from
24 these problems, that he would complain.

1 THE COURT: I'm going to cut you off. All this has been
2 gone through a number of times on the arguments of these
3 depositions. I'll incorporate both the arguments of defendants
4 and plaintiffs on it. It has been ruled on, I think I'm right,
5 I think my rulings are consistent. I'm going to apply that policy
6 now, and I think it was accurately stated, so be governed accordingly
7 when you talk to your witness and interrogate on the stand. We
8 will break now and start up at ten o'clock.

9 (The following proceedings were held in open Court.)

10 THE COURT: Good morning.

11 MR. CARR: Your Honor, we have no more questions of
12 Dr. Dost.

13 THE COURT: Mr. Heineman?

14 REDIRECT EXAMINATION

15 BY MR. HEINEMAN

16 Q Dr. Dost, with respect to this exhibit, this Plaintiff's
17 Exhibit 1646A here, sir, referring to the Poiger and Schlatter
18 exhibit which I think--do you still have that before you?

19 A No, sir, there are none of them left here.

20 Q Let me hand you again Plaintiff's Exhibit 1646, the
21 Poiger and Schlatter abstract. And again referring to 1646A,
22 what were the circumstances or the conditions, if any, under which
23 you would agree that the half life elimination from the body
24 was at least 4.95 years?

1 A It would have to be a situation in which there was no
2 TCDD reservoir--two circumstances, one in which there is no
3 TCDD in the body prior to the administration of the labeled
4 material, and then no intake of TCDD following that time. Then
5 it would provide--the information that was provided would provide
6 a reasonable estimate.

7 Q Now, why is that, sir?

8 A Well, because any material that comes in after the
9 administration of the labeled material will dilute it. In other
10 words, there will be a lower--I hope I can make this understood.
11 What we're dealing with here is TCDD in some physical amount,
12 105 nanograms. Then there is a specific amount of radioactivity
13 in that TCDD, so there are actually two things that can be
14 measured, the chemical itself and the radioactivity that went
15 in with it.

16 Q Now, excuse me, the radioactivity, sir, is that
17 something that was added or naturally occurring?

18 A That is something--that TCDD molecule was used to label
19 is synthesized for, specifically for the purpose. In other
20 words, and I believe that I made some mention of this earlier
21 in other testimony, that organic chemists can synthesize TCDD
22 with radioactive hydrogen on the ring.

23 Q So radioactivity, would that have anything to do with
24 naturally occurring TCDD?

1 A No, sir, it would not, no, sir. The assumption is, and
2 it is very strongly supported, that when you use a labeled molecule
3 like this, it is very, very slightly different. The mass of
4 that hydrogen is three instead of one, as normal hydrogen would
5 be. Nonetheless, the molecule will behave in the body precisely
6 as an unlabeled molecule so that there is from a biological
7 standpoint no difference between the labeled and the unlabeled
8 molecule. The difference is that the label enables one to
9 track the molecule.

10 Now, there is a certain amount of radioactivity and a
11 certain amount of the chemical present. If additional TCDD is
12 brought into the body, and that apparently is a circumstance
13 with most of us, given that most of the fat biopsies have shown
14 that there is at least some TCDD in our fat. If additional
15 TCDD comes in, then there would be a dilution effect and it
16 would tend, even though the material is moving throughout the
17 body, it comes in and it is being processed and it moves out at
18 some rate, it would tend to dilute the labeled material and it
19 would tend to stay in the body because it's being diluted more
20 and more and more. It is like if you put--if you have a sink full
21 of water and you put ink into it and you can see that it has a
22 blue color. If you pull the stopper, the water and the ink all
23 go out at once. If you instead leave the stopper in and turn
24 one of the faucets on and the ink and the water all go out through

1 the overflow, it takes a very long time to get rid of the blue
2 color, all right? The same thing occurs here if TCDD is
3 entering the body after the label has been introduced. This is
4 why I was concerned in my remarks yesterday about the specific
5 activity of the TCDD in the fat. They took fat biopsies, it would
6 be very important to know that the amount of radioactivity
7 relative to the amount of TCDD remained the same. That would
8 indicate that there was no additional TCDD coming into this
9 individual.

10 On the other hand, if there was a difference, then it
11 would be possible to construct a mathematical model that would
12 account for this influx and it would be a much more complex
13 process, but one could still obtain information that would be
14 indicative of a half life.

15 Q What would be the effect on the calculation of a half
16 life of the dilution which you are describing?

17 A Well, it would make it seem longer.

18 Q And why is that?

19 A Well, because the labeled material that's in the body is
20 being continually diluted and it is staying back, it is not
21 coming out, it is not coming out as rapidly. I would have to go
22 back to the analogy of the ink in the sink, where if there was
23 no dilution with incoming water, the ink and the water would leave
24 at the same rate if you pulled the plug, whereas if you left the

1 plug in and let it go out through the overflow, the sink continually
2 mixing with the incoming water and the color becomes lighter and
3 lighter and lighter and lighter and lighter until eventually there
4 is no ink left. But at the same time you will have processed--
5 there will have been a much larger amount of water going out,
6 but you have looked at the same amount of label, in this case,
7 ink.

8 Q All right. Now, what do we know, sir, in terms of
9 whether or not there is incoming TCDD or an equilibrium, so to
10 speak, in the population as a whole?

11 A In the population as a whole, it appears that there is
12 an incoming, that is that there is widespread low level exposure
13 to TCDDs, exposure in the sense that we are in contact with some
14 of the material and we take it up and dispose of it, so there is
15 TCDD coming into the body of a very large portion of the population,
16 certainly a large enough portion of the population to make it
17 necessary to learn that piece of information in the subject. I
18 suspect that before this experiment is through they will have
19 accomplished that.

20 Q Now, what does the term "background level" have to do
21 with what you are describing?

22 A Background level is the amount, is the level that we are
23 carrying with us on the average. If we used--if we use the term
24 both with respect to radioactivity, we all have a very, very small

1 amount of this kind of radioactivity because it occurs naturally,
2 not as TCDD, but if you go out into the sea and take water or
3 into the Mississippi River and take water, you will find a small
4 amount of hydrogen-3 tritium, and we all have a little bit of
5 that in our bodies, very, very small, but it is there nonetheless.
6 That's a background level, probably small enough that we don't
7 have to correct for it.

8 The TCDD that we carry, if it were to amount to five
9 parts per trillion in fat, my recollection, well, if there is
10 25 kilograms of fat in this amount of TCDD, all went into that
11 fat, the concentration of this material would be four parts
12 per trillion. And that's really--if it was a substance that
13 could be administered--

14 Q By "this material", you are referring to this--

15 A I am referring to the TCDD, the total TCDD unlabeled.

16 Q In this experiment?

17 A In this experiment, approximately a hundred nanograms
18 if it went into 25 kilograms of fat would be something on the
19 order of four parts per trillion in that fat. That isn't a
20 large enough additional amount to make the body burden that's
21 already there or that may already be there negligible. You see,
22 if it were an experiment with a compound that is never found
23 in the body, then none of this would need to be taken into
24 account, or if it was an experiment with a substance that is

1 found in low levels in the body but that we could give, let's
2 say, ten or fifty times more so that the amount already in the
3 body is just negligible. Again, the calculation would be very,
4 very straightforward.

5 Q Now, given what you have just explained with respect to
6 background level, what does that do to the accuracy of this
7 half life figure?

8 A If there was no additional material coming in, and if
9 the material that was added mixed perfectly with all of the TCDD
10 that's in the body, then it would be an accurate representation
11 of what's happening to the TCDD. But it would depend on perfect
12 mixing, which is really unlikely. It is hard to tell over 125
13 days, but TCDD as it comes in would more than likely preferentially
14 move toward the liver. How long it would take to clear the
15 liver and to go into equilibrium with all of the other TCDD in the
16 body, in other words, become completely diluted in it, we would
17 be unable to tell the difference between TCDD that was already
18 there and TCDD that we have just brought in. I don't know how
19 long that would take, but until that has taken place and unless
20 there is no additional TCDD coming in, then those are the
21 conditions that it would take in order to be certain that this
22 is a reliable figure.

23 Q But if there is additional TCDD coming in, sir, and do
24 you have an opinion as to whether there would be?

1 A I think there would be, because of the experience with
2 all of the samples that have been taken for determining TCDD
3 levels in fat, most such samples have been found to contain
4 detectible TCDD.

5 Q All right. Now, that being the case, what would that
6 fact do to the accuracy of this half life?

7 A Well, it would make it--it would make it too long. In
8 other words, the apparent half life by this, with this amount of
9 information is, would be longer than the true half life.

10 Q Longer than the--

11 A True half time.

12 Q All right, sir. Now, you talked about right at the end
13 of the day, Mr. Carr was talking to you about diatomaceous earth
14 and bentonite, do you recall that?

15 A Yes, I do.

16 Q Now, what is the difference between diatomaceous earth
17 and bentonite?

18 A I made an error when I characterized bentonite as
19 diatomaceous earth. They are both silicate compounds, diatomaceous
20 earth is formed as the skeleton more or less of one-celled
21 organisms that live in the sea and they settle to the bottom
22 and these deposits are eventually used, and that's the material
23 that I kept in my laboratory as an adsorbent. Bentonite is
24 aluminum silicate and it is a substance that has a considerable

1 attraction for water and it swells when it is hydrated, when it
2 is brought into contact with water. And that would make it as
3 it was described as a sealer and it would be a sealer, it goes
4 into the crevices and then swells.

5 Q To do what to the interstitial spaces?

6 A Well, it fills them. It would fill them, occupy all
7 of the spaces.

8 Q All right, sir. I'd like to direct your attention again
9 to the Moses study which Mr. Carr asked you about, Defendant's
10 Exhibit 908. Let me hand to you, sir, Defendant's Exhibit 908.
11 And what is the effect, in your opinion, of that study, the
12 Moses study at Nitro on the dose response principle?

13 A Well, I see no reason, no way that it does not conform
14 to a dose response relationship. It conforms, I think, very
15 clearly.

16 Q Now, there was a chart on Page 171 that Mr. Carr directed
17 your attention to, do you recall that, sir?

18 A Yes.

19 Q Now, let's make sure that we are talking about the same
20 chart. Yes, that's the one. Now, the chart on Page 171, does
21 that chart reflect anything with respect to the dose response
22 principle?

23 A Well, it shows a very--it shows a clear relationship
24 between, well, to begin with we have a description here of exposure

1 levels that are, I believe, based for this purpose on the recall
2 by the worker of the job assignment that they had, keep in mind
3 that this study was done some years after the workers had been
4 working in this process. And there is a clear relationship
5 between their recall of their job assignment and the expected
6 exposure to 2,4,5-T in that job assignment. There is a clear
7 relationship in terms of the chloracne incidence that was--or,
8 excuse me--a relationship between the people, the number of
9 people who had never had chloracne. In other words, where there
10 was no exposure, 97 percent of the people never had chloracne.
11 Minimal exposure, 64 percent. Moderate exposure, 49. Heavy
12 exposure, 24. In terms of chloracne, that makes very good
13 sense. There is a dose response with respect to current
14 chloracne, the people who were supposedly had heavy exposure
15 had 55, or 55 percent of them had chloracne. Those who had
16 moderate exposure, 24 percent had chloracne. Minimal exposure,
17 16 percent, 3 percent in those who had no exposure at least in
18 terms of this definition of exposure.

19 Q Now, sir, why do you say "supposedly had exposure"?

20 A Well, because they are depending on information provided
21 by the workers as they described their job assignments when they
22 were working in the plant.

23 Q Now, I'd like to direct your attention if I may to Page 170
24 of the exhibit. Do you have it there, sir?

1 A Yes.

2 Q The first paragraph at the top of the page, what does
3 that paragraph describe, sir?

4 A Should I read it?

5 Q If you could just tell us what it describes.

6 A Well, it says that they consider that chloracne is
7 generally considered to be a reliable indicator of heavy dioxin
8 exposure, so they decided as they did this study, they decided
9 to use chloracne as a surrogate or rather as an indicator for
10 exposure. In other words, they would use the status of these
11 individuals in terms of the presence or absence of chloracne
12 or the presence of chloracne in their history as a means of
13 saying either exposed or not exposed. And then they have a
14 parenthetical sentence here which says, "It is recognized that
15 those without chloracne but with appropriate work exposure
16 history might also have had TCDD exposure and were not therefore
17 unexposed controls." So they recognized that there is a little
18 bit of slippage in that definition that they use.

19 Q Now, do they--does that sentence conclude that they
20 were exposed, the last one you just read?

21 A No, it doesn't conclude that they were exposed. It
22 says that they might also have had TCDD exposure, they might have
23 had it.

24 Q And those, are those people that have work exposure

1 history might have TCDD exposure?

2 A That's their statement, yes.

3 Q Now, in light of that paragraph, sir, does in your
4 opinion, does the Moses article disprove or disregard or negate
5 in any way the dose response relationship?

6 A No, sir.

7 Q When Mr. Carr was discussing with you yesterday, sir,
8 this study and with reference to Dr. Carnow's testimony, do you
9 recall that, sir?

10 A Yes.

11 Q Now, did you suggest, did you ask something about needing
12 a general population for comparison?

13 A I recall something of that sort, yes.

14 Q All right. Would you explain to the jury what you
15 meant and why you made that suggestion?

16 A Well, if I were to see data such as is reported here, it
17 would also be very useful to compare it with other people who
18 live in the same general area who do not have any exposure to
19 the work exposure in this plant. In other words, are these people,
20 are the people in the plant different from the people who live
21 five miles away, but live in the same general environment. In
22 other words, is there something unique about the plant as well as
23 is there possibly something unique about certain conditions in
24 the plant as distinguished from other conditions in the plant.

1 So it is really necessary in order to tell whether there is an
2 effect on the people in the plant in general, it is necessary
3 to compare them with if we are talking about Nitro, it would
4 be very useful to compare them with people who live in the
5 Kanawha Valley but have no association with the plant or with
6 the chemical industry, for that matter.

7 Q Now, Dr. Dost, in such a connection, if you were to
8 observe certain effects among people most heavily exposed and
9 there would not be statistical significant difference between
10 those and the people who were not heavily exposed, what would
11 that lead you to believe with respect to the dose response
12 relationship?

13 A Well, with that information, I would have to conclude
14 that a threshold had not been reached with those conditions.
15 In other words, there was not sufficient exposure in either
16 group to be responsible for those, for those effects.

17 Q Now, if you find that among the people that are working
18 inside the plant, what does that principle tell you with respect
19 to what you would find among a group outside the plant who had
20 never been involved in the work environment at all?

21 A Well, this information as it stands would not tell me
22 anything about that, but if I saw that the people outside the
23 plant had the same occurrence of these conditions, that is that
24 these people were no different from the people on the outside, I

1 would have to conclude that there were no conditions in the
2 plant that were producing these effects.

3 Q And in that connection, sir, I'd like to direct your
4 attention to Page 178, and the second to the last paragraph on
5 the page, do you see that, sir?

6 A Yes.

7 Q With respect to cardiovascular disease, what does that
8 information tell you?

9 A It says that, it speaks of the mortality study that was
10 conducted at the plant and it describes--I'll just read, "It was
11 stated as of 163 deaths in 884 workers at the plant from 1955 to
12 1977 a subgroup of 58 workers with 2,4,5-T exposure documented
13 by company records had a higher observed rate of coronary heart
14 disease mortality than expected from United States general
15 population," that's general population death rates. Now, that
16 refers to statistics that arise from across the entire nation.
17 Although the difference was not statistically significant,
18 mortality from cardiovascular disease is known to be higher
19 than national rates in the Kanawha Valley of West Virginia
20 where the plant is located. And that's data that is referenced
21 from the study that they refer to is Zack, and I believe the
22 reference has been left out. The other, the Kanawha Valley
23 information is derived from the State of West Virginia Department
24 of Health study.

1 Q And in connection with what we have been talking about,
2 what does that tell you with respect to the causation of heart
3 disease, cardiovascular disease?

4 A Well, there is something intrinsic in that region that
5 results, and who knows what it might be, that there is something
6 characteristic of that region or the way the people live in the
7 region. I have no way of knowing what that characteristic might
8 be, that for some reason gives rise to a higher frequency of
9 cardiovascular disease in that general region.

10 Q Now, sir, if it is not statistically significant within
11 the plant, and within the plant it is about the same as it is
12 in the Kanawha Valley, based upon the dose response relationship,
13 does that suggest to you that the people in the Kanawha Valley--

14 MR. CARR: Objection, your Honor, leading.

15 THE COURT: Objection sustained. Please rephrase it.

16 Q What does that suggest to you, sir, with respect to
17 whether or not the plant is causing the increase in cardiovascular
18 disease?

19 A Well, if the cardiovascular disease incidence of the plant
20 workers is similar to that of people in the general area, one
21 would have to assume that the plant is not a causative factor.

22 Q Why is that, sir?

23 A Well, because the same--if that comparison is in fact
24 the same, then whatever is responsible for the increased incidence

1 in the region is affecting all of the people, and if it is
2 affecting all of the people, then it certainly isn't going to
3 arise from the plant that most of the people are not associated
4 with or involved with.

5 Q Why is that?

6 A Well, it is because, of course, I have no idea what the
7 causes are, but the people in the plant and the people who are not
8 involved with the plant have some similar experience that is outside
9 the plant.

10 Q If you were to assume, sir, that that similar experience
11 is exposure to what is in the plant, would you expect the rates
12 of incidence to be the same inside and outside?

13 A I'm not sure I understand, because the people outside
14 the plant that are not around the plant at all are not exposed
15 to material that the people inside the plant are.

16 Q Now, I'd like to hand you Plaintiff's Exhibit 1665. Mr. Carr--
17 do you recall Mr. Carr directed your attention to a couple of--

18 A Yes, sir.

19 Q --excerpts from this? Particularly Page 8-48. Do you
20 recall that, sir?

21 A Yes.

22 Q Now, do you recall Mr. Carr questioning you about kidney
23 renal disorder?

24 A Yes.

1 Q In connection with that?

2 A Yes.

3 Q Would you tell us what that portion that he read, that
4 you and he read together yesterday means and whether it has any
5 connection with the kidney renal disorder?

6 A As I recall, what we read was, "After a six-month
7 recovery period, the porphyrin level in animals exposed to a
8 microgram per kilogram a week was still a hundred-fold higher
9 than values in the control group. A similar pattern was observed
10 for urinary excretion of uroporphyrin." What that means is that
11 they were in this experiment measuring porphyrin levels in the
12 liver and they were measuring the excretion of porphyrin in the
13 urine, and so what they are saying is that porphyrin levels in
14 the liver are still high and that porphyrins, uroporphyrin, is
15 still being excreted at a high level through the kidney.

16 Q Does that have anything to do with kidney or renal
17 disorder, sir?

18 A No, sir, it does not. The kidney is functioning very
19 nicely if it will take care of that material.

20 Q Now, what mammalian species are being referred to here?

21 A This work was done in rats.

22 Q Now, sir, do you remember Mr. Carr questioning you about
23 the isomers, the tetra isomers of dioxin?

24 A Yes.

1 Q And particularly in connection with the industrial
2 accidents, do you remember that, sir?

3 A Yes.

4 Q And Seveso was one that he talked about. Now, what is
5 the chemistry of the manufacture of 2,4,5-T?

6 A Well, it requires the formation of the 2,4-Trichlorophenol,
7 which is made by hydrolizing tetrachlorobenzene, which means
8 taking off a chlorine and putting a hydroxyl group on. And then
9 the trichlorophenol is further processed to make the trichloro--the
10 2,4,5-Trichlorophenoxyacetic acid.

11 Q Now, maybe I misunderstood you, I thought you said
12 2,4-Trichlorophenol.

13 A You make 2,4-Trichlorophenol--

14 MR. CARR: 2,4,5.

15 A Thank you, sir. 2,4,5-Trichlorophenol in this process by
16 taking a chlorine off a tetrachlorobenzene and adding a hydroxyl.

17 Q Now, with respect to Seveso, or Seveso, however you want
18 to pronounce it, was chloracne found?

19 A Yes, yes.

20 Q All right. Are any tetra isomers of dioxin known to
21 cause chloracne other than 2,3,7,8?

22 A I don't believe so.

23 Q Based upon the chemistry of 2,4,5-T manufacture, which--is
24 there any particular isomer that would be expected of dioxin to be

1 formed?

2 A Oh, yes.

3 Q And what is that, sir?

4 A It would be the 2,3,7,8 isomer.

5 Q Let me hand you Defendant's Exhibit 1148, which Mr. Carr
6 had asked you about yesterday. Now, this document, sir, if you
7 look at Page 1, first of all, I'm sure that the jury is likely
8 not to recall the number of this exhibit, what study is this,
9 1148?

10 A This is a report presented at a meeting in April of 1984
11 by Raymond Freeman and Jerry Schroy. It is called "Environmental
12 Mobility of Dioxins".

13 Q And does it identify the isomer of dioxin at Times
14 Beach, sir?

15 A Yes.

16 Q And what is that, sir?

17 A It is the 2,3,7,8 isomer.

18 Q Now, I'd like to direct your attention to the questioning
19 that Mr. Carr did of you yesterday relating to the DDT versus
20 TCDD volatility question. Do you recall that?

21 A Yes.

22 Q And whether you used a figure of one part per million
23 of dioxin in the 2,4,5-T.

24 A Yes.

1 Q Do you recall that, sir?

2 A Yes, I do.

3 Q Now, if in fact you were to use a figure of 55 parts per
4 million of dioxin in 2,4,5-T, rather than one, would it make any
5 difference, any appreciable difference in the comparison between
6 TCDD and DDT in terms of worldwide distribution?

7 A No, sir, I don't really think it would.

8 Q And why not, sir?

9 A Well, the TCDD in 2,4,5-T is subject to photodegradation, both
10 while it is accompanied by the 2,4,5-T, and because 2,4,5-T
11 would be an effective proton donor or hydrogen donor. But also
12 when it comes to rest on the surface of the soil, plants and so
13 forth, it continues to be subject to photodegradation, and the
14 amounts that might remain intact are going to reflect a vastly
15 lower quantity than the original contamination would suggest.
16 The one part per million that I used also was keeping in mind
17 the later history of 2,4,5-T in which the contamination levels
18 ran from a tenth of a part per million down to none detectible
19 levels as well, so what I was trying to do was to pick a single
20 figure that would fall, that would represent some median
21 concentration. I recognize that one part per million is much
22 less than 55, but there were very large amounts of material made
23 at the very low concentrations as well, but it is primarily
24 photodegradation of the TCDD that is responsible, plus the fact

1 that TCDD, if volatility is really a factor, is vastly less
2 volatile than DDT.

3 Q Now, I'd like to direct your attention next to the
4 questioning of you about Lysol and Santophen, whether there is
5 dioxin in a Lysol spray can. Do you remember that, sir?

6 A Yes.

7 Q And the discussion of Mr. Carr asking you about the Lysol
8 being used in the nursery and that sort of thing.

9 A Yes.

10 Q And particularly the spray can. Do you remember that?

11 A Yes.

12 (Defendant's Exhibit 1326 and 1327 were marked
13 for identification.)

14 Q Let me hand you what's been marked as Defendant's Exhibit
15 1326, sir. Would you identify that for me, please?

16 A This is a Lysol brand disinfectant spray. It kills
17 household germs, mold and mildew, 360 uses.

18 Q All right, sir, what is the active ingredient in that
19 material?

20 A It is ortho-phenylphenol, .1 percent.

21 Q Ortho-phenylphenol?

22 A Yes.

23 Q I'd like you to assume, sir, that there is testimony in
24 the case that Santophen is actually orthobenzo-para-chlorophenol,

1 all right, sir?

2 A Yes.

3 Q Is there any Santophen or orthobenzo-para-chlorophenol
4 in that package?

5 A No. This material on the label is not Santophen, is not
6 that product that you identified, that chemical.

7 Q Now, let me hand you next what's been marked as Defendant's
8 Exhibit 1326. Would you identify that for me, please, sir?

9 A Well, this is a Lysol brand disinfectant bathroom cleaner
10 for cleaning basins, tubs, tiles and so forth.

11 Q Now, that's a spray of sorts, is it not, sir?

12 A Yes, this is one of these things that you foam on a
13 surface and leave it for a while, I think, yeah.

14 Q All right. Now, what's the active ingredient in that
15 material?

16 A There are several quaternary compounds, quaternary
17 ammonium chlorides and a substance that is a kelator, EDTA, which
18 is a substance that will trap metal, atoms of metal. These are
19 quaternary ammoniums are a form of detergent.

20 Q Quaternary ammonium?

21 A Yes.

22 Q I'd like you to assume, sir, that there's been testimony
23 in this case that Lehn & Fink used another material in their
24 Lysol known as quats not made by Monsanto Company. Would you

1 assume that, sir?

2 A Yes.

3 Q Is there any relationship between that term and what you
4 have just referred to there as the active ingredient?

5 A Well, the quat is a slang term for quaternary ammonium
6 compounds, it is a very, very general nickname.

7 Q Now, based upon what you observed there, sir, would it
8 be accurate that, to state that there is dioxin in spray cans of
9 Lysol being used all over the country in every household around
10 the country?

11 A Not in these products.

12 Q Now, Dr. Dost, you were--

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

15 MR. HEINEMAN: Oh, sure, Judge. I didn't notice the
16 time.

17 THE COURT: Ladies and gentlemen, we will take a short
18 recess at this time. I forgot to mention earlier, I wanted to
19 apologize for us starting so late this morning, but it has
20 occurred many times before. There are matters that have to be
21 taken up outside the presence of the jury and we had one that took
22 up a little time. We will take a recess at this time. I would
23 remind you that you are not to discuss this matter among
24 yourselves or with anyone outside the jury panel or form any

1 conclusions or opinions about the matters on trial. The Court
2 is in a short recess.

3 (At this time, Court was in recess.)

4 BY MR. HEINEMAN:

5 Q Dr. Dost, I'd like to direct your attention to yesterday's
6 examination by Mr. Carr in connection with dioxin in the vapor
7 phase and the Schroy studies and that general subject matter,
8 all right, sir? First of all, in connection with dioxin itself,
9 2,3,7,8 TCDD, is that a solid material?

10 A When it is in the pure form, at room temperature, it is
11 in sort of a crystalline form, waxy crystals, if I understand.
12 I have never seen it with my own eyes, but that's how it is
13 described, I believe.

14 Q Now, in the discussions Mr. Carr had with you with respect
15 to it becoming a vapor, going into a vapor phase, I wonder if you
16 would explain to the jury what happens to molecules when they go
17 from a solid or a liquid phase into a vapor phase and whether the
18 molecule itself changes.

19 A The molecule doesn't change, the solid material is an
20 accumulation, if you will, of the molecules. And the reason
21 that it takes on this more or less crystalline form is because
22 the molecules tend to be aligned. They stack, if you will, when
23 they are together. When they volatilize away, and this is true
24 of any substance, when they--we are really talking about single

1 molecules that emerge into the atmosphere if we have nothing
2 else for them to attach to, so that they are single molecules
3 of in this case TCDD, just as there would be single molecules of
4 oxygen, which is really two oxygen atoms bound together or nitrogen
5 in this room, two nitrogen atoms bound together. These are free,
6 separate molecules of the substance and they behave differently
7 only in the sense that they are free to move rather than being
8 tied up either in a solution or in the solid or liquid pure
9 material.

10 Q What are the factors that change the dioxin molecules
11 from a solid to a gaseous or vapor state?

12 A Well, there are a number of factors, the tendency for the
13 molecule to separate from the body of material that it's originally
14 part of, and as I have pointed out a number of times, all
15 substances have at least some tendency for molecules to
16 separate and go and diffuse away. Part of it depends on the
17 capacity of the medium into which it is being lost. Dioxin,
18 TCDD, is very--has very, very limited solubility in water, and
19 if you were to put solid TCDD into water, only a very, very
20 small amount of it would go into solution. There are things that
21 we use around the household that don't go into solution very
22 easily, and you put too much into the water and only part of it
23 would go into solution, the rest of it wouldn't dissolve. The
24 same thing applies in the atmosphere. The atmosphere has the

1 capacity to hold only a certain amount of a volatile material,
2 and that amount varies depending on the substance. You can just
3 get only so much water vapor into the atmosphere or so much
4 gasoline vapor into the atmosphere, and beyond that, it all
5 comes back down. In the case of water, when we get more water
6 in the atmosphere than it can hold, we get rain or fog.

7 Q Does the latter thing you've described have anything
8 to do with vapor pressure?

9 A That is vapor pressure, in essence. In other words,
10 vapor pressure is the contribution that a gas can make to the
11 total atmospheric pressure.

12 Q Now, does temperature have anything to do with this
13 phenomenon?

14 A Oh, yes. As the temperature increases, substances
15 have greater and greater ability to move into the atmosphere.
16 Vapor pressure information is always specified in terms of the
17 temperature at which the measurement is made.

18 Q What is the nature of the movement that goes on of these
19 molecules in terms of direction and speed and that sort of thing?

20 A Well, they move at random. They move at random. They,
21 if nothing is there to interfere, they can go in any direction
22 until they collide with something else. There is--a single molecule is
23 not very, is not affected by gravity to a great extent.

24 Q Now, if you assume, sir, I'd like you to assume the

1 following testimony from Mr. Schroy on the 12th of September,
2 Pages 6 and 7. "QUESTION: So the movement that you were talking
3 about in the vapor phase is the material such as TCDD moving from,
4 if you will, a dirt, small dirt particle, to a small dirt particle
5 through the air that's in between the two? ANSWER: Yes, because
6 you are going to have a partitioning to the next particle and
7 it will keep happening like that until eventually it works its
8 way to the surface or works its way down to where there is an
9 even distribution through the whole soil column. Nature tries
10 to average everything and make everything the same. QUESTION: And
11 this is then the unsaturated, where air is between? ANSWER: That's
12 what I depict here, because I label this "air". I could say
13 this was water, but then our model wouldn't fit. QUESTION: Now,
14 that's the question I had. If there were water rather than air
15 between those dirt particles because you have gone out and
16 spread water or some other liquid that it saturated into this,
17 there would then be the saturated type of core that you were
18 talking about? ANSWER: Like a rice patty. QUESTION: And your
19 model doesn't deal with the saturated core? ANSWER: No, we
20 don't deal with movement in the fluid phase. If the fluid is
21 liquid. Not that we can't, we just haven't had the time to do it.
22 We are running experiments at Times Beach to try to get some
23 understanding of that."

24 Now, if you assume that that's Mr. Schroy's testimony, sir,

1 what is he describing in terms of movement in relationship to
2 what you've just described to the jury?

3 A Well, he is really describing the same thing, I think.
4 He is describing the random movement of individual molecules of
5 TCDD in which every direction they happen to move, and until
6 they strike some other surface.

7 Q Now, is the vaporization that Mr. Schroy is describing
8 as I just read it to you, sir, is that like smoke going up a
9 hot chimney?

10 A No, sir, not at all.

11 Q What is he describing in terms of movement of the TCDD
12 molecules?

13 A What he is describing is, I used the word random, and I
14 would use it again. The random movement, the random direction
15 that a particle, a molecule of that sort would go in a space and
16 it can go in any direction, until it reaches another point where
17 it stops and eventually it will move again. Now, the movement
18 of a given molecule is going to be random. It can go in any
19 direction. If there is a higher concentration at one point,
20 then that movement would tend to be eventually away from that
21 point because until the limit exposed by the vapor pressure
22 is reached and that probably doesn't happen except in an experimental
23 situation, there will be a very slow movement of molecules away
24 from the area of high concentration, some will move back, of

1 course, to the same substance just as if water is probably
2 volatilizing away very slowly from the water in this cup, but
3 it is also, a lot of it is returning just because of that random
4 movement because water can be an independent molecule as well
5 as a liquid that we see here. So the net movement, the eventual
6 movement would be a very gradual movement away from the point
7 where the concentration is highest, if the material is buried
8 very, very slowly, it would by this random movement within the
9 soil, very slowly would work its way upward. But a given molecule
10 at any time when it moves, it will move in whichever direction
11 it moves in, and there is no way of predicting it, it is all a
12 question of probability.

13 Q Now, if we assume, sir, that Mr. Schroy testified that
14 if TCDD is in dirt and then clean dirt or clean ballast is placed
15 on top of it, and that TCDD, in order to volatilize, would work
16 its way through that dirt or ballast just like at Eglin, would
17 you assume that, sir?

18 A Yes.

19 Q That he testified to that?

20 A Yes.

21 Q Now, was Eglin--what material was being measured in the
22 Eglin experiments?

23 A TCDD.

24 Q And in what material was it moving?

1 A Essentially a sandy, very sandy soil, in sand, say.

2 Q All right. Now, sir, let me hand you what's been
3 previously marked and put in evidence as Plaintiff's Exhibit No.
4 1415. I wonder if you would identify that for the jury, please, sir.

5 A It is a paper titled "Modeling the Transport of 2,3,7,8
6 TCDD and Other Low Volatility Chemicals in Soils". Again, it
7 is by Raymond Freeman and Jerry Schroy, and according to this was
8 presented at the, I presume this is the American Institute of
9 Chemical Engineering national meeting in August of 1984.

10 Q Now, if I can direct your attention to Page 11 of that
11 document, sir, where it says, titled "Conclusions", do you see
12 that, sir?

13 A Yes.

14 Q Now, if you look at item number two there of the
15 Conclusions, would you read that item aloud to the jury, please?

16 A It says, "The rate of TCDD movement is very slow. The
17 TCDD in the Eglin Air Force Base biodegradation plots has moved
18 only about ten centimeters in twelve years."

19 Q Now, sir, is that what you said?

20 A I think in essence that's what I was describing, yes.

21 Q And if Mr. Schroy has testified that the movement in
22 the Sturgeon ballast would be like Eglin, what would that lead
23 you to believe, sir, as to whether or not the--any dioxin in
24 the soil below the ballast would emerge or would have emerged or

1 volatilized since 1979?

2 A This would suggest that that would not have occurred.

3 Q How long is ten centimeters?

4 A Ten centimeters is well, there is two and a half centimeters
5 per inch, so that's going to be about four inches.

6 Q Four inches?

7 A Yes.

8 Q So it is moved four inches in twelve years?

9 A Roughly that, yes.

10 Q Now, if you look at Page 3, sir, of that same exhibit,
11 do you have it, sir?

12 A Yes, sir, I do.

13 Q What is Mr. Schroy, what are Mr. Schroy and Dr. Freeman
14 discussing there, sir?

15 A They are discussing some experiments by someone named
16 Liberti, spelled with an I rather than a Y. It was published,
17 it is a paper called "Solar and UV Photodecomposition of 2,3,7,8
18 TCDD, Tetrachlorodibenzo-p-dioxin in the Environment", published
19 in The Science of the Total Environment, and they were studying
20 the soil at Seveso and they used what are called here deep tray
21 tests. I am not entirely certain what that described, but they
22 showed TCDD losses from subsurface layers after exposure to the
23 sun. Their explanation at that time, that is, the explanation
24 of Liberti, et al., was that the loss was due to free, radical

1 movement in the soil column. And Freeman and Schroy comment
2 that a more reasonable explanation is due to the transport of
3 TCDD to the soil surface where it could be photochemically
4 destroyed or vaporized.

5 Q Now, what is the relationship if any between photodegradation
6 and photochemical destruction?

7 A Well, these are really synonymous terms.

8 Q Now, do you have Plaintiff's Exhibit 1148 before you
9 there, sir?

10 A Yes, I have, I have it.

11 Q And I wonder if you would turn to Table 4 in that exhibit,
12 which is on Page 34.

13 A Yes, I have it here.

14 Q I'm sorry, it starts on Page 33.

15 A Yes.

16 Q Now, what is the--what's the title of that table? What
17 are they showing there?

18 A The concentration profile of 2,3,7,8 TCDD measured in
19 three soil cores from Times Beach, Missouri. And what they did
20 was to go down at, it appears a half inch, and then perhaps inch
21 and a half, half inch and, yeah, I think inch and a half. It is
22 in centimeters, anyway. The first core is 1.27 centimeters. That's
23 a half. And the second is the same. And they went down a total
24 of 23 centimeters and took samples at different levels in each of

1 three spots.

2 Q Now, if we take that first centimeter, sir, what is
3 being measured specifically here, sir?

4 A 2,3,7,8. This is an isomer specific measurement,
5 2,3,7,8 measured in the soil.

6 Q All right. And if you look at the measurement of 2,3,7,8
7 in the first centimeter, in each of these cores, how much is
8 there?

9 A Of the three, the lowest is a little over 20 parts per
10 billion, and the highest, 34.6 parts per billion.

11 Q All right, sir. Now, and this measurement was taken
12 when?

13 A This measurement was taken in 1983, yeah.

14 Q Now, do you recall Mr. Carr asking you about the conclusion
15 of Mr. Schoy in this document on Page 22, that over 90 percent
16 of the applied TCDD volatilized from the top one centimeter of soil
17 during the first summer?

18 A Yes.

19 Q Now, if the measurement in 1983 were the same as it
20 had been during that first summer--

21 A That was in 1973 when the material was applied.

22 Q Yes, sir. What would be, if 90 percent was gone in
23 the first summer, what would the original concentration in that
24 first centimeter of soil be?

1 A I don't know, but it would be absolutely enormous.
2 It would be well up into the parts per million. The material
3 it was put on was between 100 and 300 parts per million, this
4 was oil, this was road oil applied to an unpaved street.

5 Q Well, sir, if you have 20 parts per billion, and
6 that's ten percent of what's left, what would 100 percent be?

7 MR. CARR: I object, your Honor. There is no showing
8 that this 20 parts per billion is ten percent of what's left.

9 THE COURT: Objection is overruled.

10 A Excuse me, could you ask me the question again, please?

11 Q All right. I might have phrased that wrong. Let me
12 try that again. The 20.5 to 34.6 that were found in the top
13 centimeter, that's parts per billion of 2,3,7,8 TCDD, correct?

14 A Yes.

15 Q All right. If 90 percent was gone in the first summer,
16 back in 1973 or 1974, what would the original concentration have
17 been? Could you just multiply the 20.5, or divide it by--

18 MR. CARR: Object. Leading.

19 THE COURT: Objection sustained. That is leading.
20 You will have to rephrase that.

21 Q How would you determine that, sir?

22 A Well, it would be very difficult. To begin with, that
23 estimate was made on the basis of a model, a mathematical model
24 constructed ten years after the material was applied. In other

1 words, this is not the result of a measurement made three months,
2 or whatever period it is, after the material was sprayed. The
3 model is derived from this information in which they determined
4 a profile and then made some mathematical modeling projections
5 back to times zero, and then on the basis of that model, in
6 other words, they undoubtedly drew a logarithmic curve that
7 started at a very, very high level and works its way down to the
8 values at the present time. Based on this whole, on this whole
9 profile. And given that the material that was put on was
10 between 100 and 300 parts per million, and this is applied to a
11 surface, not mixed in, I would suggest that the concentration of
12 that soil at the top would have had to be up in the, easily the
13 tens of parts per million. I don't know how, what the dilution
14 of the road oil in the soil might have been, but it had to be
15 substantial.

16 In other words, a good part of the surface was constituted
17 of that oil, and so I would say just on the basis of that, that
18 the concentration had to be anywhere on the order of a thousand
19 times greater than this figure that is found ten years later in
20 that top layer.

21 Q Now, the 90 percent statement on Page 22, is that based
22 on a measurement, sir?

23 A No, it is based on, it is based on the model, on a mathematical
24 model that was constructed. There were no direct measurements at

1 the time or--there were no direct measurements during the ten-year
2 period after this material was applied. The first measurements
3 of that material were made in 1983, the material was applied in
4 1973. So what this is is a simulation model. Undoubtedly did
5 it with a computer and arrived at a conclusion of how much was
6 there at the beginning and how much was there three months later
7 or whatever. The initial slope of that curve is going to be
8 extremely steep, the initial disappearance is going to be very
9 fast, and then it will slow down.

10 Q Now, you used the term disappearance, sir. What do
11 you mean by that?

12 A Well, we don't really know what happened to it. It
13 isn't there, and that's all that can really be said about it.
14 Dr. Schroy uses the term volatilization, but there is no evidence
15 to say that it is or is not. It is gone. The material that
16 was applied is no longer there, or most of it.

17 Q Do you have an opinion as to what the most probable
18 means of disappearance would be?

19 MR. CARR: Objection, your Honor. The witness has been
20 examined on this point.

21 THE COURT: It is repetitious. Objection is sustained.

22 Q Now, Dr. Dost, if you look at Page 22 of this exhibit
23 1148, in Item No. 3 there, do you see that?

24 A Yes.

1 Q What are the assumptions based upon which this 90
2 percent figure is determined?

3 A Well, he made the measurement of this concentration
4 profile and that is, I think, represented, yes, in Figure 4, which
5 is a fairly typical frequency curve, I suppose you could call it.
6 He made an assumption about the initial concentration of TCDD
7 at the time of application. I don't remember what figure he
8 used, but he did not have direct information, he made an assumption
9 that I believe was based on the concentration that had been
10 measured in the material on a, both in the--one tank of that
11 residue that was measured by CDC where the concentration was
12 356 parts per million, and then a concentration of 114 parts
13 per million in an archive sample, that is a sample that had been
14 stored, and--

15 Q Now, what's the fourth word in Item 3 there?

16 A Are we on Page 22.

17 Q Twenty-two, sir.

18 A Simulation.

19 Q What does that mean?

20 A That means almost always a mathematical, a mathematical
21 model that is constructed with whatever information is available,
22 and some assumptions that can be assumed reasonable, and that
23 includes a variety of physical constants and so forth, and when
24 this is all put together, usually by computer, why, it gives you

1 information about other components, you know something that
2 happened today and you know enough characteristics of the system,
3 perhaps you can get your model to tell you what probably was the
4 situation in this case ten years ago.

5 Q And the date of this paper, 1148, is what, sir, on the
6 first page?

7 A The date is 1984. This work was reported in a meeting
8 in April of 1984.

9 Q April, '84?

10 A Yes.

11 Q And in that document, that's where the 90 percent
12 estimate appears?

13 A Yes.

14 Q In Plaintiff's Exhibit 1415, what's the date of that
15 paper?

16 A That paper is August of 1984.

17 Q And in that paper, on Page 11, how does he describe--
18 MR. CARR: Your Honor, this is all leading, suggestive.
19 THE COURT: Objection sustained. Plesse rephrase it.

20 Q Does Mr. Schroy have a description of the movement of
21 TCDD?

22 A Yes, various conclusions.

23 Q And what is that, sir?

24 A Is that the rate of movement is very slow, moves ten

1 centimeters in twelve years. And it says the transport of
2 TCDD in a soil column can be monitored by a temperature driven
3 diffusion process.

4 Q Now, going back for a moment to 1148, Page 22, Item 3A,
5 would you read that very brief paragraph to the jury aloud, please?

6 A "TCDD will volatilize from soils most rapidly during
7 the summer months. TCDD will not volatilize from soils to any
8 appreciable extent during the winter."

9 THE COURT: Before you get into questioning of that, we
10 are at noon. Is this a good point to break?

11 MR. HEINEMAN: Oh, all right, Judge.

12 THE COURT: We will break for lunch at this time.
13 Gentlemen, could I see you up at the bench for a minute, please?

14 (An off-the-record discussion was held
15 at the bench.)

16 THE COURT: Ladies and gentlemen, in order that you not
17 have to wait around so much, I'm going to ask that you come back
18 from lunch today at 1:30 instead of 1:15. We will adjourn at
19 this time for lunch. Be back at 1:30. The admonishments that I
20 have given you earlier will apply during lunch break also. The
21 Court is in recess.

22 (At this time Court recessed for the noon hour.)

23 (The following proceedings were held in chambers.)

24 MR. CARR: On the fact situation that they have proposed,

1 everything Joe has given me is relating to experts, opinions,
2 actions of the CDC, and this expert category is not relevant
3 to the issues in this case, and there is nothing except what he's
4 given me that we have agreed to other than the question did she
5 review Plaintiff's Exhibit 1665 and the date which she did or did
6 not review it.

7 THE COURT: Do you have a list or something?

8 MR. NASSIF: I gave him this list.

9 THE COURT: Let me take a look at it. 1183 is what?

10 MR. NASSIF: It is an exhibit in the case, your Honor,
11 from the EPA, Harry Gilmer of the EPA to another person in the
12 EPA which has the fact that he contacted several experts,
13 including Dr. Kimbrough.

14 THE COURT: I remember now. Thank you. Okay, I may have
15 cut you off. Do you have anything more that you want to say?

16 MR. CARR: I'd like to go, well, I could go over each
17 individual item if the Court wanted.

18 THE COURT: No, we can xerox that and make it a part of
19 the record.

20 MR. CARR: I don't understand. These are additional
21 documents that you want to get in evidence?

22 MR. NASSIF: That's the response to the business records.

23 MR. CARR: I thought this was. I don't have this, this
24 is something different than what we were given.

1 MR. NASSIF: You were given those previously. If you
2 weren't, you have them, they're either included in there or you
3 were given them previously. Between the two of them, you should
4 have every document.

5 MR. CARR: This is the first I've seen this, so I have
6 no idea.

7 MR. NASSIF: I'm just telling you that you have those
8 before. They have C numbers on them.

9 MR. CARR: Yeah.

10 MR. NASSIF: Those have been produced to you already.

11 MR. CARR: They may be, but I can't tell you whether
12 they are or are not business records that we would or would not
13 agree to or object to. I can't make any comment on this, Judge.
14 I haven't looked at it.

15 THE COURT: Okay, I guess you're handling this again?

16 MR. NASSIF: Yes, your Honor, I am. In terms of this
17 list, your Honor, Mr. Carr has objected to most of what's on
18 the list as being immaterial. I don't think it is immaterial,
19 your Honor. You've seen the list, would you like for me to go
20 down and tell you why I think he tried them as material?

21 THE COURT: Well, they are somewhat similar. Why
22 don't you make a general argument?

23 MR. NASSIF: The argument is we're asking basically,
24 your Honor, what did her review of Plaintiff's 1665 consist of,

1 not what she concluded, but when did you see the document,
2 Doctor Kimbrough, what were the circumstances that you saw it,
3 what draft did you see, and when did that take place, and Mr. Carr
4 has objected to anything but asking her the date and the time
5 that that took place. And we think the circumstances under which
6 she was invited to the meeting and the circumstances under which
7 her review took place, where she was, what that review consisted
8 of, we think those are important so the jury gets the, you know,
9 the whole picture. If she says yes, I reviewed 1665 but it wasn't
10 in the form, and she is not allowed to say, but it wasn't in
11 this form and I never saw this final draft and I saw a much
12 earlier draft that didn't look anything like this--

13 MR. CARR: I'm not objecting to that. You didn't tell
14 me that.

15 MR. NASSIF: You're not objecting to her saying I
16 never saw this draft, it never looked anything like this? It
17 didn't have these pages in it, it didn't have this in it, you are
18 not objecting to this?

19 MR. CARR: It goes with the question did she review 1665.

20 MR. NASSIF: I asked her what her review consisted of,
21 and I meant by that is like what draft did you look at, what
22 were the circumstances that you looked at it, what did they tell
23 you you were there to do in terms of this draft document. Those
24 are the kinds of things I think we ought to be able to go into.

1 I think we also ought to be able to go into what she was told
2 about Sturgeon, who contacted her, what agencies contacted her,
3 not anything as to what she told them, but to confirm that in
4 fact she was contacted by various agencies.

5 THE COURT: No one is disputing that.

6 MR. NASSIF: Some of that is not in evidence, the fact
7 that she was contacted by the Occupational Safety and Health
8 Administration is not in evidence. There is no way we can get
9 that in unless we call someone from OSHA, but the EPA person
10 couldn't comment on the OSHA contact, so that's not in evidence
11 at all. I think what it does, your Honor, it is relevant on the
12 point that other agencies were involved in the Sturgeon incident,
13 they were involved in reviewing the health effects of the Sturgeon
14 incident, OSHA was involved in reviewing it. There is some
15 question about the health of the railroad workers, we have had
16 a railroad worker testify in this case, I think the fact that
17 another agency is involved in that review is important on the
18 issue of whether the community was left to stew in the chemicals
19 as Mr. Carr has stated on several occasions, and that's why I
20 think it is relevant, and the fact that there's been no testimony
21 to date that OSHA looked into the situation in terms of the railroad
22 workers. This is the only lady that can do that at this point,
23 because we are not planning to have any other governmental witnesses
24 lined up.

1 THE COURT: I know I'm breaking up your argument, but
2 what's your position on the relevancy?

3 MR. CARR: There aren't any railroad workers in this
4 case, your Honor, and OSHA would be responsible for looking at
5 the exposure to the railroad work and not to the plaintiffs in
6 this case. It has absolutely no relevance whether OSHA was or
7 was not involved.

8 MR. NASSIF: Your Honor, it has relevance as to level of
9 contaminants found in testimony, extensive testimony. There has
10 been testimony by a railroad worker, and what went on in this case.
11 I think it is relevant to the case.

12 MR. CARR: The railroad worker testified to what he saw
13 and did out there.

14 MR. NASSIF: Right. It goes to the issue of whatever
15 impression the jury's got regarding any health effect that he
16 might have suffered as a result of what he saw and what he did.

17 MR. CARR: I wouldn't agree with that at all, your Honor.

18 THE COURT: Anything else you want to say?

19 MR. NASSIF: Yes, your Honor. Why the one part per
20 billion calculation was entered into has nothing to do with her
21 expert opinion. We're asking her why her agency, why the CDC
22 prepared the one part per billion calculation, that has nothing
23 to do with an expert opinion on her part. It is relevant to this
24 case, the one part per billion standard has come up several times

1 in this case, and I think the jury's knowledge of why the CDC
2 prepared that is important for them to understand the relationship
3 of that one part per billion figure and to the facts that they're
4 trying to assess, and I think her stating the agency's position
5 on why the one part per billion figure was reached doesn't involve
6 any expert testimony on her part. I think the fact that she did
7 certain actions in terms of previewing railroad worker blood
8 serum analysis also goes to the same issue that the people weren't
9 left. She also did this for residents of the town of Sturgeon,
10 at least one child. That also goes to the issue of whether these
11 people were left to stew in their chemicals. They were not. There
12 was a follow-up from the agencies involved through the CDC. I
13 think that also goes to the issue of whether people were forced
14 to sit and stew on the chemicals. Her impressions of the levels
15 of dioxin as were told to her by the EPA goes to the very issue
16 of punitive damages, not what her expert opinion is, but what
17 she was told were the levels of dioxins there and the type of
18 dioxin present goes to the very issue of the punitive damages
19 because Mr. Carr has said we have hidden or we hid or we did not
20 disclose what knowledge we have of the possibility of 2,3,7,8
21 being there and what position she heard and received from other
22 government agencies goes to the issue of whether that information
23 was in fact not disclosed or hidden or whatever, but I think it
24 is important to get her testimony as to what type of dioxin was

1 there and the levels.

2 THE COURT: Are you saying her knowledge constitutes
3 notice?

4 MR. NASSIF: Yes, it does constitute notice.

5 MR. CARR: Of what some other governmental agent told
6 her? Hearsay.

7 MR. NASSIF: Yes, it constitutes her knowledge is knowledge
8 of the government. She is a government employee, her knowledge
9 is knowledge of the government, if the government knows, and then
10 we have disclosed, that is notice to the government. I mean,
11 she is not some--she is a government employee, I mean, that's
12 what her job is.

13 THE COURT: There is no argument about that.

14 MR. NASSIF: She is a government employee contacted about
15 this incident by other government employees.

16 THE COURT: You are saying that conveyance of knowledge
17 to her constitutes proof that the world generally or the world
18 of expertise was put on notice and that Monsanto did not
19 fail to disclose?

20 MR. NASSIF: Yes, exactly. It constitutes notice that
21 there was no failure to disclose or no misrepresentation because
22 they in fact knew, the government in fact knew, and she is a
23 government employee.

24 THE COURT: I can't possibly agree with that line of

1 logic, but go ahead.

2 MR. NASSIF: I think her testimony regarding facts within
3 Defendant's 1193, the information contained in the documents does
4 not require expert opinion on her part to say yes, I had that
5 conversation with Mr. Kleopfer and to the best of my knowledge
6 it was at the time that that document indicates, and I recall
7 that conversation and those are the questions that he asked.

8 THE COURT: Is the existence of her compensation an
9 issue?

10 MR. NASSIF: It is only an issue in that Dr. Kleopfer was
11 not able to testify about that document.

12 THE COURT: That's not what I asked. Is the existence
13 of the conversation an issue?

14 MR. NASSIF: Perhaps not in our minds, but in the jury's
15 mind since no one has been able to testify that that conversation
16 took place. They saw the document and they read the document,
17 but there is no one that said yes, that conversation took place.

18 THE COURT: Then doesn't that make it a non-issue then
19 if no one is disputing that it took place?

20 MR. NASSIF: It makes it a non-issue in our mind, but
21 I am not sure that the jury knows the conversation took place.

22 THE COURT: If it was read to them and no one is
23 disputing them, how could they not know it didn't take place?
24 What reason would they have to think that it didn't? They should

1 know that it took place. But her testimony, are you saying that
2 she shouldn't have to testify on it because it is redundant?

3 THE COURT: I haven't reached any conclusions yet. I am
4 just asking you the questions about them in my mind, obviously.

5 MR. NASSIF: Fair enough.

6 THE COURT: And I will try to make them louder. I'm
7 fighting off whatever is going around, too.

8 MR. NASSIF: We should be able to testify on actions
9 taken by the CDC regarding what she has personal knowledge of
10 regarding Sturgeon. That's just factual steps, steps that they
11 took regarding Sturgeon once again on the issue that people were
12 not left to stew in a sea of chemicals, that actions were taken
13 by government agencies and not, since your Honor says she could
14 not do it on the basis of any expert opinions, then what the
15 results of those actions she cannot perhaps testify on, as you've
16 already ruled, but the fact that actions were taken goes to the
17 issue of whether people were left to stew in the chemicals.

18 And there is one other, your Honor. One of these
19 actions would be whether or not this agency recommended an
20 evacuation of Sturgeon, and if they did, have they ever recommended
21 an evacuation of any dioxin site, and I think that goes to the
22 issue of, once again, actions taken and whether they were the
23 agency that recommended to the EPA that the town of Sturgeon
24 should be evacuated.

1 THE COURT: Do you have anything you want to say?

2 MR. CARR: Yes, your Honor. If I might have your list,
3 Joe, for a moment. Her awareness of the spill at Sturgeon has
4 got no materiality to anything, whether or not the CDC got
5 contacts from various individuals or agencies, I don't think there
6 is any suggestion that Monsanto contacted CDC, is there? That
7 would be the only relevance to that.

8 The questions asked of CDC are not relevant, why CDC
9 was contacted would not be relevant, did the CDC prepare the one
10 part per billion calculation is not relevant, whether or not
11 they reviewed the Sturgeon spill is not relevant, her agreement
12 with the one part per billion is again not relevant and/or calling
13 for expert opinions. The review of data of analysis of railroad
14 workers, and they put in here and people at Sturgeon, all I've
15 got so far is that she reviewed the railroad workers. I don't
16 have anybody at Sturgeon, at least.

17 MR. NASSIF: That six-year-old girl that had the--

18 MR. CARR: Well, there was no data there, all there was
19 she got a report according to what you have given me, but anyway,
20 that would be calling for an expert opinion, certainly not a
21 factual matter. Her impression of levels of dioxin at Sturgeon
22 as to who told her is, it is immaterial as to who told her and
23 levels calls for an expert opinion, testimony as to 1193. Of course,
24 I think I already mentioned that the jury knows all those things

1 and there is no issue as to those contents therein, and that's
2 all I have to say, your Honor.

3 THE COURT: Now, she's just supposed to be here Wednesday,
4 right?

5 MR. NASSIF: Yes, your Honor.

6 MR. HEINEMAN: That's my understanding.

7 THE COURT: Having looked at that list, which I do want
8 to xerox and make a matter of record, because this argument in
9 chambers I think makes more sense on the record and, I think, except
10 for the question of what she did as to that one Plaintiff's Exhibit
11 that what you stated that list is either irrelevant and a non-issue
12 or would involve expertise, probably both, in the delivery of that
13 matter on cross examination. And I think basically it constitutes
14 again a way of getting in expertise without calling an expert,
15 without calling someone an expert but calling them as an expert.
16 And I think the points and objections raised by the plaintiff are
17 well taken.

18 I have been thinking about this situation with the time
19 limit that we've got with her being here and the very limited
20 amount of what she would in fact testify to in front of this jury,
21 also what would apparently be an extensive examination both direct
22 and cross on an offer of proof, and also the past history here
23 of after various examinations outside the presence of the jury
24 some objections being dropped, and also the idea that an offer

1 of proof is made to some extent in a position so the Judge can
2 listen to what is being offered, evaluate it, and I am thinking
3 seriously about having the offer of proof, and when the offer of
4 proof is over, whatever at that point in time she should testify
5 to, she would testify to. Otherwise we could have a situation
6 of testimony in front of a jury, offer of proof, and then calling
7 her back again. And under the circumstances, I think that we
8 might be best advised to spend Wednesday on an offer of proof.
9 At the end of that time, and apparently will go on beyond Wednesday,
10 at the end of the offer of proof, whenever that would be concluded,
11 we will have a determination--be able to make a determination of
12 what in fact she would be allowed to testify to in front of
13 this jury other than the few minutes that would be involved in
14 her review actions and, if any, with that one Plaintiff's Exhibit.
15 What's your position?

16 MR. CARR: That's fine with me, Judge.

17 THE COURT: I have had the practice before of a witness
18 leaves the stand by asking if there is any offer of proof to
19 be made, and that's one of the reasons why both for the person
20 being there and whether the offer of proof is testimonial, show
21 that if some part of it should be testified to, the person would
22 be there, and I think this would be in accordance with that.

23 MR. NASSIF: The only issue I have with that is the
24 jury will not be here tomorrow, from what you are indicating.

1 THE COURT: Right. That's what I am indicating. If you
2 say it is going to take two hours, with our great record on
3 estimating times, it is going to take two and a half or three.
4 If Mr. Carr says a day or two, it will take at least two.

5 MR. CARR: I really don't know how much time it will
6 take, Judge. It depends on if they make an offer of proof on
7 all those points. I see no way they can get through. This is
8 a thick list of documents here, an interrogation of that alone would
9 take hours.

10 THE COURT: And apparently she is only allowed to be here
11 one day, anyway. It seems to me that--it seems to me that, you
12 know, we are talking for sure taking up all of Wednesday on an
13 offer of proof.

14 MR. NASSIF: Judge, in the event that she could not
15 come back and parts of her testimony were deemed admissible in
16 front of the jury, would we be able to read that part of her
17 testimony?

18 THE COURT: I would not want to rule on that until if
19 and when that came up. I really, I would not want to take a
20 position on that unless I had something solid in front of me
21 upon which I would be ruling. I don't want to be put in a
22 position of an advisory ruling.

23 MR. HEINEMAN: Here is the situation that we are up
24 against. The government has agreed to make her available on this

1 one day. I've just gotten a note, a message that tells me that
2 she has to be out of the courtroom by three o'clock tomorrow
3 afternoon to make a return plane to Atlanta, and that's what
4 she's got. And it seems to me to be very unlikely that she is
5 going to come back voluntarily. To that end, if there is anything
6 that we can agree that she can testify, namely this 1665, I
7 would appreciate the opportunity to have her do it now before,
8 I mean, I know that it would be inconvenient to have the jury
9 come in for a half an hour in the morning, and that would be
10 inconvenient. But the problem is if we can at least get that in,
11 then we will have the opportunity to do that. If we don't do
12 that and we are stuck in an offer of proof situation, we may
13 never be able to get her back. We may be in the spot that we
14 are in with Kleopfer where we started an offer of proof, we can't
15 finish it, and Mr. Carr agreed that if he would not come back that
16 I could summarize it, which is something I'm going to have to
17 do because I have been trying to get him to come back and he
18 won't.

19 So we are very likely going to be in the spot where
20 we're going to start the offer of proof, we're going to get part
21 of it done, she is going to get up and leave and we are not going
22 to be able to get her back. So my request to the Court is we be
23 permitted to at least let her testify first thing in the morning
24 on the things, the one thing, apparently, depending upon how the

1 Court rules, that we can agree to and then excuse the jury and
2 then go into the thing. Because otherwise we will never get her
3 back to put that on. I can see the handwriting on the wall,
4 that's been made pretty clear, she says she's leaving at three.

5 THE COURT: Do you have anything you want to say, Mr. Carr?

6 MR. CARR: Well, I would say they have the right without
7 agreement from me or from the Court to put her on as a fact
8 witness to prove that one fact, if they want to, whether she did
9 or did not peer review that article without getting into the
10 contents of it, and I can't object to it if they want to do it.
11 And if the Court wants to call the jury back for that short
12 period of time. I think it is a misuse of the jury time and
13 it is an imposition on them to bring them back for what has got
14 to be essentially a non-issue in this case. I don't think it
15 means two hoots in hell what she did or did not do. She was on
16 the peer review panel, and apparently she is not going to say
17 she saw the last document. Nobody ever said she did. But if
18 they want to use up this time in that way, I personally will
19 not object to it. But I think the Court's judgment is correct,
20 but if they want to use that time in that way, it is their nickel.
21 But it is the Court's time that we are concerned with and the
22 imposition on the jury.

23 MR. HEINEMAN: As I've conceded to the Court, that is
24 clearly, it is inconvenient for the jury. There is no doubt about

1 that, and I concede that. To come in for an hour and then go
2 back home, that is an inconvenience to them. But, on the other
3 side of the coin, I'm looking at the possibility that I will
4 never get her back, and if there is anything I can prove with
5 her, I'd like to do it.

6 THE COURT: Well, let me ask you something. If you
7 foresee her not getting back, and you have only got one day and
8 everything, how did you expect to cover all this to begin with?

9 MR. HEINEMAN: My expectation was that I was going to be
10 able to put her on in two hours, that she would be crossed the
11 rest of the day, and that would be it.

12 MR. CARR: Mr. Heineman, the list of things that you
13 gave us, that you were proffering her for as an expert witness
14 touches on every issue in this case. Now, what your other expert
15 toxicologists have said, and you have seen the cross examination
16 on these points have taken days with these people, and I submit
17 that you are not in good faith knowing that she could only give
18 us one day, you are not in good faith in offering her as an
19 expert witness in this case.

20 MR. HEINEMAN: Well, I'm sorry that you have that view.

21 MR. CARR: Well, that's just my feeling.

22 MR. HEINEMAN: It grieves me.

23 MR. CARR: It grieves you? You are not crying, Kenneth.

24 MR. HEINEMAN: I know. It grieves me that you feel that

1 way. But nevertheless, the fact of the matter is that I think,
2 if I covered the whole gamut, that I could get her on and off
3 that stand in two hours.

4 THE COURT: There is no way.

5 MR. HEINEMAN: That is with my examination.

6 THE COURT: No, we're going to spend whatever time we
7 have tomorrow as an offer of proof. If she has to leave at
8 three, then from three o'clock until five o'clock we will finish
9 up on these evidence depositions. I am not going to do this in
10 a cart before the horse, backwards type thing. You proposed
11 all this stuff, we're going to cover it and we're going to do
12 it the right way, and that's the way it is going to be.

13 MR. NASSIF: Then, your Honor, we don't need to go over
14 these documents then at this point in time because we're just
15 going to have an offer of proof.

16 THE COURT: Tomorrow.

17 MR. NASSIF: Then we can go over the document in the course
18 of the offer of proof.

19 THE COURT: Sure, absolutely.

20 MR. CARR: Okay.

21 MR. HEINEMAN: Now, with respect to the remainder of
22 today, I have no idea how long you plan to--wait a minute, I'm
23 not finished. I've got the witness, that's right. What's the
24 matter with me?

1 THE COURT: Are you done?

2 MR. HEINEMAN: No, I am not. But we called, when I
3 got back to the office, I talked to Coach Odneal and he advised
4 me that he's got to coach a ball game. His team is in a
5 basketball tournament and he has to go back, and it is a three
6 and a half hour drive, and he wished me a fond farewell.

7 THE COURT: Why don't you use his evidence deposition?

8 MR. CARR: You told us that already, Kenneth.

9 THE COURT: Well, you hadn't told me. Why don't you
10 just use his evidence deposition. We will clean that up and
11 we will read 16 of them instead of 15 of them.

12 MR. HEINEMAN: I don't know if I want to do that. I
13 may want to have him back later. We may end up doing that,
14 depending upon his willingness to come back. But I prefer to
15 have him in person if possible. What I was getting at is that
16 if Frank doesn't finish today--if Frank does finish today, and I
17 would think that he would, I don't have Odneal to put on afterwards.
18 And so what I was going to suggest, if it is all right with the
19 Court, is that at such time we go ahead and let the jury go and
20 start on the 15 depositions.

21 MR. CARR: No, we've got four to read. Why lose that
22 jury time? We have some not read as yet.

23 THE COURT: We have four to read, exactly. I forgot about
24 those. We had gone through them, but we hadn't got to them that

1 day.

2 MR. CARR: Then when we get through with them, then we
3 can recess and let the jury go and go do our work, but that's
4 some jury time we can use.

5 THE COURT: Exactly, I forgot about those. Okay, we will
6 do it that way. Okay, very good.

7 Oh, one other thing. When is she going to be here
8 tomorrow morning?

9 MR. HEINEMAN: At starting time.

10 THE COURT: Okay, at 9:30? Fine, start at 9:30.

11 (The following proceedings were held in
12 open Court.)

13 THE COURT: Okay, ladies and gentlemen, again I apologize
14 for your having to wait until we had some matters that had to
15 be taken up outside the presence of the members of the jury, and
16 it took a little longer than I anticipated it would.

17 And also, in keeping with our policy of letting you
18 know days when we are not going to have Court, we are not going
19 to have Court tomorrow at all. There will be no Court for you
20 tomorrow. So if you would, after you're let loose today, if you
21 would come back Thursday at 9:30, all right? Thursday at 9:30.
22 Mr. Heineman?

23 MR. HEINEMAN: Yes, sir.

24 Q Dr. Dost, let me direct your attention again to Defendant's

1 Exhibit 1148. Do you still have that before you there, sir?

2 A Yes, sir.

3 Q And it is Page 22. You see Item 3A there, sir?

4 A Yes.

5 Q I think we had just started to look at that just before
6 we broke for lunch, isn't that correct?

7 A I believe so.

8 Q And I wonder in that very brief paragraph, if you would
9 read that aloud to the jury.

10 A "TCDD will volatilize from soils most rapidly during the
11 summer months. TCDD will not volatilize from soils to any
12 appreciable extent during the winter."

13 Q Thank you, sir. And I would also like to ask you to
14 assume, sir, that Mr. Schroy testified to the following in
15 Court on September the 12th, 1985 on Page 107. "QUESTION: It
16 still has the liquid in it, but no longer in what we would
17 consider a liquid form, it still has orthochlorophenol, all of
18 this soil still has the orthochlorophenol in it, would you assume
19 that, sir? ANSWER: If the voids are filled, then there is no
20 gas space, so you can't vaporize. That's my problem in terms of
21 liquid. QUESTION: Is what you are saying, Mr. Schroy, that if
22 the soil is saturated with OCP, orthochlorophenol crude, TCDD, it
23 says can, I assume it means can't, escape? ANSWER: Can't
24 volatilize. QUESTION: Can't volatilize? ANSWER: Yes, sir.

1 QUESTION: When the OCP is washed out and then that soil dries,
2 then can it volatilize? ANSWER: It can start, yes, sir.

3 QUESTION: All right. So but it doesn't do that to any great
4 degree in very cold weather, does it, sir? ANSWER: No, sir.

5 That's one thing the study that we have published shows, that you
6 get a peak in the summer and it drops off to very low levels in
7 cold weather. QUESTION: So it starts to do it then when the

8 warm season comes in the spring? ANSWER: Much faster when it

9 is warm. QUESTION: So as far as Sturgeon is concerned, based
10 upon your studies, if we had cold weather in January and February,

11 started warming up in March, April, and May, that's when the
12 TCDD would start volatilizing that's in this top layer of

13 soil? ANSWER: The rate would increase probably about June
14 would be when it would really start causing problems when it
15 really starts to get hot."

16 Assume that's what he testified, sir.

17 A Yes.

18 Q Now, sir, I'd like you further to assume that beginning
19 in January, 1979, all the material between the ties in the
20 main track was removed to a depth of six to eight inches below
21 the bottom of the ties as well as all material between the ends
22 of the passing track ties north of the rails. In addition,
23 assume that all material between the passing track ties was
24 removed to a depth of eight to ten inches in the western 150 to

1 200 feet of the spill area where the surface of the snow and
2 the ballast of the passing track had been visibly discolored
3 by the spilled chemical. I want you to further assume that by
4 March 1, 1979, 4,500 drums of material cribbed from the track
5 had been removed from Sturgeon. Assume further that the cribbing
6 operation, after the cribbing operation, a ditch two and a half
7 feet wide and four feet deep was dug between the passing track
8 and the main track from Ogden Street to the place where the tank
9 car came to rest. Assume that additionally that an undercutter
10 removed the ballast and earth between the main track to a depth
11 of 46 inches in the 200 to 240 feet of track where the most
12 chemical was spilled and to a depth of two feet for the rest of
13 the main track. Assume that some dirt was removed from the
14 ditches around where the tank car came to rest. Assume that by
15 March 1, 1979, 2,855.3 cubic yards of soil had been removed from
16 Sturgeon, and assume that throughout January and February the
17 weather was nearly always below freezing, sometimes as low as
18 20 degrees below zero. Now, sir, based upon the matters that
19 I have asked you to assume and the testimony of Dr.--or Mr. Schroy
20 that I have asked you to assume, do you have an opinion, sir, as
21 to whether by the time the weather got warm there was any TCDD
22 in the top layer of ballast or soil in Sturgeon in order to
23 volatilize?

24 A Yes, I have an opinion.

1 Q What is that opinion, sir?

2 A I believe that there would not be any TCDD in that zone
3 that was cleaned.

4 Q Now, sir, I'd like to ask you about, again, Defendant's
5 Exhibit 1148. Mr. Carr was asking you about Table 3, which is
6 on Page 32. Do you see that, sir?

7 A Yes, I see it.

8 Q And I'd also like you to look at Table 2, which is on
9 Page 31. Do you see that, sir?

10 A Yes.

11 Q Now, Table 2, what is the information that is set forth
12 there according to the title?

13 A "TCCC Concentration in Air of Nash Microcosm Experiment."

14 Q And on Table 3, sir, what is the information set forth
15 there according to the title?

16 A "TCDD Concentration in Air, Nash Field Plots."

17 Q Thank you, sir. And I'd like to direct your attention,
18 I'd like to direct your attention to Page 7 of the same exhibit,
19 sir. Do you see the first paragraph on that page?

20 A Yes.

21 Q I wonder if you would read aloud the statement in
22 quotation marks, well, just beginning the sentence before the
23 statement in quotation marks set forth there, do you see,
24 beginning with "Nash"?

1 A Oh, yes. Nash observed that photodegradation was important
2 in his field tests. "If the air had been sampled only during the
3 daylight or if we had continuous light, probably there would
4 have been little or no labeled TCDD trapped."

5 Q Now, what is that referring to, Table 2, Table 3, and
6 this paragraph, what is Mr. Schroy talking about here?

7 A He was talking about an experiment that was done by
8 an investigator, Ralph Nash, and a colleague, I think that was
9 in Nash and Beale, and they constructed what is known as a
10 microcosm. That is, it is an ecosystem in a container, like a
11 terrarium perhaps, in which all of the components are there.
12 They grew a crop in there. This is a small vessel, but they
13 grow a crop. And in this case treated that area with an herbicide
14 called Silvex, which is very much like 2,4,5-T, which also is
15 contaminated with 2,3,7,8 TCDD. That's the data in, or part of
16 the data that they obtained that's referred to in Table 2. And
17 then in Table 3 they conducted an experiment with a rather small
18 plot out on the ground, two plots, one of which they shaded with
19 a piece of plywood, I guess.

20 Q Now, what is the importance of the statement that you
21 read aloud with respect to the daylight and non-daylight?

22 A Well, they are recognizing the fact that in the light
23 TCDD is degraded, subject to photodegradation.

24 Q Would you tell me, sir, this microcosm that you have

1 described, it is like a terrarium?

2 A Well, in a way. It is a closed, it is a closed system.
3 It is in glass in the system that they are using here, the authors
4 of that, of those researchers, set it up so that they were controlling
5 the flow of air through the system and trapping material that
6 was in the air as it exited the chamber. It is a growth chamber,
7 in effect.

8 Q Does it have dirt in it?

9 A It has dirt in it. It has plants in it. I think they
10 planted grass, if I remember correctly. It has earthworms in
11 it, presumably the important components of a small, they call it
12 an agro--microagroecosystem.

13 Q A what?

14 A A microagroecosystem.

15 Q Okay.

16 A A little, tiny farm in a bottle.

17 Q All right. Now then, how do they manage the air?

18 A They draw air in through the outside and run it through
19 a filter which they tested that will trap all of the herbicide
20 and the TCDD, any TCDD that's in that atmosphere, so they are
21 running air through this system all of the time.

22 Q Now, how did the TCDD get into that system?

23 A TCDD was a contaminant in the herbicide. They used two.
24 If I remember correctly, they used two different products, one

1 which was contaminated to the extent of 44 parts per billion,
2 I believe, and the other which was contaminated to the extent of
3 seven and a half parts per million.

4 Q The first was what, again, sir?

5 A Forty-four parts per billion.

6 Q And the second?

7 A Seven and a half parts per million.

8 Q Now, in the system like this, would there be anything
9 like wind?

10 A Well, there is air movement through the system, yes.
11 I do not know the velocity of the air, I do not remember what the
12 flow rate was through that system, but there is a continuous
13 exchange of air.

14 Q Now, would there be an exchange of air comparable to
15 what you would find outdoors in a, for example, along the
16 Sturgeon railroad right-of-way?

17 A I doubt if it is that rapid. I've seen information that
18 the average wind velocity in the Sturgeon area is seven, around
19 seven miles an hour. That's 11 kilometers an hour. And that
20 would be, I think, a much higher, much higher exchange rate
21 than was taking place in this system.

22 Q Now, let me ask you further to assume the following
23 testimony by Dr. Schroy, excuse me, Mr. Schroy. "QUESTION: Sure,
24 and of course the closer you are to the ground, that is a child, if

1 it is a vapor in the air, the more likely that child is to inhale
2 that particular vapor. Would that be a fair statement, children
3 being smaller, shorter than adults? ANSWER: Based on the
4 literature, I can't really agree with that. QUESTION: Well,
5 what is it you don't agree with? That children are not shorter
6 than adults or that it is not vapor in the air? ANSWER: Dr.
7 Ralph Nash writes that during the daytime that the samples he's
8 collected in the air would contain no TCDD. The only samples
9 that really contain TCDD were those that were collected after
10 dark." Would you accept that testimony from Dr.--from Mr. Schroy?
11 I want you to assume that he testified to that.

12 A All right.

13 Q Now, what is, what were the Nash people able to find?
14 What did the Nash experiment find?

15 A Well, they found in their trap they had, they used a labeled
16 TCDD. We've discussed tritium labeled TCDD, a radioactive
17 hydrogen, and they were able to trap the label in their system.
18 And now I'm not sure what you're asking me, what did they find?

19 Q What I am asking you, sir, is did they find any TCDD in
20 the atmosphere?

21 A Yes.

22 Q All right. Now, was that TCDD in the atmosphere in a
23 vapor state or was it on a dust particle, or can you tell?

24 A Well, I have no information that would tell me.

1 Q And in their experiments, sir, at the end of--at one day,
2 how much TCDD did they find from the Silvex?

3 A Well, they did two experiments. The one that they did
4 with the high concentration is here, and the other one with the
5 low concentration, they found that had 44 parts per billion
6 contamination, and they found in the air something on the order
7 of in the first few hours about 50 femtagrams. A femtagram is a
8 thousandth of a picogram, which is a thousandth of a nanogram,
9 which is a thousandth of a microgram, et cetera. They found
10 about 50 femtagrams per cubic meter.

11 Q Do you recall what they found after a day, sir?

12 A It was down on the order of--

13 MR. CARR: What's the citation for this, counsel?

14 MR. HEINEMAN: I would be glad to have it marked.

15 MR. CARR: No, what's the citation?

16 MR. HEINEMAN: It is the Nash study.

17 MR. CARR: Has it been marked?

18 MR. HEINEMAN: I will be happy to do that.

19 MR. CARR: May we approach the bench, your Honor?

20 THE COURT: Sure.

21 (The following conference was held at the bench.)

22 MR. CARR: Counsel is doing by trickery that which he
23 knows he is not allowed to do. This witness is putting in facts
24 and data from a document that is not in evidence, a document that

1 has not been supplied to us, and completely improper, and he
2 knows that he cannot do it this way.

3 MR. HEINEMAN: Your Honor, this document has been supplied
4 to the Plaintiffs.

5 MR. CARR: Whether it's been supplied to us or not, I
6 would have to go back and research that. I don't think it has
7 been, but the point is that he knows he cannot get this facts
8 and data into evidence. He can cite the source, he cannot get
9 the facts and data into evidence through this witness in this
10 fashion.

11 MR. HEINEMAN: Your Honor, this is not a matter which has
12 never come up before, this particular paper. This is a document
13 which has been quoted, discussed in the Schroy data, which is
14 a document that's in evidence. It is a paper which Mr. Carr
15 has questioned Mr. Schroy about.

16 MR. CARR: I have not. I have never had that document
17 in my hand and I have never questioned Mr. Schroy about it.

18 THE COURT: That is not in evidence, is that correct?

19 MR. HEINEMAN: To my knowledge, this particular paper
20 is not.

21 MR. CARR: It has never been marked, it has never been
22 referred to by me.

23 MR. HEINEMAN: It certainly has been referred to.

24 MR. CARR: Schroy referred to it and he cited in his

1 article.

2 THE COURT: Assuming that it has been supplied to the
3 Plaintiffs' counsel, the objection is sustained on the other
4 grounds of the objection, so we will deal accordingly with it.

5 MR. CARR: May I have a copy of it, counsel?

6 MR. HEINEMAN: Certainly.

7 (The following proceedings were held in
8 open Court.)

9 BY MR. HEINEMAN:

10 Q Dr. Dost, I would like you to assume that it has been
11 testified to in this case by Dr. Roush of Monsanto Company that
12 the Center for Disease Control has established a dose which
13 compares to their one part per billion in soil of 44 picograms,
14 44.6 picograms per day for a 70 kilogram man, all right, sir?
15 How does that figure compare to the data which appears in
16 Defendant's Exhibit 1148?

17 A Which, Table 2, Table 3?

18 Q Table 2, sir.

19 A Okay, the initial, in the first day they sampled four times.
20 They sampled it zero times when the material had just been placed
21 in there, a tenth of a day, four-tenths of a day, at the time the
22 material was introduced, and this is Silvex containing seven and
23 a half parts per million of TCDD, the concentration that they
24 found in the air was 79,800 femtograms per cubic meter, which would

1 be 79, let's say 80 picograms per cubic meter at the end of a
2 tenth of a day, which is 2.4 hours concentration was down to
3 about 15 picograms per cubic meter. At the end of four-tenths
4 of a day, the concentration was down to 4.7 picograms. At the
5 end of the day of the first day, it was down to 29 picograms per
6 cubic meter, and then it steadily drops off at 200 days, it is
7 down to 16 femtograms per cubic meter.

8 Q And that's in which experiment, sir?

9 A This is an experiment in which an herbicide containing
10 seven and a half parts per million of TCDD was placed on the
11 surface in that ecosystem.

12 Q Seven and a half parts per million?

13 A Yes, sir.

14 Q And is this the microcosm now?

15 A This is in the microcosm, yes.

16 Q Now, when you read Table 3, you used a different term
17 in the title.

18 A This is the experiment in which they did, they went out
19 on the ground, marked off a small plot, and placed the material
20 on the plot.

21 Q All right. And were their measurements there as well?

22 A Measurements there, yes.

23 Q I'm sorry?

24 A Excuse me, I was anticipating your question.

1 Q And what TCDD did they find there, according to this
2 exhibit?

3 A Well, on the first day they found 270 fentagrams per
4 cubic meter. And on the second day, 516. And then that was
5 in the shaded plot. In the non-shaded plot, 620 fentagrams per
6 cubic meter and 180 per cubic meter on the second day. That's
7 out in the open.

8 Q Now, how do those levels compare to the 44.6 picograms
9 that I mentioned to you before?

10 A Well, the 270 fentagrams would be .27 picograms per cubic
11 meter.

12 Q So how many times less would that be?

13 A Well, that would be, let's take a higher one. This is
14 one at 560, one at 620, one at 180, at .27 it would be 44.6
15 divided by .27, which is going to be what? Probably 150, 165.
16 In the case of the highest value they found on the non-shaded plot,
17 .62 picograms, the difference would be 72. In other words, that
18 is the amount per cubic meter compared--

19 Q Now, if you were to assume that a human being inhaled
20 the TCDD from the highest one in the field plot, for example, 620
21 fentagrams per cubic meter, what would be the dose that one would
22 get from that?

23 A Well, it would be expected that an individual, if an
24 individual is working in that area, their daily, their work day

1 respiratory ventilation would be something on the order of ten
2 cubic meters, so that would mean a dose of 6.2 picograms, which
3 would be about one-seventh of the 1.46 picogram per day for a
4 70 kilogram person that you referenced.

5 Q Now, sir, you have been to Sturgeon, have you?

6 A Yes, I have.

7 Q Are the Sturgeon railroad tracks in a shaded or an unshaded
8 area?

9 A They are really out in the open. There are a few
10 trees nearby, but I don't think that you could say that the area
11 is shaded at all.

12 Q Now, 6.2 picograms, now, if that were inhaled by somebody
13 every day, how much of that dose would actually get into the body?

14 A Probably about 30 percent.

15 Q And what do you base that on, sir?

16 A Well, I wouldn't expect it to get very far down the
17 respiratory tract. It would, particularly if it was attached to
18 dust particles, it would probably be moved upward, and then
19 swallowed and mixed with the contents of the digestive tract, so
20 30 percent is the figure that I recall that is used in the CDC
21 estimates as an estimate of the tract of TCDD that would be
22 absorbed from the digestive tract.

23 Q Now, I'd like you to assume further, sir, that Dr. Roush
24 testified that the TCDD--that's 44.6 picograms per man was a

1 daily dose from the CDC, all right, sir?

2 A Yes.

3 Q Now, in this instance, using this 620 figure, 30 percent,
4 what would be the daily dose from inhaling that? The highest
5 amount in the field plot?

6 A Well, the daily dose would be something on the order of
7 two picograms per day, assuming that absorption rate that I
8 already spoke to.

9 Q Now, and that two picograms a day is based on what
10 concentration, sir? Applied to the soil.

11 A I do not--

12 Q Look at Page 7, sir, of the exhibit, the field site.

13 A In that particular case, they used a Silvex that was
14 actually spiked with additional TCDD to the extent of 15 parts
15 per million.

16 Q All right. So they used the Silvex with 15 parts per
17 million?

18 A Yes, they added TCDD to it.

19 Q Now, if you were to assume, sir, that the soil had 3.1
20 parts per billion of dioxin in it rather than 15 parts per million
21 on the surface, could you calculate what that air concentration
22 might be if all the other circumstances were the same?

23 A I don't know, because--we're dealing with a situation
24 here in which the TCDD has been essentially diluted and sprayed on

1 top of the soil. If at 15 ppm, if we were to assume that the
2 material, now, are you referring to 3.1 parts per billion?

3 That would be what we calculated as the concentration in soil.

4 I'm not sure how to--I'm not sure how to relate that, because it
5 is in the soil and here we are talking about material that's on
6 the surface.

7 Q All right.

8 A But we have a much, much lower concentration in the soil
9 than we would have right at the surface of this, where all of
10 this TCDD has been applied to the surface and has not been
11 entrained in the soil, so the concentration right at the interface
12 between the air and the ground would have much, much higher
13 concentration than would these, than you would find in a soil
14 that contained 3.1 parts per billion distributed throughout the
15 soil. We can assume some infinite thinness of the top layer and
16 come to some kind of an equivalent. 3.1 parts per billion is
17 about 3,000 times less than 15 parts per million.

18 Q Now, does this experiment, sir, duplicate in your opinion
19 in any way the situation at Sturgeon, Missouri, as it's been
20 given to you in the hypothetical question?

21 A No, sir, I don't think it does.

22 Q Why not?

23 A Well, here we are talking about material that's been
24 spread on the surface and a surface that includes soil, vegetation

1 so forth, and Sturgeon, we are talking about material that was
2 in a very large volume of chlorinated phenol and phenol that
3 spilled into the soil, went down, saturated the soil, penetrated
4 to some depth, and then remained there as soon as it cooled until
5 the spring when the material, that is, the material that was
6 left after the cleanup that took place during the cold weather.
7 In fact, you've described that just a short time ago, so I don't
8 see any comparison at all.

9 Q Would you expect, sir, in the way the Sturgeon incident
10 occurred with the derailment and the material coming out of the
11 bottom of the tank car--

12 MR. CARR: Suggestive question, your Honor.

13 THE COURT: Objection is sustained. Please rephrase it.

14 Q Would you expect, sir, that in the Sturgeon situation,
15 well, can you tell us whether or not any TCDD that was in the OCP
16 and phenol that came out of the tank car would stay right at the top?

17 A No, sir, I don't think it would. I think it would follow
18 the--I think it would follow the OCP right down into the, in that
19 first, when it is first spilling, it will follow it right down
20 into the ballast and so forth.

21 Q Now, sir, if it had stayed at the top, if the TCDD had
22 stayed right at the surface, would it be more comparable to the
23 Nash study discussed in Plaintiff's--or Defendant's Exhibit 1148?

24 A Well, it would in a way. The volume of material is very,

1 very large, but it would be comparable, it would be the phenol
2 and the TCDD would be at the surface of this material.

3 Q And according to what Mr. Schroy has testified to with
4 respect to what happened in the cold and the winter months versus
5 the warm months, would any TCDD in it have volatilized during
6 January and February when the temperature was around zero?

7 A I would certainly doubt it.

8 Q And if it were all at the top, sir, what would have
9 happened to it during the cleanup?

10 A Well, it would have been carried away.

11 Q Now, sir, if it were all at the top, and you assume the
12 cleanup steps that I have suggested to you from the hypothetical
13 question, the depth, the levels, the amounts that was taken away,
14 and assume further, sir, that after that taking away was done,
15 that there was new soil and ballast put down, would you assume
16 that, sir?

17 A Yes.

18 Q Where would that, if there were TCDD there left, where
19 would it be?

20 A It would be under the added ballast, under the added
21 material.

22 Q And according to what I have asked you to assume from
23 Mr. Schroy's testimony as of six years from January of 1979,
24 would any of it have yet volatilized to the surface?

1 A According to Mr. Schroy, no.

2 MR. HEINEMAN: I have no further questions, your Honor.

3 THE COURT: Mr. Carr, do you have any further questions?

4 MR. CARR: Yes.

5 THE COURT: Before you start on your recross examination,
6 we will take a short recess at this time.

7 MR. CARR: Certainly.

8 THE COURT: Court is in recess.

9 (At this time, Court was in recess.)

10 THE COURT: Mr. Carr?

11 RECROSS EXAMINATION

12 BY MR. CARR

13 Q Dr. Dost, this morning Mr. Heineman was questioning you
14 and suggested that there were two things wrong with the Poiger and
15 Schlatter study if you have to make an assumption that there was
16 no intake of TCDD after the labeled material was put in, is
17 that correct, sir? Have I fairly and accurately stated that?

18 A Not quite. It could be either with none coming in or with
19 some already there and complete mixing of the material added. But
20 then none following, at least until other measurements are made.

21 Q And you made an assumption that this study of this
22 calculation was faulty because you assumed that this male volunteer
23 had continuous exposure to TCDD after ingesting this radioactive
24 TCDD?

1 A I said that's a question that has to be answered before--

2 Q Well, you apparently answered it in a fashion and said in
3 effect that that's what's wrong with this study because there
4 was material ingested.

5 A I said because of the frequency with which people are
6 found with an existing body burden of TCDD and the probability
7 that there is a continuing amount of TCDD coming into the body
8 that needs to be accounted for in the calculation.

9 Q Now Doctor, it is in comparison to the amount that was
10 radioactive, this volunteer was checked after 35 days, and I
11 think after 120 days, something like that, was he not?

12 A Yes.

13 Q Would the amount that would come in under these ordinary
14 circumstances be anywhere close to this amount?

15 A I have no idea.

16 Q Doctor, you have absolutely no idea at all, do you, sir?

17 A That's the reason why I need the answer to the question--

18 Q Well, Doctor, you are assuming that something occurred
19 during this test period and you have absolutely no information
20 that something did occur during this test period, isn't that
21 correct, sir?

22 A Yes, sir.

23 Q And what you are doing is simply speculating that
24 something may have occurred without the least factual knowledge

1 or evidence that something did occur in order to denigrate this
2 study, isn't that right, Dr. Dost?

3 A No, sir, not quite.

4 Q Well, did you make an assumption that this study was
5 faulty because it doesn't account for TCDD coming into the body
6 after the date of ingestion of this radioactive TCDD?

7 A Yes.

8 Q Yes. You have absolutely no knowledge that this male
9 volunteer was anywhere close to a can of Lysol, do you, sir?

10 A No, sir, I know nothing--

11 Q You have absolutely no knowledge that this volunteer
12 was anywhere near Sauget, Illinois or Nitro, West Virginia or
13 some other chemical plant where they make TCDD, do you, sir?

14 A No, sir.

15 Q You have absolutely no knowledge that this person ate
16 cattle that had been eating on rangeland that had been treated
17 with 2,4,5-T, do you, sir?

18 A No, sir.

19 Q What you have is knowledge, no affirmative knowledge that
20 he had any kind of exposure to TCDD other than what he ingested,
21 isn't that correct, sir?

22 A That's correct.

23 Q Yes. Now, Doctor, you made a statement that the radioactive
24 material would be diluted by the substance taken in after the

1 ingestion of the radioactive material, did you not, sir?

2 A Yes, sir.

3 Q Now, Doctor, the only way that that could affect the--
4 strike that for a moment. The person conducting this test
5 actually measured the amount of radioactivity of the TCDD that
6 was being excreted in the feces or urine, correct, sir?

7 A Yes, sir.

8 Q And they do that with what, some kind of a Geiger counter?

9 A A related instrument.

10 Q Sir?

11 A A similar instrument.

12 Q They truly count the number of beeps?

13 A Yes.

14 Q And they are counting the number of beeps coming from
15 that material that they put in, correct, sir?

16 A Yes.

17 Q And what you are saying then is the only way that could
18 have a diluting effect is if the body or--strike that. Does the
19 body excrete the same amount of TCDD no matter how much it has
20 in it?

21 A Excuse me, I'm not sure I understand you.

22 Q Does the body excrete the same amount of TCDD on a
23 daily basis no matter how much it has in it to start with?

24 A It would probably excrete some constant fraction of the

1 amount that's in it.

2 Q Well, the constant fraction is not the equivalent of
3 saying it excretes the same amount. It excretes--the more TCDD
4 it has in the body, the more it would excrete according to your
5 judgment, isn't that right?

6 A That's correct.

7 Q Do you have any knowledge upon which to base that
8 statement, sir?

9 A All of the animal studies that deal with TCDD metabolism
10 indicate that.

11 Q Now, Doctor, did these animal studies, did they measure
12 the feces and the urine excretion?

13 A Yes.

14 Q And they concluded that a certain constant amount was,
15 a certain constant percentage was taken out?

16 A That's the basis of the kinetic finding.

17 Q And, Doctor, all those animal studies, however, came
18 to the conclusion that there is a thirty-day half life of TCDD
19 in the animals except for the monkey that has a year half life,
20 isn't that right, sir?

21 A Yes.

22 Q Doesn't that suggest that something is in the area of
23 metabolizing, excreting this TCDD, there is something tremendously
24 different between the human body and the animal body?

1 A No, sir.

2 Q Well, Doctor, a thirty-day half life is nowhere like
3 4.95 years, according to Poiger and Schlatter, or three to five
4 years, according to Monsanto, isn't that right, sir?

5 A That's correct.

6 Q There is just a tremendous difference between thirty days
7 and three to five years, isn't there, sir?

8 A There is, yes.

9 Q And there is, therefore, a tremendous difference between
10 the human body metabolizes TCDD and the way the animals, the
11 experimental animals metabolize TCDD in the rates, isn't that
12 correct?

13 A No, sir.

14 Q Oh, the rates are the same, sir?

15 A There is only one experiment with a human.

16 Q Doctor, could you answer my question, sir?

17 A The answer is no, there isn't a difference. We don't
18 have information to answer it.

19 Q You have this information right here, don't you, Doctor?
20 You have the Monsanto information, don't you, sir? Three to
21 five years? You have the monkey study, don't you, sir, one year?

22 A I've discussed the monkey study.

23 Q Yes, we have those three studies, we have a monkey, which
24 is a primate, close to human beings. We have the calculation

1 made by Monsanto, and we have this study by Poiger and Schlatter,
2 do we not, sir?

3 A This study is incomplete.

4 Q Excuse me, Doctor. Could you answer that question, please?

5 A Yes, that's true.

6 Q Because we are discussing this study right now. We also
7 have the Viet Nam veterans who were exposed to TCDD in Viet Nam
8 many, many years before their fat was tested, correct, sir?

9 A Yes.

10 Q And we know that they have fat, the TCDD in their fat
11 tissue many, many years after their exposure, don't we, sir?

12 A If their exposure only took place then, yes.

13 Q Well, that's all the information we have. We have that
14 one veteran with nearly a hundred parts per trillion in his fat
15 tissue, did we not, sir?

16 A We know nothing else about them, that's correct.

17 Q Well, the scientists conclude, or their judgment is that
18 it was the Viet Nam exposure that caused the TCDD in these Viet
19 Nam veterans' bodies, isn't that right, sir?

20 A Some of them have made that conclusion, yes.

21 Q You have no information to the contrary, sir?

22 A No, sir.

23 Q Nothing factual at all to counter what they say?

24 A That's correct.

1 Q Now, Dr. Dost, we do have this study even with a dilution
2 that would suggest the metabolizing excretion rate in humans is
3 vastly different than that in the animal, vis a vis, 4.95 years
4 versus thirty days, don't we, sir?

5 A If this can be accepted.

6 Q Yes. Now, Doctor, if it can be accepted, now, the dilution
7 factor that you talk about, the TCDD that they counted, the
8 radioactive TCDD that they counted coming out in this person's
9 body had a half life of 4.95 years, didn't it, sir?

10 A Yes.

11 Q Now, that took in account whatever dilution there might
12 be in this body because of pre-existing TCDD or after ingesting
13 TCDD, doesn't it, sir?

14 A No, sir.

15 Q Well, Doctor, didn't they measure the TCDD, the
16 radioactive TCDD that came out of this man's excretions?

17 A Yes.

18 Q And they measured based upon that, that 25 percent came
19 out in a particular period of time, and therefore based upon what
20 their actual counts, they said the radioactive TCDD that's in
21 this body has a half life of 4.95 years, did they not, sir?

22 A They said that, yes.

23 Q Now, Doctor, they are measuring, when they measure the
24 counts, they are not measuring that which may have diluted, are

1 they, sir?

2 A No, and that's the problem.

3 Q Doctor, if you will bear with me. They are measuring
4 as far as this person is concerned the half life of radioactive
5 TCDD in his body is 4.95 years, isn't that correct, sir?

6 A Of the label that they put in, and that's all.

7 Q And that's exactly what I've asked you. Of the label
8 TCDD that they put in, the half life of that TCDD in this person's
9 body is 4.95 years, correct, sir?

10 A Just of the label.

11 Q Now, Doctor, isn't that what I am asking you? The label,
12 what they are measuring is the label, correct, sir?

13 A Yes.

14 Q And they are measuring label TCDD, aren't they, sir?

15 A Yes.

16 Q And the label TCDD that they put in there are, you said
17 is exactly the same as other TCDD for excretion purposes, correct,
18 sir?

19 A Yes.

20 Q So what they are measuring is the TCDD that they put
21 in, the TCDD that they put in this volunteered body has a half
22 life of five years, doesn't it, sir?

23 A We don't know. We have no way of knowing.

24 Q Doctor, we do have. They counted the blips on the

1 Geiger counter, they counted the blips that came out, did they
2 not, sir?

3 A That's not sufficient information.

4 Q Excuse me, did they count it or not?

5 A Yes, they counted it.

6 Q They counted all the blips that came out in this man's
7 excretion and feces for the period of time in question, didn't
8 they, sir?

9 A Yes.

10 Q And they know that the rest of it is in there, don't
11 they, sir? It didn't come out, did it, sir?

12 A That's correct.

13 Q And they measured the amount of the TCDD that they put
14 in as opposed to the amount that they put out, right, sir?

15 A No, the amount of label.

16 Q That's right, that's all they put in was label TCDD,
17 they didn't put anything unlabeled TCDD in this man's body, did
18 they, sir?

19 A Well, actually, part of that is unlabeled.

20 Q Doctor, are you now changing your testimony?

21 A No, sir, I am not.

22 Q They put in labeled TCDD and they measured the labeled
23 TCDD that came out, didn't they, sir?

24 A Yes.

1 Q And whatever didn't come out is still there, isn't it,
2 sir, of this label TCDD?

3 A Yes.

4 Q This label TCDD in this man's body under the circumstances
5 that he is living with, whether he has a lot of TCDD in there to
6 start with or whether he ingested massive TCDD later on, that
7 TCDD has the half life of 4.9 years?

8 A Yes.

9 Q Now, Doctor, that's the whole point. In this man's
10 body, the TCDD has a half life of 4.93 years and it makes no
11 difference as far as this man is concerned if he took in a lot
12 of TCDD later on or if he had a lot of TCDD in his body to start
13 with, this is an in common situation. In the human circumstance,
14 everybody that gets exposed to TCDD will have some TCDD in his
15 body, will he not, sir?

16 A Yes.

17 MR. HEINEMAN: Your Honor, objection, please, object
18 to the speech, ask that it be stricken and ask the jury be
19 instructed to disregard it.

20 THE COURT: Objection is overruled, properly part of the
21 question.

22 Q Now, Doctor, whether the new TCDD that comes in is
23 diluted by the existing TCDD or is diluted by some later TCDD
24 that comes in, the TCDD in that person's body has the half life

1 as suggested here, isn't that correct, Dr. Dost?

2 A No, sir.

3 Q Now, Dr. Dost, wherein is it incorrect if the label
4 TCDD, if you are not taking back what you said a moment ago
5 about the half life in this man's body of this label TCDD
6 being 4.95 years?

7 A You just used the term TCDD. Now we are trying to find
8 what the half time of TCDD in that person is. To do that we
9 have to introduce a marker of some kind that can be used to
10 follow it.

11 Q And they did that, they introduced the marker.

12 A They did that.

13 Q And they counted that marker.

14 A That marker dilutes with all of the TCDD in the body.
15 If there is additional TCDD coming into the body, it will further
16 dilute it and the TCDD, the label TCDD that comes out will
17 actually be representing a larger amount of material which will
18 give the illusion of a longer half life.

19 Q Yes, but Doctor, it won't be representing a larger
20 amount of the label TCDD. That TCDD is still in there, it
21 has the half life of 4.95 years, doesn't it, no matter how much
22 other TCDD comes out with it, it has the half life of 4.95 years,
23 doesn't it, sir?

24 A No, sir, it doesn't.

1 Q Didn't we just establish that you're measuring actually
2 what comes out, didn't they count exactly what came out, Dr. Dost?

3 A Yes.

4 Q And what didn't come out is still there, correct, sir?

5 A Yes.

6 Q And what is still there has the half life of 4.95 years
7 by actual measurements, doesn't it, sir?

8 A There is not enough information to make the calculation.

9 Q Well, now, Doctor, you made a calculation, you took away
10 from this conclusion when in point of fact what this study
11 shows is that there is a half life. There may be variances
12 from human to human as there is in any kind of thing. But the
13 label TCDD that was put in this person's body has a half life of
14 4.95 years, doesn't it, sir?

15 A The label as it is put in and the label as it is counted
16 out would provide that figure.

17 Q And that figure is 4.95 years, isn't it, sir?

18 A For the label.

19 Q And Doctor, so we just don't get hung up on the label,
20 the label is the 2,3,7,8 TCDD that was labeled with this
21 radioactive hydrogen atom, correct, sir?

22 A That was administered, yes.

23 Q So we are measuring the TCDD that was put in and that
24 TCDD that we took in at that point in time has that half life,

1 doesn't it, sir, of 4.95 years?

2 A If we consider only the label at this point, that's
3 the information.

4 Q All right. And Doctor, if a person took in, instead
5 of it being labeled TCDD, all other circumstances are the same,
6 instead of being labeled TCDD, radioactive, it was non-radioactive,
7 that TCDD would react the same way as the non-labeled--as the
8 labeled TCDD, wouldn't it, sir?

9 A I have no idea.

10 Q Doctor, you just got through saying that the labeled
11 TCDD and the non-labeled TCDD reacts exactly the same way in
12 the human body. Now, that's what you told us on direct examination.

13 A They behave the same.

14 Q Isn't that what you told us, sir?

15 A Yes.

16 Q If they behave exactly the same, the fact that you put
17 the label on it or the fact that you don't put the label on it
18 has no effect upon the result, isn't that correct, sir?

19 A You would have no way of measuring--

20 Q Excuse me, Doctor, I didn't ask you that.

21 A --for the molecules that you put into the body, this
22 figure would emerge.

23 Q So if you put in 105 micrograms of non-labeled TCDD in
24 this person's body, that bit that he ingested on that particular

1 day in that particular point in time, whether you label it or
2 don't label it, has got a half life of 4.95 years according to
3 this study, doesn't it, sir?

4 A The dose was 105 nanograms, which was a very small amount.

5 Q Nanograms, all right, my question is whatever the dose,
6 that TCDD was ingested on that day has a half life of 4.95 years,
7 doesn't it, sir?

8 A If no other TCDD went into the body afterward, that
9 would be correct.

10 Q And if more TCDD went into the body afterward, it is
11 still correct?

12 A No, sir.

13 Q Why not, Doctor?

14 A I have explained it several times.

15 Q Oh, Doctor, but what you explained was you counted the
16 counts that came out, it doesn't matter how many came out, how
17 much was there already, he could have swallowed barrels of it later
18 on, but the amount that came out, that he put in came out having
19 a half life of 4.95 years, they counted the blips, did they not,
20 sir?

21 A I'm trying to explain the science.

22 Q Doctor, they counted the blips, didn't they, sir, the
23 beeps?

24 A That's what they counted.

1 Q And that material that had these blips had this life of
2 4.95 years regardless of however much other TCDD may have been
3 there?

4 A The other TCDD influences it.

5 Q Does it make it more radioactive or less radioactive,
6 more counts or less counts?

7 A Per unit time, it could be more or could be less.

8 Q You believe that the other TCDD affects the radioactivity
9 of this label, sir?

10 A I've said nothing of the sort.

11 Q That's what I have asked you, does it give it more
12 counts per minute or less?

13 A It could cause it to come out faster or it could cause
14 it to come out slower.

15 Q Whether it came out slower or faster, this is the rate
16 it came out, at the rate of 4.95 years for half life, didn't
17 it, sir?

18 A Yes.

19 Q So how it was influenced by the other is immaterial.
20 This TCDD had the 4.95 years, didn't it, sir? Haven't you
21 answered that already a number of times, Dr. Dost?

22 A Yes, I have.

23 Q Now, Doctor, insofar as the various sources of the
24 TCDD that one is exposed to, you are aware of what the EPA says

1 about the sources of the TCDD to which we are exposed, don't
2 you, sir?

3 A I don't remember their precise statement.

4 Q Could you give the exhibit 1665 to the witness?

5 A I have that here on my desk.

6 Q You do? Fine. Turning to 4-38.

7 A Yes.

8 Q The paragraph that begins a little past the middle
9 of the page, "The primary sources of TCDDs in the environment
10 are industrial manufacturers of chlorophenols or their derivatives
11 and chemical disposal sites containing the wastes from these
12 industries."

13 A Yes.

14 Q And Doctor, it also says, "Municipal waste consideration
15 also may produce some environmental emissions of TCDDs," does it
16 not, sir?

17 A Yes.

18 Q And do you agree with the statement of the EPA that
19 these are the primary sources of these TCDDs, that is the
20 industrial manufacturers of chlorophenol or their derivatives
21 and the chemical disposal sites containing the wastes from those
22 industries?

23 A Well, those are certainly significant.

24 Q My question is do you agree with the EPA assessment here?

1 A Yes.

2 Q Doctor, one of the derivatives of these chlorophenols
3 is Lysol, isn't it, sir?

4 A Well, it depends on which product.

5 Q Now Doctor, did you understand my question?

6 A Yes.

7 Q One of the sources of contamination of the environment
8 with polychlorinated dibenzodioxins is Lysol, isn't it, sir?

9 A Well, I don't know whether it is a significant contributor
10 or not.

11 Q Doctor, did I use the word "significant contributor"?

12 A No, sir.

13 Q What did I say, Dr. Dost?

14 A You said one of the contributors.

15 Q Yes, and could you answer that question, please, sir?

16 A Which Lysol, of course?

17 Q Dr. Dost, you do know that Lysol contains dioxin, some
18 of the Lysols on the market contain dioxin, don't you, sir?

19 A If it is the chlorophenols, I've heard that, I've seen
20 some information.

21 Q You've heard that from Monsanto.

22 A Yes, I've seen data.

23 Q You've seen data. Doctor, where did you see the--did
24 a Monsanto official tell us that Lysol contains dioxin?

1 A I have not spoken to any Monsanto officials.

2 Q Then I take it a Monsanto official did not tell you
3 that, is that correct, sir? Is that the answer to my question?

4 A Yes.

5 Q Did one of the attorneys for Monsanto tell you that
6 Lysol contains dioxin?

7 A I was provided information by attorneys that described
8 some of that information.

9 Q Let me ask you again, Doctor, did one of the attorneys
10 for Monsanto tell you that Lysol contained dioxin?

11 A Well, I guess that would amount--yes.

12 Q Who was that attorney?

13 A I don't really remember who it was.

14 Q What attorneys have you had contact with that have
15 discussed the facts of this case with you?

16 A Well, Mr. Heineman, of course, Mr. Ryder, Miss Rudolf.

17 Q How about Mr. Nassif?

18 A Mr. Nassif is an attorney for Monsanto. I've discussed
19 it obviously with Mr. Nassif.

20 Q So it is one of those four lawyers told you that Lysol
21 contains dioxin, is that correct, sir? Or gave you the documents
22 that told you that Lysol contains dioxin, is that right, sir?

23 A Yes.

24 Q How long ago did you get this information, sir?

1 A I don't know. It's been quite a long time.

2 Q Now, did they also tell you that Dr. Kilgore was told
3 by a Monsanto official that Lysol contains dioxin?

4 A I haven't heard that.

5 Q Are you aware of the fact that Dr. Kilgore testified in
6 this case, sir, that he was told by an official of Monsanto's
7 that Lysol contains 2,3,7,8 TCDD?

8 A I wasn't aware of that.

9 Q But you got the same information from another source,
10 did you not, sir?

11 A Apparently, similar information, at least.

12 Q Now, Doctor, the fact that the particular can that you
13 have in front of you or could you get the Plaintiff's and
14 Defendant's little cans of Lysol out? I think there may be two
15 or three of them. Yes, one is a Monsanto, that's right. Now,
16 Doctor, each of these exhibits, that is, 487--874A and 1194, you
17 recognize as Lysol that you can buy in the supermarket?

18 A Yes.

19 Q And there are a lot of other Lysols that you can
20 buy in the supermarket, aren't there, sir?

21 A Yes.

22 Q And do you know just when the Exhibit 1326 and 1327 were
23 purchased or were acquired?

24 A I have no idea.

1 Q I take it you weren't part of buying it?

2 A No, sir.

3 Q You weren't told by the lawyer where they got them or
4 when they got them?

5 A No, sir.

6 Q You do know that sometime after this, after the Sturgeon
7 spill took place that Monsanto quit making Santophen because the
8 maker of Lysol went to the--what you would call the quats and
9 no longer uses Monsanto's Santophen, you do know that, don't you,
10 sir?

11 A Yes.

12 Q And it would be therefore likely that the Lysol that you
13 would buy today from the store, it would be likely that it does
14 not contain Monsanto's base product, wouldn't it, sir?

15 A I would think so, yes.

16 Q But do you know how many years the Monsanto based product
17 was used to manufacture Lysol and sold to the American public
18 prior to the time Monsanto quit making Santophen?

19 A No, sir, I don't know how long.

20 Q Doctor, didn't you discuss that issue with the attorneys
21 that gave you the information, or wasn't the information in the
22 documents that you got?

23 A Yes, it was, but I don't remember the time line.

24 Q Doctor, you know that it's been many, many years, don't

1 you, sir?

2 A For a substantial period, yes.

3 Q And all during that period of time you know that the
4 Lysol contained dioxin, don't you, sir? Up until the time
5 they quit using the Monsanto product?

6 A Yes.

7 Q And, Doctor, all for those many years, if TCDD has a
8 half life of 4.95 years as Poiger and Schlatter suggest, that
9 would mean that the Lysol contaminated with TCDD could be, that
10 TCDD could yet be in the bodies of the people living today,
11 couldn't it, sir, if they got TCDD from exposure to Lysol, say,
12 in 1979?

13 A If they had exposure and if it is correct, yes.

14 Q Now, the 1979 exposure, that Lysol that they got in 1979
15 would, half of it would still be in there today, sir, if this
16 exhibit is correct.

17 A If that is correct, yes.

18 Q And a quarter of that which they got in 1974 would still
19 be there, wouldn't it, sir?

20 A Yes, if that's correct.

21 Q And the 12 and a half percent of that which they got in
22 1969 would still be there?

23 A Yes.

24 Q And six percent of that which they got in 19--whatever,

1 twenty years ago, 1964 or 1959, would still be there, wouldn't
2 it, sir?

3 A In that event, yes.

4 Q And all those dioxins over that period of time would be
5 accumulating one on top of another, wouldn't they, sir?

6 A Not necessarily.

7 Q Well, Doctor, you say not necessarily. Could it occur
8 or not, sir?

9 A No.

10 Q It cannot occur?

11 A No.

12 Q Doctor, if you cannot excrete it at a faster rate than
13 4.95 years, isn't it still there? Isn't that the definition of
14 half life, Dr. Dost?

15 A If that's the half life, then the exposures must be
16 exceedingly low, because body burdens are very low.

17 Q Now, Doctor, I am not asking you that. My question was,
18 sir, that would add up one on top of another, wouldn't it, sir?
19 All these accumulated half lives over that period of time would
20 all still be there, wouldn't it, sir?

21 A No, sir.

22 Q If this is correct, sir, it is not being excreted in
23 the urine or the feces, is it, sir?

24 A Well, the material that's going in, it is going to be

1 coming out at the same rate it is going in. There will be an
2 equilibrium if the intake is constant.

3 Q Well, Doctor, if the intake is constant, but who says
4 the intake is going to be constant, sir? There will be a greater
5 exposure one day and less in another, wouldn't it, sir?

6 A But it will average out.

7 Q Well, everything averages out. The widest variety of
8 exposures and doses also average out so that you can say it is
9 a constant, can you not, sir? If you take three thousand figures
10 and add them all, various figures and divide them all by three
11 thousand, you are going to get the constant average, aren't you,
12 sir?

13 A Yes.

14 Q All right. Now, Doctor, this body burden that we have
15 in our bodies, is it in your judgment more likely that it has
16 come from this kind of exposure to Lysol, more likely that it's
17 come from the 2,4,5-T exposure, or more likely that it's come
18 from living near industrial wastes?

19 A I really don't know.

20 Q Let me suggest to you, Doctor, that the thing that we
21 all, if we all have it in our bodies, the most universal
22 substance to which we are all exposed one way or another is not
23 the 2,4,5-T on the rangeland, and it is not the industrial waste
24 site, but it is this product that's in every grocery store and

1 probably in the majority of the homes in the community, isn't
2 that correct, Dr. Dost?

3 A Well, I don't know how to quantitate the exposure.

4 Q Doctor, I'm not asking you to quantitate the exposure.
5 I'm saying of these sources of contamination that we all have
6 in our bodies now of TCDD, which is the most likely source of that
7 TCDD, the 2,4,5-T that's on the rangeland, the industrial waste
8 site been dumped by a chemical company, or the Lysol that we
9 are all exposed to?

10 A I'm having a little trouble differentiating between
11 amounts and frequency. Certainly the exposure, if it exists to
12 Lysol, is very common. How it compares quantitatively with the
13 potential for movement of TCDD through livestock, I'm not certain.

14 Q Doctor, this livestock, they quit using 2,4,5-T on
15 rangeland many years ago, didn't they, sir?

16 A Yes.

17 Q About 1970 thereabouts?

18 A No, sir.

19 Q When was it, Doctor?

20 A About '78 or '79.

21 Q They quit using that some five, four years ago before
22 Lysol quit having Monsanto's product in it, is that right, sir?

23 A Probably. I don't know just when they stopped using it
24 in Lysol.

1 Q Doctor, to your knowledge, has Monsanto ever informed
2 the EPA or the FDA or Lehn & Fink, the manufacturer or anybody
3 else that their Lysol contains dioxin?

4 MR. HEINEMAN: Your Honor, may counsel approach the
5 bench?

6 THE COURT: Sure.

7 (The following conference was held at the bench.)

8 MR. HEINEMAN: Your Honor, I have been trying not to
9 interrupt too much in the course of this examination because
10 I'd like to get this witness off the stand, but this is clearly
11 beyond the scope of the direct examination which I have just
12 conducted with this witness. It has absolutely nothing to do
13 with anything I've asked him, and I object to it as going
14 beyond the scope.

15 Further, I object on the ground that his opinion on these
16 subjects is absolutely irrelevant to this lawsuit.

17 MR. CARR: Your Honor, I see the two Lysol bottles
18 brought out by them in their redirect. They brought up the
19 subject of Lysol, they compared it with a possible accumulation
20 in the body. I submit it is within the scope of what they did.

21 MR. HEINEMAN: It wasn't compared with 2,4,5-T, the question
22 was when Mr. Carr told this question and asked him to assume
23 that there was Lysol, or there was dioxin in the Lysol spray,
24 the purpose of it was to demonstrate that there isn't Lysol

1 dioxin in this Lysol spray, and it's being sold to everybody,
2 which is what he stated in his examination of this witness.
3 It has nothing to do with comparison of 2,4,5-T or anything else.

4 MR. CARR: It has, too, it is what caused the dioxin to
5 be in our body.

6 MR. HEINEMAN: That was not the subject of the cross
7 examination.

8 THE COURT: Objection is overruled and I will make it a
9 continuing objection to this line.

10 (The following proceedings were held in open Court.)

11 BY MR. CARR:

12 Q Could you answer that question, Dr. Dost?

13 A You are referring to the time?

14 Q During the time that they manufactured the Santophen that
15 had the dioxin in it that was the cause of the Lysol having the
16 dioxin in it.

17 A I really don't--you are speaking about reporting to the
18 agencies?

19 Q To responsible governmental agencies that need to be
20 told where the contaminant is.

21 A I really don't know.

22 Q Doctor, you do know that it is an obligation of the
23 manufacturers to advise the appropriate governmental agencies
24 of the existence of dioxin content, do you not, sir?

1 A I don't know whether there is any specific requirement
2 of that sort or not.

3 Q Doctor, you are not familiar with the various regulations
4 of the EPA and FDA as to chemicals being manufactured?

5 A At the present time, yes, I do not know what the position
6 was at that time.

7 Q In '79 and '80, you don't know what the law was on the
8 books then, sir?

9 A That required, I do not know of a law that required that
10 kind of reporting.

11 Q You are not saying that there is or is not, you are
12 simply saying you do not know the law on the point?

13 A That is correct.

14 Q All right. In any event, you do know that laws do
15 exist in general that required chemical manufacturers to advise,
16 manufacturers of toxic contaminants?

17 A There are various procedures, I am not very familiar
18 with them.

19 Q I won't get into that. Doesn't that ever come up in
20 your work as a toxicologist?

21 A I am more interested in the effect of the chemical
22 than I am with the law as relating to reporting about it.

23 Q Now, Doctor, you have agreed or, no, you've taken it
24 back, you no longer agree that there is a, that some people can

1 react in one fashion to TCDD and others not, if I take your
2 testimony correct, is that right, sir?

3 A Well, it would be pretty much a function of dosage.
4 There is going to be some variability among individuals.

5 Q Doctor, you know there is variability. On this TCDD that
6 we have in our body, is it possible, Dr. Dost, as far as you know
7 that some people can have adverse health effects from TCDD
8 exposure or TCDD in their bodies and that other people would
9 not have such health effects?

10 A Oh, I'm sure there is some dose at which that might
11 possibly happen, at which that would occur, yes.

12 Q I'm not even asking relative to the dose, Doctor, given
13 the same dose, isn't it a fact that some people react adversely
14 and have bad effects while others may not be affected by it
15 at all?

16 A Well, that's possible.

17 Q Now, Doctor, it is not just possible, you know it is
18 a fact, don't you, sir?

19 A There is going to be a level at which nothing is going to
20 happen to any individual.

21 Q Well, now, Doctor, you have gone beyond my question
22 again. I said given an appropriate dose, Doctor, isn't it a
23 fact that some people can have adverse reactions, adverse health
24 effects and others will not have any adverse health effects whatsoever?

1 A Given an appropriate dose, yes.

2 Q And, Doctor, the toxic substance that's in the fat
3 tissue, TCDD, it doesn't act by itself, does it, sir, we are
4 exposed to other toxic substances, aren't we, from time to time?

5 A I'm sure we are, yes.

6 Q When the people smoke, Doctor, they are exposed to the
7 carcinogens and the toxic substances in the tobacco smoke,
8 aren't they, sir?

9 A Yes.

10 Q Now, Doctor, isn't it possible that the TCDD that they
11 take in can cause the toxins that are already there that could
12 cause lung cancer to become more active?

13 A Only if the dose is quite high.

14 Q Now, Doctor, you've seen, you've seen the Zack/Gaffey
15 reports, have you not, sir, that the lung cancer rate was
16 143 percent higher in one group of Nitro workers, are you aware
17 of that, sir?

18 MR. HEINEMAN: May counsel approach the bench?

19 THE COURT: Sure.

20 (The following conference was held at the bench.)

21 MR. HEINEMAN: It really isn't fair to a witness,
22 your Honor, to keep dragging him out with things that have nothing
23 to do with the scope of the examination that's just been gone into
24 with the witness. Now, we're going--we're back to Zack/Gaffey and

1 the 143 percent. Good Lord, that was covered a month ago with
2 this witness. It was not covered by me today, and I object to
3 it. It goes beyond the scope.

4 MR. CARR: Your Honor, he is saying that this is such a
5 little amount, and he said it throughout their case, that it
6 wouldn't affect anybody and it wouldn't have any effect on anybody,
7 and that's exactly what he said.

8 MR. HEINEMAN: That's got nothing to do with Zack/Gaffey.

9 MR. CARR: It has everything to do, because Zack/Gaffey
10 shows that the lung cancer rate is higher among people exposed to
11 TCDD than people not exposed to TCDD.

12 MR. HEINEMAN: Your Honor, the point is that we will
13 never, ever finish with this witness or any other unless we
14 require it stay within the bounds of the examination of the other
15 counsel, and this has, I've never even gone near this subject.

16 MR. CARR: You didn't ask the health effects, whether
17 or not that was enough volatility to affect anybody at Sturgeon?

18 MR. HEINEMAN: Does that mean that any subject covered
19 at any time in this case opens up every other subject?

20 MR. CARR: When you went into the health effects from
21 the amount of dioxin that these people were exposed to because
22 of their volatility, you opened up the door again and again on
23 how TCDD reacts with other chemicals. You don't have the right to
24 say, well, I can ask about volatility and ask if that volatility

1 will affect somebody, or that amount that's breathed in the lungs--

2 MR. HEINEMAN: You certainly maintained that in the past
3 with my cross examination.

4 THE COURT: Objection overruled. I think it is within
5 the scope.

6 (The following proceedings were held in open Court.)

7 BY MR. CARR:

8 Q Doctor, to get a little more specific on the lung cancer,
9 you testified about the amount of TCDD being inhaled if the worker
10 or somebody was in this microcosm or exposed to the vapor in the
11 Nash study, do you recall Mr. Heineman just asking you about
12 that, sir?

13 A Yes.

14 Q And you said something to the effect, yes, it is only
15 that which would go down into the stomach that would be poisonous,
16 only that 30 percent that would go down there, correct, sir?

17 A I said 30 percent of what was inhaled would probably
18 be absorbed.

19 Q And you said it would be absorbed because it would be
20 swallowed, didn't you, sir?

21 A It would be brought back up out of the respiratory tract.

22 Q That 30 percent would?

23 A The whole amount would be brought up.

24 Q The entire amount is going to be brought up out of the

1 lungs?

2 A If it is on particulate material, which is probably
3 the way that it is going to reach.

4 Q Now, Doctor, you are speculating. You're saying on
5 particulate material. They were not measuring in the Nash study
6 particulate material, they were measuring gas, vapor.

7 A They didn't know if it was vapor--

8 Q They described it as vapor.

9 A They didn't specify it.

10 Q They described it as vapor, did they not? They didn't
11 say it was dust, did they, sir? That's something that you threw
12 in there. The article says it was vapor, doesn't it, sir?

13 A The article says that it was airborne and they trapped
14 it, they didn't specify, they speculated that it was vaporized.

15 Q They speculated, Doctor? They said, they used the word
16 vapor, it was vaporized, did they not, sir? They said it was
17 volatile, vaporized, did they not, sir?

18 A That was Dr. Schroy's words, sir.

19 Q Yes, and the vapor, whether it is on dust particulate or
20 not, the vapor that's inhaled into the lungs, 30 percent may go
21 into the stomach, but the other 70 percent would remain in the
22 lungs, would it not, sir?

23 A If any of it is going to be moved into the digestive
24 tract, most all of it would.

1 Q Now, Doctor, you said 30 percent would go into the
2 digestive tract?

3 A No, I said 30 percent of what went into the digestive
4 tract would be absorbed.

5 Q When they are inhaling this vapor, Doctor, does the vapor
6 get into their lungs first?

7 A If it is in fact a vapor.

8 Q Or if it is in fact dust, it will still get into the
9 lungs, won't it, sir

10 A If it is dust, it will be moved back up, if it is a vapor,
11 yes, it will stay in the lungs.

12 Q Are you saying all of it will be moved back? You know
13 better than that, Dr. Dost.

14 A Most of the dust that goes into the respiratory tract
15 is moved out.

16 Q What you said was all of it, and you know better than
17 that. The vapor goes into the lungs, the dust goes into the
18 lungs, some of that TCDD in that vapor could well remain in the
19 lungs, could it not, sir? Just like the tar, just like the
20 nicotine from the cigarette smoke, isn't that right, sir?

21 A I would expect the TCDD to be absorbed and distributed
22 if it gets into the lungs, if it gets that far.

23 Q Doctor, that's not what I have asked you. It gets in
24 the lungs, it stays in the lungs until something else happens

1 to it, doesn't it, sir?

2 A Yes, that's correct.

3 Q Once it gets in there, it will stay there until something
4 happens to it, won't it, sir?

5 A Yes.

6 Q And it will touch the various tissue within the lungs,
7 won't it, sir?

8 A Yes.

9 Q And that TCDD touching that various tissue may either
10 remain on that tissue or be absorbed by that tissue and go elsewhere
11 into the bloodstream, correct, sir?

12 A Yes.

13 Q And in that bloodstream--and before it gets there, however,
14 it may have some damaging effect on the lungs, may it not, sir?

15 A No, I don't think so.

16 Q Doctor, have you assumed that the lung cancer rate is
17 143 percent higher in the Nitro workers, in the exposed Nitro
18 workers to 2,3,7,8 TCDD than it is to other population in
19 general, can you not assume, sir, that the TCDD played some role
20 in causing that lung cancer rate?

21 A If it is a fact, that that incidence is that different.

22 Q Yes, that's what I am asking you to assume, that it is
23 a fact.

24 A It would have to be considered possible.

1 Q Now, Doctor, not just possible, if it is a fact, it
2 occurred, didn't it, sir?

3 A Yes.

4 Q Sir? The TCDD in the lungs or in the body, however it
5 got there, caused the increased cancer rate if what I gave you
6 is a fact, correct, sir?

7 A I'm sorry, sir, that does not follow.

8 Q Is there any other fact that I have given you, now, I'll
9 grant you, Dr. Dost, as far as you're concerned you are sitting
10 right there, I could be misleading you, I could be making these
11 figures up, but I'm asking you to assume certain things. If
12 the lung cancer rate is 143 percent higher in those people
13 exposed to TCDD, can you not conclude that the TCDD is having some
14 role to play in that rate, sir?

15 A Well, there is an association between the two.

16 Q Doctor, I don't care whether you call it an association.
17 It has an effect, does it not, sir? Would you answer that
18 question, please?

19 A Well, I'm trying to decide how to answer it. An
20 association is not necessarily cause and effect.

21 Q Well, Doctor, you used the words "not necessarily." Do
22 you want to break that down?

23 A Well, you've told me that the cancer rate is high and
24 you have told me that they are exposed to TCDD.

1 Q Yeah, and that's all the facts that I have given you,
2 right, Doctor?

3 A That's correct.

4 Q And from that can you not draw a conclusion, sir, that
5 the TCDD has caused the lung cancer?

6 A Well, if there are no other factors operating at all.

7 Q If there are no other factors operating at all? What,
8 sir?

9 A If there are no other possible factors, then that would
10 be a fair conclusion.

11 Q Now, Doctor, that would indicate the lung cancer rate
12 is affected either by the inhalation of the TCDD or some other
13 effect that we don't know, correct, sir?

14 A Again, if there are no other possible factors that are
15 influencing those individuals.

16 Q Lung cancer is caused by the toxic substances inhaled,
17 isn't it, sir? Isn't that what doctors of the medical profession
18 generally believe?

19 A Yes.

20 Q It is not because it gets into your blood or not because
21 it gets into your vein or your bile or your liver or your kidney,
22 it is because the toxic substance gets into your lungs, sir, that
23 causes the lung cancer.

24 A Seems to, yes.

1 Q And if there is 143 percent higher rate in lung cancer
2 with those people exposed to TCDD, it does indeed follow that
3 the TCDD could contribute to cause that increase in the rate,
4 correct, sir?

5 A Yes.

6 Q Yes. All right. Now, Doctor, the same thing can occur
7 to others, other cancers or other sicknesses by the TCDD
8 that's in our bodies, can it not, sir?

9 A No, sir, I don't think so.

10 Q Doctor, is the effect of TCDD just in lungs and just in
11 lung cancer?

12 A No, sir.

13 Q It is a systemic toxin, isn't it, sir?

14 A Yes.

15 Q It can affect every single part of the body, can't it,
16 sir?

17 A Presumably, if there is a sufficient dose.

18 Q And, Doctor, it can affect other things in other ways,
19 can't it, sir?

20 A Only at an adequate dose.

21 Q Now, Doctor, you keep adding that, sir, and my question
22 is assuming that the dose is there, sir.

23 A Assuming that the dose is there, yes.

24 Q And of course we have gone all through that, and the dose

1 that is there can be a cumulative effect, can't it, sir? Other
2 doses added to it can add to the toxic effect of that which is
3 already there, just simple addition, correct, Doctor?

4 A It depends on the effect, sir.

5 Q It depends upon what health effect is being caused is
6 what you are saying.

7 A Yes, in part.

8 Q Some health effects are greater and others are less
9 than from the same amount of exposure, isn't that correct, sir?

10 A Yes.

11 Q Now, Doctor, you mentioned that the Moses study,
12 Exhibit 908 showed there is no dose response principle, do you
13 recall that, sir?

14 A No, sir, I didn't say that.

15 Q I'm sorry, you said exact opposite, that there is a
16 dose response principle involved, is what you told Mr. Heineman.

17 A That's correct.

18 Q And in point of fact, Doctor, we went through it and I
19 won't go through it again, if you acknowledge that you agreed
20 that in those symptoms that were shown by these workers, there
21 was no dose response shown except for half a dozen or so.

22 A Yes, because there wasn't sufficient dose to cause any
23 of those things.

24 Q Well, now, Doctor, who said there was not sufficient

1 dose to cause any of those? And who said they weren't caused?
2 Who said that these workers with the chloracne and without the
3 chloracne did not have these symptoms? Where did you get that
4 from, Doctor?

5 A The people with chloracne and without chloracne in that
6 group of symptoms that we had discussed did not show a difference.

7 Q Now, Doctor, that's not the same thing, they did not
8 have symptoms which you just got through saying.

9 A You're right.

10 Q There isn't any place in this document that says these
11 people did not have these afflictions that were described here,
12 isn't that right?

13 A That's correct.

14 Q As a matter of fact, for as far as you know from reading
15 this document, every single person there could have had joint
16 pains, isn't that correct, sir?

17 A That's possible.

18 Q No, it is more than that. From all you know from reading
19 this document, every single person there could have had joint
20 pain, abdomen pain, nausea, vomiting, diarrhea, irritability and
21 so forth, isn't that correct, sir?

22 A That would be correct, yes.

23 Q And what they found was those symptoms showed no difference
24 between the people who had chloracne and not chloracne, correct, sir?

1 A Yes.

2 Q And, Doctor, even with the exposure group, there was a,
3 clearly a no dose response insofar as even the chloracne is
4 concerned, isn't that correct, sir?

5 A No, sir, I don't agree.

6 Q Doctor, didn't you testify this morning that 55 percent
7 of the people had heavy exposure got chloracne and the others did
8 not? That's nearly 50 percent, Doctor, isn't it?

9 A What I described was that 55 percent of the heavy
10 exposures had chloracne.

11 Q Yes.

12 A Twenty-four percent of the moderate exposures had chloracne.

13 Q Right.

14 A Sixteen percent of the minimal exposures had chloracne.

15 Q Go ahead, I'm sorry.

16 A Well, then, of those who were defined as not having
17 exposure, there was a three percent increase.

18 Q Now, Doctor, you said that 55 percent had chloracne. It
19 would follow that the 45 percent did not?

20 A That's right.

21 Q Sir?

22 A That's correct.

23 Q Now, Doctor, these people, both sets of people are in
24 the group that had heavy exposure, correct, sir?

1 A By the definition that they used here, yes.

2 Q All we're going on is what they said here. You have
3 no independent facts, sir?

4 A That's correct.

5 Q So nearly half of the people had, that had the heavy
6 exposure, more than half the people that had heavy exposure got
7 chloracne and the other half did not, correct, sir?

8 A Yes.

9 Q Now, doesn't that indicate, Doctor, that there is no
10 dose response showed there if half get it and half not with the
11 same exposure? You had the same dose, half of them got it and
12 the other half didn't get it, isn't that correct, Doctor?

13 A That does not--

14 Q Excuse me, Doctor, isn't that correct?

15 A That half got it and half did not?

16 Q Yes.

17 A Yes.

18 Q And they had the same dose, didn't they, sir?

19 A We really don't know what their dose was.

20 Q No, Doctor, we do know. We know what is described in
21 that document that they had the same exposure, they worked side
22 by side, that's what we know, Doctor, don't we, sir? And that's
23 all we know.

24 A We have four categories.

1 Q Doctor, and we will get to the other categories. On
2 the heavy exposure group they had the same exposure so far as
3 that document shows, didn't they, sir?

4 A As far as this document shows, yes.

5 Q And that's all the knowledge you have, correct, sir?

6 A That's right.

7 Q And half of them, a little more than half of them got
8 chloracne and a little less than half of them did not get
9 chloracne, correct, sir?

10 A That's right.

11 Q Now, sir, is that what you call a dose response, same
12 dose and completely opposite reactions, is that a dose response by
13 your definition, Dr. Dost?

14 A It certainly is.

15 Q Doctor, what you are saying then is that dose response
16 means no--

17 A No, sir, I am not.

18 Q If you have a dose, you may or may not have an effect
19 because that's what occurred, isn't that correct, sir?

20 A No, sir.

21 Q That's exactly what occurred, Dr. Dost. They all had
22 the same dose, didn't they, sir?

23 A They had a similar dose.

24 Q Some reacted, correct, sir?

1 A Yes.

2 Q And some did not?

3 A And that will be true of any dose.

4 Q Isn't that correct, sir?

5 A Yes.

6 Q That's exactly the fact, isn't it, sir?

7 A Yes.

8 Q The half that did not get chloracne did not respond to
9 the dose, did they, sir?

10 A No.

11 Q There was no dose response in their instance, was there,
12 sir?

13 A Yes, sir.

14 Q Oh, did they get chloracne?

15 A That is not the definition of dose response.

16 Q What is the definition of dose response, Doctor?

17 A You are suggesting to me--

18 Q No, what is the definition of dose response, if that isn't it?

19 A As you increase the dose you increase the response or
20 you increase the frequency of response or you increase the degree
21 of response, and in this case, as the dose was increased, the
22 frequency of response was increased.

23 Q Your definition of dose simply is if you get more dose
24 you are going to have more effect?

1 A Precisely.

2 Q Doctor, that wasn't true of a substantial group of
3 people here. A substantial group of people got a heavier dose
4 than the other people, and they did not get a response, isn't
5 that right, sir?

6 A That's right.

7 Q So there was no dose response there, was there, sir?
8 People that had minimal exposure got chloracne, whereas other
9 people that had heavy exposure did not get chloracne, isn't
10 that correct, sir?

11 A According to the categories here--

12 Q Excuse me, isn't that correct, sir?

13 A According to these categories, yes.

14 Q And what that means, Doctor, is that some people react
15 one way and other people react in a different way to the same
16 toxic substance, isn't that correct, sir?

17 A A different way, not so, sir. They do not react
18 necessarily in a different--with different effects, they are more
19 or less sensitive.

20 Q Well, that's exactly what I have been asking about,
21 Doctor. The sensitivity varies from person to person, same dose,
22 exactly the same dose, some people will get chloracne and other
23 people will not, correct, sir?

24 A If that dose is intermediate, yes. If it is a very high

1 dose, everybody would perhaps get it.

2 Q Doctor, we have got a heavy dose right here and 55 percent
3 of the people got it and 45 percent did not. By definition, heavy
4 dose, sir.

5 A Well--

6 Q And this is all the information we have, isn't it, sir?

7 A Yes.

8 Q Yes. Now, Doctor, you also mentioned about this
9 bentonite. You told us that bentonite was diatomaceous earth
10 yesterday, and today you tell us it is not, correct, sir?

11 A I corrected myself, yes.

12 Q Would you answer my question yes?

13 A Yes.

14 Q Doctor, you were corrected by somebody else, weren't
15 you, sir?

16 A No, sir, I wasn't.

17 Q Who told you that it was not diatomaceous earth?

18 A I realized after I left the courtroom and I went immediately
19 and found a dictionary and clarified--

20 Q Did you have a conversation with your lawyers, with these
21 lawyers about that point, Doctor?

22 A No, sir, I didn't.

23 Q They didn't suggest to you--

24 A No, sir, as soon as I said it, I became concerned that I

1 had misspoken.

2 Q Now, Doctor, this misspeaking of yours, that's now
3 illuminous silicate, does that make any difference in your
4 opinion as to what took place last night? Your opinion happens
5 to be the same, doesn't it, sir?

6 A Well, my overall opinion is yes, we were speaking about
7 what would be the effect of water on bentonite, and that caused
8 me to get concerned about my definition.

9 Q Doctor, does the illuminous silicate present an
10 impermeable vapor barrier?

11 A I don't know whether or not it is absolutely impermeable,
12 but it is going to be rather tight.

13 Q Doctor, have you had an experience with illuminous
14 silicate?

15 A No.

16 Q Have you done any reading about illuminous silicate?

17 A All I know is it takes up water and swells.

18 Q All you know is you have read it in a dictionary.

19 A I have never used it, correct.

20 Q The answer to my question is that's the total experience
21 you have had with it?

22 A I have read other things, but they say essentially the
23 same thing.

24 Q Is your answer to my question is that's yes, that's your

1 total knowledge of it is what you have read in the dictionary?

2 A Yes, I think so.

3 Q So we could read a dictionary and draw our own conclusions,
4 couldn't we, sir?

5 A Yes.

6 Q And you have no knowledge whether it would or would not
7 keep a gas vapor from rising, would you?

8 A Not direct knowledge, no.

9 Q Doctor, you haven't got any indirect knowledge, you
10 haven't worked with it in the laboratory or any other place,
11 have you, sir?

12 A No.

13 Q And you haven't read anything other than the dictionary,
14 correct, sir?

15 A Well, I have in past times, that's one of the reasons
16 I became concerned about my definition, because I remembered
17 things that I had read at other times.

18 Q Doctor, other things that you had read in past times,
19 you had forgotten it and you had to look it up and learn it all
20 anew?

21 A Certainly remind myself, yes, sir.

22 Q All right. Now, Doctor, you indicated earlier that
23 Dr. Moses in this 908 study, I think the words you used was that
24 there was some slippage of exposure, correct, sir?

1 A I recall that, yes.

2 Q Doctor, in point of fact, the Moses/Salikoff study
3 highlights and emphasizes, in effect, underlines that the people
4 without chloracne are not unexposed controls, don't they, sir?

5 A Yes, they make a statement--

6 Q Excuse me, my question is, is they emphasized it, they
7 underlined it, didn't they, sir? They italicized it.

8 A I remember that some place. Could you point it out
9 to me.

10 Q Well, it is on Page 170.

11 A Yes, as a matter of fact, I read that earlier in the
12 day.

13 Q And, Doctor, there isn't a single other place in this
14 article where they emphasize or italicize like they did in that
15 information, isn't that correct?

16 A Yes, that's correct.

17 Q Now, that can't hardly be called "slippage", can it, sir,
18 when the only thing in the entire article that's emphasized is
19 the fact that the people without chloracne are not unexposed
20 controls, isn't that correct, sir?

21 A That's correct.

22 Q What they're telling us, and what they mean to communicate
23 to us is the salient fact that there were workers that have a
24 work exposure history at Nitro, they cannot be an unexposed control

1 simply because they do not have chloracne, isn't that correct,
2 Doctor?

3 A Yes.

4 Q Now, Doctor, insofar as the mortality rate, I'm sorry,
5 before I get to that, you talked about controls. You need to have
6 a--compare it with a group of people who live in the same town or
7 in the same area that don't work in a chemical plant, do you
8 recall that, sir?

9 A Yes.

10 Q Point of fact, Doctor, don't we have controls already
11 for everybody that's afflicted with any disease in every
12 community in this country?

13 A Not really.

14 Q Doctor, don't we have what's called laboratory controls
15 for each specific test?

16 A Yes.

17 Q Now, Doctor, isn't that a control group for each specific
18 test, the laboratory controls?

19 A Not--no, sir.

20 Q Now, Doctor, are you familiar with how the laboratories
21 get their values?

22 A Yes, I am.

23 Q You know they do go out and take people from the community,
24 don't you, sir, and run tests on these people?

1 A No, they don't do that generally, sir.

2 Q Now, Doctor, you don't know that they do that?

3 A They develop a statistical pattern of all of the analyses
4 that they do. They don't go out and recruit people to come in
5 and have blood work done, for example. There may be laboratories
6 that do that, but the general practice is for a laboratory to
7 maintain a statistical background for all of the assays that it
8 does.

9 Q Well, Doctor, they do that, but they also run controls
10 as well, do they not, sir?

11 A They generally rely on historical controls. They rely
12 on, if you will, textbook information and so on.

13 Q Doctor, you don't know that, for instance, Mayo's has
14 controls for its porphyrias, you don't know that, sir?

15 A I wouldn't be surprised that Mayo may.

16 Q And you don't know that all the laboratories that work
17 in immune studies also have controls?

18 A The laboratories that I am familiar with do not run,
19 the clinical laboratories, the research laboratory would run
20 controls.

21 Q Well, Doctor, even aside from that, how they get their
22 data, they do have a control group to compare the other data
23 with, don't they, sir?

24 A Yes, they have their historical controls.

1 Q The ones with historical controls may consist of
2 thousands of people, won't it, sir?

3 A Yes.

4 Q And that is indeed a control group, isn't it, sir?

5 A For a given test, yes.

6 Q Yes. Now, Doctor, insofar as the mortality rate,
7 you mentioned insofar as the workers at Nitro were concerned
8 in this valley that you have, that there is something intrinsic
9 in that region and nobody knows what it is, we have no way of
10 knowing what it might be that's causing this high cardiovascular
11 disease rate, correct, sir?

12 A It is slightly higher than the national average, yes.

13 Q Is the answer to my question yes, we have no way of
14 knowing?

15 A Yes, sir.

16 Q Now, Doctor, do you know that that valley is called
17 "Chemical Alley" or "Chemical Valley" by some people, don't
18 you, sir?

19 A Yes, sir.

20 Q There is a lot of chemical plants there, Monsanto has a
21 very large plant there, doesn't it, sir?

22 A Yes.

23 Q And other companies as well?

24 A Yes.

1 Q And, Doctor, it could be that the emissions from these
2 plants, the toxic substances being emitted from these plants
3 could contribute to cause this higher mortality rate from
4 cardiovascular disease, couldn't it, sir?

5 A Yes, it could.

6 Q And, Doctor, it could be the dioxins emitted from the
7 Nitro plant could play a role in this higher mortality rate,
8 correct, sir?

9 A I would doubt it. You say it could be if we use that
10 language.

11 Q That's the language used.

12 A Since we cannot say that it does not, yes.

13 Q And, Doctor, it is known that chemicals can cause
14 cardiovascular heart disease, that's a known fact, isn't it, sir?

15 A Well, certainly chemicals can, I think.

16 Q And, Doctor, can it not be that the higher mortality
17 rate in this valley, including the Nitro workers, is because
18 the chemical that these people are living in this valley have
19 been exposed to?

20 A Well, you say "can it not be", I think that, yes, I can't
21 answer it in the negative.

22 Q Doctor, is there anything about the lifestyle of people
23 in this valley that would be different to your knowledge from
24 the lifestyle of anybody else that could cause this increased

1 mortality rate from cardiovascular disease?

2 A I am really not familiar enough to say.

3 Q Doctor, you have been there.

4 A I have been there, but I can't--

5 Q You've walked the streets, have you not, sir?

6 A Yes.

7 Q You testified in Court there.

8 A Yes.

9 Q You have eaten there, you've slept there, you've stayed
10 there for weeks at a time.

11 A I have been there for a few days, yes.

12 Q Is it for weeks at a time?

13 A No, I don't--possibly one week.

14 Q Dr. Dost, you are familiar with their lifestyle as much
15 you can be with that limited sojourn, isn't that right, sir?

16 A From that very limited sojourn, I can't tell a thing
17 about them that's different.

18 Q That's correct.

19 A They have a different accent.

20 Q Sir?

21 A They have a different accent than we have at home.

22 Q What you can tell, Dr. Dost, is that they live--their
23 lifestyle is much the same or if not exactly the same as the
24 rest of us, correct, sir?

1 A To the extent of my knowledge, that could be correct.

2 Q They have McDonald's, they have Kentucky Fried Chicken,
3 they have Bonanzas, they have all of the same kind of eating
4 establishments that we have here in St. Clair County, don't they,
5 sir?

6 A Yes, I presume.

7 Q And you saw nothing about their lifestyle that you could
8 put your finger on or even come close to saying was the cause of
9 this increased mortality rate, isn't that correct, sir?

10 A That's correct.

11 Q The only thing that you do know that is different in
12 that valley from the rest of the country is the presence of
13 these chemical plants, isn't that correct, sir?

14 A Well, there are other parts of the country that have
15 similar, but that is all I know about, yes.

16 Q There are other parts of the country that have chemical
17 plants as well, isn't that right, sir?

18 A Yes.

19 Q The people that live in Rush City, Illinois have a
20 chemical plant right next door to them. The people that live in
21 East St. Louis have a chemical plant right next door to them on
22 the sides of them, they have them in Washington Park, they have
23 them in Sauget.

24 A I know that there are many plants around.

1 Q And, Doctor, there are higher cardiovascular disease
2 rates in any place that's not a large number of chemical plants,
3 isn't that correct, sir?

4 A That I don't know, sir.

5 Q You don't know that?

6 A No, sir.

7 Q Have you looked for it, Doctor?

8 A No, sir, I have not.

9 Q And, Doctor, insofar as the people inside the plant and
10 the people outside the plant, if you don't know right now from
11 this study whether the people at Nitro have a higher or lower or
12 the same cardiovascular death rate as the people outside the plant
13 in that valley, do you, sir?

14 A On the basis of the information I have, I don't know
15 what the relative rates are.

16 Q So it could be as far as what you know is that the heart
17 disease rate on the people within the plant is higher than the
18 heart disease rate or death rate of the people outside the
19 plant, correct, Dr. Dost?

20 A On the basis of the information in this paper, I don't
21 know. It is interesting that they state that the incidence of
22 heart disease in these people is slightly but not significantly,
23 not statistically, significantly different from the rate in the
24 country at large, and they also point out that the State of

1 West Virginia has found that there is in fact a statistically
2 different rate.

3 Q Where does it say that, Doctor? Where does it say that?
4 You are just putting that in there, aren't you, Dr. Dost? It
5 doesn't say that at all.

6 A I don't know whether it says "statistically different" or not.

7 Q No, you said that it says it, but it doesn't say that.
8 Look on Page 178, Dr. Dost.

9 A "Mortality from cardiovascular disease is known to be
10 higher than national rates in the Kanawha Valley where the plant
11 is located."

12 Q And it doesn't say statistically significant, does it, sir?

13 A No, you're right. That's correct.

14 Q And, Doctor, whether they're higher or lower, it could
15 be that the people in the plant and the people in the valley are
16 having their heart trouble from the chemicals to which they are
17 respectively exposed, isn't that correct, sir?

18 A You say it could be, knowing nothing else--

19 Q Doctor--

20 A That could be.

21 Q You cited Seveso as an example of a dose response, did
22 you not, sir?

23 A I don't remember.

24 Q You don't remember Mr. Heineman asked you about Seveso, Italy?

1 A He asked me, I believe, if there was chloracne at
2 Seveso, and I said that yes, there was.

3 Q And you said yes, there was. Now, that statement, if
4 we didn't know, have any other information, would make us
5 believe that the people at Seveso all had chloracne, wouldn't
6 it, sir?

7 A Not necessarily, no, sir.

8 Q Doctor, in point of fact you know that very few adults
9 got chloracne and only sixteen percent of the kids got chloracne,
10 you knew that?

11 A That's correct.

12 Q And when you said that--when Mr. Heineman asked you
13 that question, you knew that there was a very low rate of incidence
14 of chloracne at Seveso, didn't you, sir?

15 A Yes.

16 Q And all those people were exposed to this, weren't they,
17 sir? Just a very small percentage got chloracne.

18 A Yes.

19 Q And that indicates again, sir, just as shown in the Moses/
20 Selikoff study that some people can be exposed to a substance
21 and react one way and other people exposed to the same substance
22 and the same doses don't react that way, isn't that correct, sir?

23 A At a given exposure, yes.

24 Q Now, Doctor, talking about Dr. Schroy's work that you and

1 Mr. Heineman went back into, you still got Plaintiff's Exhibit
2 1413 there?

3 A Yes, I have it.

4 Q And there was some discussion about DDT?

5 A Yes.

6 Q Would you look at the very first, the page numbered 1
7 on Exhibit 1413?

8 A Yes.

9 Q Schroy says, does he not, that the vapor pressure of
10 DDT and TCDD are not identical but they are similar?

11 A Yes.

12 Q Does he also say that the environmental mobility of
13 TCDD should be similar to DDT?

14 A Yes.

15 Q And what did he say earlier was the cause of the environmental
16 mobility of DDT, Dr. Doast?

17 A He spoke about the volatility.

18 Q Yes.

19 A Of TCDD.

20 Q That's exactly what he said, didn't he, sir?

21 A Yes.

22 Q And he says the same thing here, doesn't he, sir?

23 A I am not really sure that he is saying the same thing here.

24 Q Now, Doctor, he testified in this case that he believes

1 the world was contaminated with DDT because it was volatile,
2 you recall that, sir?

3 A Yes.

4 Q We went into that?

5 A Yes.

6 Q And he is testifying here, not testifying here, his
7 study here he says the environmental mobility of TCDD should be
8 similar to DDT, doesn't he, sir?

9 A Yes, he is saying that.

10 Q Environmental mobility means how it moves in the environment,
11 doesn't it, sir?

12 A Yes.

13 Q And isn't he saying that if DDT contaminated the world
14 because of its volatility, because of its particular kind of
15 mobility that TCDD has the similar or the same, similar kind of
16 mobility?

17 A I really don't think he is making that broad a comparison,
18 sir.

19 Q Doctor, he says exactly that. He says, "Thus, the
20 environmental mobility of TCDD should be similar to DDT," end
21 of quote, doesn't he, sir?

22 A Yes.

23 Q I didn't add a word there?

24 A No, sir.

1 Q He is saying that they should be similar, isn't he, sir?

2 A Yes.

3 Q And he says that several investigators showed that DDT
4 is mobile in the environment because of what, sir?

5 A Vaporization.

6 Q And what is it that he is saying that is similar to
7 DDT?

8 A He is saying that the environmental mobility of TCDD
9 should be similar to DDT.

10 Q And he demonstrates in this study, does he not, sir,
11 that it is?

12 A In this study, he is speaking of the transport of TCDD
13 in soils and is comparing it to DDT.

14 Q He is talking about the transport up into the environment
15 through vaporization, isn't he, sir?

16 A Well, he is talking about how it behaves in soil.

17 Q Now, Doctor, this three pages here, he says, concludes,
18 "Thus TCDD should be mobile, via vaporization, in the environment,"
19 doesn't he, sir, on the next page?

20 A Yes, he says that.

21 Q Now, Doctor, that vaporization in the environment is in
22 our environment, isn't it, sir?

23 A Presumably.

24 Q And he is saying that TCDD should be mobile by the fact

1 that it is vaporized in our environment, doesn't he, sir?

2 A He is drawing a comparison, he is making a prediction.

3 Q Well, and his study he comes out and says his model
4 proves his prediction, doesn't he, sir?

5 A Well, in his study his model describes the movement of
6 TCDD in soil in a soil matrix.

7 Q Now, Doctor, doesn't he conclude that this model fits
8 the volatility of DDT and TCDD?

9 A Yes, in the soil.

10 Q Yes. Does he say in any place here that TCDD will act
11 differently in the soil or in the atmosphere than DDT?

12 A Well, he is not discussing the atmosphere, really,
13 except as he, in fact, he isn't discussing the atmosphere, I
14 don't believe he is talking really about soil.

15 Q Doctor, the whole purpose of this study, according to
16 his background notes, is to show what's going to happen to DDT
17 because it is a vapor, that he spends three pages discussing.
18 The only background he gives is discussing the vaporization
19 through volatility, isn't that right, sir?

20 A Yes.

21 Q And he concludes that his model supports his theories in
22 the background, doesn't he, sir?

23 A Yes, in the soil, that's what he is looking at.

24 Q Doctor, does he anywhere say that it will act differently

1 in the atmosphere than the DDT?

2 A No, sir.

3 Q Doesn't he say that TCDD should be mobile via vaporization
4 in the environment?

5 A He says it should be.

6 Q And hasn't he said that TCDD, that Nash and Beale have
7 demonstrated that TCDD is volatile in laboratory microcosm and
8 field experiments?

9 A Yes.

10 Q And they measured the TCDD in the air, Nash and Beale?

11 A Yes.

12 Q In the form of vapor, correct, sir?

13 A Well, they used the term vapor, yes.

14 Q Now, Doctor, are you--you made--your Honor, I've got
15 past ten 'til five.

16 THE COURT: Gentlemen, could I see you at the bench
17 for a minute, please?

18 (An off-the-record discussion was held
19 at the bench.)

20 THE COURT: Okay.

21 BY MR. CARR:

22 Q You've made a number of statements about the volatility
23 in the ballast or that Eglin is like Sturgeon ballast. Doctor,
24 the material at Eglin was buried, wasn't it, sir?

1 A Very sandy.

2 Q Did you understand my question, Dr. Dost? The material
3 at Eglin was buried?

4 A Excuse me, sir, I did not hear your question correctly.
5 It was buried, it was placed on a dugout and covered.

6 Q And the material at Sturgeon and at Times Beach was not
7 buried, was it, sir?

8 A I do not know about Times Beach, other than what I have
9 read.

10 Q Doctor, in Times Beach, the material was sprayed on the
11 surface. So you don't know anything about Sturgeon other than
12 what you would have told, either?

13 A That's correct.

14 Q Now, Doctor, you were given a long hypothetical question
15 about the fact that dirt was removed in this cleanup, were you
16 told that in the passing track, sir, they found 92,000 parts per
17 million of OCP right in the middle of the passing track after
18 they removed all this dirt, after they did all this removal that
19 Mr. Heineman told you about?

20 A This was after the thaw, yes, there was one pocket--

21 Q Oh, one pocket? Is that what you were told? Did somebody
22 tell you--

23 A I saw the data.

24 Q Doctor, are you answering questions that Mr. Heineman gave

1 you on what he gave you or on independent research here?

2 A Well, I have seen--

3 Q Could you answer my question, Doctor?

4 A Well, all of my data relative to Sturgeon is provided
5 through the attorneys.

6 Q I'm--directing your attention to the hypothetical
7 question that Mr. Heineman gave you relative to the cleanup.

8 A Yes.

9 Q Dr. Dost, you understand that if you're answering questions
10 that he's giving you that way or on other facts that are not in
11 that hypothetical question, I have no way to cross examine you
12 on it except what's in that hypothetical. Now, did he not tell
13 you in that hypothetical, did he, sir, that the passing track
14 still had 92,000 parts per million of OCP in it?

15 A I don't remember. I don't believe that was in the
16 hypothetical.

17 Q And he didn't describe the passing track area as a pocket,
18 did he, sir?

19 A No, sir.

20 Q And then your understanding is that this contamination
21 was just in a pocket some place and is that the reason you
22 gave this answer that you did?

23 A It was a single spot where that concentration was observed.

24 Q And is the answer that you have given to the questions

1 that you--the answer that you have given to Mr. Heineman based
2 upon your belief that it was a single spot?

3 A Well, that was what the analytical data showed.

4 Q Then is the answer to my question yes, that it is based
5 upon your belief that it was a single spot?

6 A Yes.

7 MR. CARR: Your Honor, I would move to strike his answer--

8 THE COURT: Gentlemen, could you approach the bench,
9 please?

10 (The following conference was held at the bench.)

11 MR. CARR: He now says that he responded to Mr. Heineman's
12 hypothetical based upon his belief that it was in a spot, and
13 I submit that I have absolutely no way of cross examining the
14 witness if he is going to answer questions based not on the
15 hypothetical given but on exhibits that he's looked at and studies
16 that haven't otherwise been identified.

17 THE COURT: Which specific answer or answers are you
18 talking about?

19 MR. CARR: That there wouldn't be any material there to
20 volatilize. Let's see, exactly what all did he ask him about?
21 Maybe rather than striking, I just better ask him questions
22 because the jury won't--they will remember what he said, but they
23 won't remember because of the lateness of the hour what it was
24 that was stricken.

1 THE COURT: Fine.

2 (The following proceedings were held in open Court.)

3 MR. CARR: I withdraw that Motion, your Honor.

4 THE COURT: Motion is withdrawn.

5 BY MR. CARR:

6 Q Doctor, the data that you got, what was it in the form of?

7 A Well, I seen a variety of analytical data, sampling data,
8 that was taken at different times in that area.

9 Q And it is your belief that based upon that data that
10 there was just a one sample tested that found a pocket of OCP
11 after the cleanup took place?

12 A No, sir, not quite. There was OCP found at various levels.
13 There was only, as I recall, that one place where there was a
14 high concentration.

15 Q Doctor, didn't you read, did you get the soil sample book
16 where there is concentrations of 29,000, 30,000, 15,000 parts
17 per million of OCP in the phenols? You didn't see those?

18 A That was after the first cleanup and after the thaw
19 began, as I recall. And that was, I believe, the reason why
20 the second cleanup was undertaken.

21 Q That's right, Doctor, The entire passing track and other
22 areas besides had never been cleaned and they found those
23 levels of OCP and phenols there, didn't they, sir?

24 A Down in the soil, yes.

1 Q All right. Now, Doctor, when you answered the hypothetical
2 that Mr. Heineman gave you, did you assume that the second cleanup
3 had already taken place?

4 A I assumed that most of--I think I used the term that most
5 of the material had been removed.

6 Q My question is, did you assume that the second cleanup
7 had taken place?

8 A I don't believe I had.

9 Q And you assumed all these contaminations that were there
10 then that you saw on this data, assumed that all that tract was
11 thusly contaminated, didn't you, sir?

12 A I'm trying to remember the hypothetical.

13 Q And that's the problem, you are answering the hypothetical
14 but you have in mind other data that you saw, and we don't know
15 what it is you are basing your answer on. Now, when you answered
16 the hypothetical question, did you have in mind that the
17 contaminated soil was all removed or not?

18 A I had in mind that most of the contaminated soil was
19 removed and there was still some material remaining.

20 Q And how much was that some material that was remaining?

21 A I suspect five percent.

22 Q Five percent of the material remained?

23 A Mr. Gilmer of the EPA, as I recall, said that 99 percent
24 was removed. I had assumed 95.

1 Q You are talking about Mr. Gilmer's statement in March
2 of '79, correct, sir?

3 A Yes.

4 Q Dr. Dost, that's what the EPA did say in March of '79,
5 that's what the government officials said exactly like you say,
6 but now after that, Dr. Dost, and the answer to the question that
7 you gave to Mr. Heineman was based upon your belief that 99 percent
8 had been removed, I take it?

9 A Sir, I had--

10 Q Ninety-five percent had been removed?

11 A I had two hypotheticals.

12 Q Excuse me. Could you answer that question, Dr. Dost?

13 A Yes.

14 Q And, Doctor, the TCDD that was in the soil in April,
15 in April of '79 that was not removed could volatilize, couldn't
16 it, sir?

17 A In the sense of moving in the soil slowly, yes.

18 Q Doctor, it could volatilize from the top layer of that
19 soil that had trapped it, couldn't it, sir?

20 A If there was any right at the top, that would be possible.

21 Q And, Doctor, you're still assuming that what Harry Gilmer
22 said was correct, that 99 percent or 95 percent had been
23 removed, right, sir?

24 A In respect to the question you're asking, that wouldn't

1 really matter.

2 Q Doctor, would you listen to my question and answer it,
3 please, sir? Are you still assuming that as Mr. Gilmer stated
4 in March of '79 that 99 percent, or as you have assumed, 95
5 percent was removed?

6 A No, sir, because I had also been asked a hypothetical that
7 assumed there had been no cleanup, and my conclusion--

8 Q I'm talking about the one where you were giving the cleanup
9 but there was 95 percent removed?

10 A I don't recall whether I was using a figure. I had made
11 the assumption that most of the material was gone and I don't
12 think that I really assigned that percentage. I just don't
13 remember it.

14 Q Now, Doctor, are you aware of the time that after this
15 99 percent pronounced by the EPA clean bill of health took place
16 that the fish in the Kemner pond died and the fish in Saling
17 Creek died for miles and miles around Sturgeon?

18 A Yes.

19 Q And you are aware of the fact that they removed tons
20 and tons of dirt after that, sir?

21 A Yes.

22 Q You are aware of the fact that they found the passing
23 track contaminated for 300 feet or better in the area where it
24 spilled in the ditches alongside and the area between the passing

1 track and the main track contaminated?

2 A With OCP, yes.

3 Q And, Doctor, all of that took place after Harry Gilmer
4 pronounced a clean bill of health, are you aware of that, sir?

5 A Yes.

6 Q Doctor, how can you conclude that 99 percent of it was
7 removed? The figures that Harry Gilmer went on had nothing to
8 do with the removal of the dirt subsequently, his information
9 came only in the first dirt removing. He didn't say that after
10 that in 1980 when the cleanup finished. He said that before
11 the second cleanup ever started, aren't you aware of that?

12 A Yes.

13 Q And, Doctor, the ballast that was poured on top of the
14 contaminated dirt in the passing track, that would not prevent
15 the vapor from rising, would it, sir?

16 A According to Dr. Schroy, it would move about the same
17 as it does in sand.

18 Q Where did Dr. Schroy say that?

19 A He made the statement it would move, it would behave
20 similarly to the way it behaved at Eglin.

21 Q You believe that he said that, Dr. Dost?

22 A I believe that it was in his testimony.

23 Q And do you believe that it is true, sir?

24 A I think that it would move similarly. I think that

1 possibly there might be some difference in rate, but the same
2 physics would apply.

3 Q Now, Doctor, you know the ballast is not sand, you know
4 that, don't you, sir?

5 A It is coarse, yes, sir.

6 Q And, Doctor, you also, oh, you don't know, you believe
7 that all of the TCDD would go right down with solvent?

8 A When it first spilled, it would go down with the
9 solvent.

10 Q You are not aware of what the University of Missouri
11 discovered in that aspect?

12 A Oh, yes, I certainly am.

13 Q What did the University of Missouri say?

14 A They put TCDD in a solvent, small amounts.

15 Q Excuse me. My question is what did they conclude?

16 A They concluded that the soil would remove TCDD from a
17 solvent, but they used very small amounts of solvent, and I
18 would expect the TCDD to come out very readily in the kind of
19 experiment they conducted.

20 Q Now, Doctor, they weren't--do you agree with Dr. Schroy
21 where he said that the University of Missouri study said that
22 the first inch and a half of the soil would take up all the TCDD
23 contaminant?

24 A Well, in the experiment they did, that's true. It is a

1 different situation.

2 Q Well, then, you disagree with Dr. Schroy's statement that
3 it is not a different situation, is that right, sir?

4 A I don't know whether Dr. Schroy said it would behave--

5 Q Mr. Schroy.

6 A Mr. Schroy said it would behave exactly the same way in
7 the track as it did in that soil column.

8 Q Doctor, he testified that the University of Missouri
9 study showed it would go down about three centimeters, a little
10 over an inch, and that all the TCDD would remain in the top three
11 centimeters and the solvent would keep on going.

12 A Yes, in that experiment that they did, that's true.

13 Q And, Doctor, what experiment have you done to suggest
14 that in the OCP situation it would go with the solvent?

15 A I haven't done experiments on TCDD in the soil, but
16 the amount of solvent.

17 Q Dr. Doat, what I am asking you, have you done any work
18 to say that the University of Missouri work doesn't apply to
19 Sturgeon?

20 A Well, I think that simple physics would say that it
21 doesn't.

22 Q Doctor, would you answer my question, please, sir?

23 A No, I have not.

24 Q Doctor, you know Dr. Schroy has done the work--or Mr. Schroy

1 and Dr. Freeman have done the work, and you know the University
2 of Missouri has done the work and University of Missouri say
3 and Mr. Schroy interprets what they say as saying that when the
4 TCDD is in a solvent, the top inch and a half is going to catch
5 the TCDD, and you differ with that based upon no work of your
6 own, is that right, Dr. Dost?

7 A I differ with it with respect to Sturgeon, yes, sir.

8 Q Based upon no work of your own?

9 A That's correct.

10 Q Doctor, if the University of Missouri is correct and if
11 Mr. Schroy is correct, all the TCDD is there in that top layer
12 of soil, aren't they, sir--isn't it, sir?

13 A I don't think that's what Mr. Schroy said. If he said
14 that it would behave in exactly the same way that Missouri study,
15 then I would presume that that would be true.

16 Q Now, Doctor, don't you recall that Mr. Heineman read
17 you the question, read from the very pages, "QUESTION: So far
18 as Sturgeon is concerned, based upon your studies, if we had
19 cold weather in January and February, started warming up in March,
20 April, May, that's when the TCDD would start volatilizing that's
21 in this top layer of soil," do you recall that, sir?

22 A Yes.

23 Q And the answer was, "The rate would increase probably
24 about June would be when it would really start causing problems

1 when it really starts to get hot." Do you recall that, sir?

2 A Yes.

3 Q And you do recall that he agreed that the TCDD would be
4 in the top layer of soil, don't you, sir?

5 A I'm sorry, but I don't believe that he said that the
6 TCDD at Sturgeon would stay in the top, in the top layer. He
7 was describing the physics of the situation in Missouri where
8 there was a small amount of solvent.

9 Q Doctor, where did you ever say that the Missouri study
10 was not valid for Sturgeon?

11 A I don't recall that he said it was not valid. It
12 illustrated the effect of soil on TCDD in the ideal situation.

13 Q And, Doctor, then he was asked how it would act at
14 Sturgeon. Do you recall that, sir?

15 A I don't recall what he said.

16 Q Doctor, he was asked the question about the TCDD would
17 start volatilizing in the top layer of soil.

18 A Yes, I recall that.

19 MR. HEINEMAN: What page, counsel?

20 MR. CARR: The one that you read, counsel, on Page 108.

21 A I am curious what Dr. Schroy said, or Mr. Schroy, said
22 about the behavior of TCDD as it moves into the soil in a large
23 amount of OCP as the situation was at Sturgeon.

24 Q Doctor, he agreed that the OCP was a solvent, I think

1 that's what he said. Does that answer your question?

2 A That describes the solvent. I am not sure what he
3 said with respect to material moving through the soil.

4 Q Doctor, it will go through the soil faster if it is
5 a better solvent, won't it, sir?

6 A It may, but it depends on the amount of the solvent
7 and the flow rate.

8 Q Well, Dr. Dost, on that point, you have absolutely
9 nothing to counter what the University of Missouri says about
10 the OCP and the flow rate or anything else, isn't that right, sir?

11 A Well, their experiment was with different solvent, and
12 I believe that their experiment is correct.

13 Q You believe it is correct?

14 A Yes.

15 Q And the top inch and a half would contain the TCDD?

16 A I question that very strongly.

17 Q But, Doctor, you just got through saying it was correct.

18 A I don't think that the Missouri experiment applies to
19 a massive amount of OCP and a very minute amount of TCDD moving
20 through a soil column.

21 Q Doctor, do you have anything at all to base that judgment on?

22 A Only some basic physics, only my experience with
23 chromatography columns.

24 Q Chromatography columns?

1 A It is the same principle.

2 Q Doctor, this Defendant's Exhibit 1148, do you still have
3 that, sir?

4 A Yes, I have.

5 Q You referred to Table 3, did you not, sir?

6 A Yes.

7 Q Doctor, they discuss concentrations of TCDD in the air
8 in a shaded outside plot, don't they, sir?

9 A Yes.

10 Q Does that indicate that it is in the air there, sir,
11 volatile and not degraded by the sunlight?

12 A Well, that which they found, yes, I don't know. It is
13 in the air, certainly.

14 Q And not degraded by the sunlight?

15 A The amount that they measured was not degraded.

16 Q Doctor, in this same work of Schroy's he quotes from
17 Mieure in which Mieure concludes on Page 8, if you would look, sir.

18 A Yes.

19 Q "That measured losses of 1,3,6,8 TCDD from soil may have
20 been due to vaporization, the reduction in 1,3,6,8 TCDD concentrations
21 in the field soil plots was not due to degradation or movement of
22 the molecule into the soil column." Do you see that, sir?

23 A Yes, sir.

24 Q And he cites with approval this statement of Mieure's,

1 doesn't he, sir?

2 A Yes, sir.

3 Q And what is the half life that Mieure reported for
4 TCDD in this soil sample, sir?

5 A Well, for this TCDD?

6 Q Yes.

7 A And it would differ, they report half times of 131 and
8 321 days.

9 Q Now, Doctor, that is just slightly more than the 36 hours
10 postulated earlier, is it not, sir, and by slightly more, I mean
11 a heck of a lot more, isn't it, sir?

12 A Yes.

13 Q And, Doctor, there is not 24 hours of daylight, is there,
14 sir?

15 A No, sir.

16 Q And the TCDD that comes up in the shady time or when it
17 is under the ballast and rises through the ballast in the gaseous
18 form or the vapor form, it is not subject to degradation by any
19 theory that you know of, is it, sir?

20 A No, sir.

21 Q And the 24-hour a day volatilization or vaporization
22 would be subject to inhalation by people living in that community,
23 would it not, sir?

24 A If it could get into the atmosphere, yes.

1 Q Doctor, is there anything to prevent it from getting
2 into the atmosphere other than loose, porous ballast and wouldn't
3 gas rise through loose, porous ballast?

4 A Gas will move randomly in that ballast and small amounts
5 of it will emerge.

6 Q It will all ultimately emerge, won't it, sir, according
7 to Schroy's theory?

8 A According to Schroy's theory.

9 Q And according to Misaure's calculation?

10 A It will take a very, very long time, yes.

11 Q Doctor, do you think that the 90 percent that he said
12 volatilized in the top one centimeter soil during the first summer
13 was a long, long time?

14 A That was TCDD in oil that was sprayed on the surface.

15 Q Yes.

16 A And he didn't, he said that it vaporized, but the fact
17 is that his model simply shows disappearance, and I think it is
18 very highly likely that most of it simply degraded in the sunlight.

19 Q Doctor, you have never done any work in this regard,
20 have you, sir?

21 A No, sir.

22 Q Mr. Schroy has, has he not, sir?

23 A Yes.

24 Q And he says it volatilized, didn't he, sir?

1 A He said that, yes.

2 Q And he said 90 percent of it voltttilized from the top
3 centimeter, didn't he, sir?

4 A Yes, he was projecting back.

5 Q Excuse me, Doctor, didn't he say that's what occurred?

6 A Yes, he said that.

7 Q That's not a very, very slow rate, is it, sir?

8 A He said that, well, he said volatilization.

9 Q Doctor, that's not a very, very slow rate, is it, sir?

10 A No.

11 Q It is exceedingly fast rate, isn't it, sir?

12 A Yes, if it is correct.

13 Q Doctor, do you have any study at all to suggest that
14 it is incorrect?

15 A No, sir.

16 Q And when you said earlier that according to Schroy,
17 it wouldn't volatilize, you were incorrect, weren't you, sir?

18 A We have had a problem with a matter of degree. I have
19 never denied that TCDD would not volatilize.

20 Q I wonder if you could direct your attention to my
21 question, Dr. Dost. You testified just a few minutes ago that
22 according to Schroy, the TCDD would not volatilize. That statement
23 is incorrect, isn't it, sir, according to Schroy it would
24 volatilize, wouldn't it, sir?

1 A I'm trying to remember the context of my original answer.

2 Schroy states that that material volatilized at Times Beach.

3 Q And is the answer to my question yes, it is correct

4 according to Schroy, it does volatilize?

5 A According to Schroy, it does volatilize.

6 MR. CARR: That's all the questions I have.

7 MR. HEINEMAN: No questions, Judge.

8 THE COURT: Doctor, you may step down. Thank you.

9 Gentlemen, could I see you at the bench for a moment?

10 (An off-the-record discussion was held

11 at the bench.)

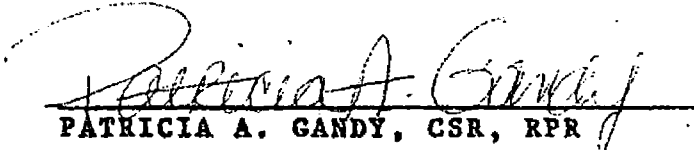
12 THE COURT: Okay, ladies and gentlemen, we are going
13 to break for the day at this time and as I remind you that you
14 won't be coming in tomorrow, we will see you Thursday morning
15 at 9:30. Thank you for your attention and cooperation. Court
16 is adjourned.

17 (At this time, Court was adjourned for the day.)

1 STATE OF ILLINOIS)
2) SS.
3 COUNTY OF ST. CLAIR)
4
5
6
7

8 I, Patricia A. Gandy, CSR, RPR, Official Court Reporter
9 in and for the Twentieth Judicial Circuit, and the Official Court
10 Reporter who transcribed the above-styled cause had on December 17,
11 1985, do hereby certify that the foregoing transcript of proceedings
12 is a true, correct and complete transcript of the proceedings had
13 on said date.

14 DATED this 31st day of December, 1985.

15
16 
17 PATRICIA A. GANDY, CSR, RPR
18 Official Court Reporter
19
20
21
22
23
24