

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

FRANCES E. KEMNER, et al,

Plaintiffs,

vs.

MONSANTO COMPANY,

Defendant.

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CAUSE NO. 80-L-970

REPORT OF PROCEEDINGS

Before the HONORABLE RICHARD P. GOLDENHERSH

January 10, 1986

APPEARANCES:

MR. REX CARR, Attorney at Law, and
MR. JEROME SEIGFREID, Attorney at Law,
On Behalf of the Plaintiffs.

MR. KENNETH HEINEMAN, Attorney at Law, and
MR. JOSEPH NASSIF, Attorney at Law,
On Behalf of the Defendant.

TRACY LYBARGER, C.S.R., R.P.R.

Official Court Reporter

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1 BE IT REMEMBERED AND CERTIFIED, that heretofore,
2 on to-wit: January 10, 1986, the matter as hereinbefore
3 set forth came on for hearing before the Honorable Richard
4 P. Goldenherst, Circuit Judge in and for the Twentieth
5 Judicial Circuit, State of Illinois, and the following was
6 had of record, to-wit:

7 (The following Offer of Proof was had out of the
8 hearing and presence of the jury.)

9 THE COURT: You may be seated. Mr. Carr?

10 CONTINUED CROSS EXAMINATION

11 BY MR. CARR:

12 Q Dr. Kimbrough, we were discussing the Missouri
13 Health Study yesterday. What in your judgment is the
14 number of people that would suffer from dizziness--percen-
15 tage of people?

16 A You mean in the study or in the general popula-
17 tion?

18 Q In the general population?

19 A A lot. I don't really know.

20 Q You have no idea whatsoever as to what percentage
21 of people you would expect to have dizziness in the general
22 population?

23 A It--no, not really. It depends on the age and--

24 Q Doctor, the general population includes all ages.

1 What percentage of the general population do you expect to
2 have dizziness?

3 A I guess almost everyone will be dizzy at some time
4 at some point.

5 Q Doctor--and you know that that's not what I'm
6 asking you about--I'm asking you in terms of the Missouri
7 Health Study. You asked that question; you put that
8 question in there for your people to discover whether or
9 not the people that have been exposed to dioxin have a
10 particular sign or symptom. What percentage of people do
11 you expect to answer in the affirmative from the general
12 population?

13 A I didn't put that question in there.

14 Q Doctor, you testified in behalf of Monsanto here
15 earlier that you and others at CDC helped to design that
16 proposal; the name of CDC is on the cover as being one of
17 the participants; I believe you said that CDC helped fund
18 it, if not fund it entirely; you are here as an expert
19 witness; you brought up the subject of the Missouri Health
20 Study in your direct testimony. I'd like--if you don't
21 take responsibility for it, who will take responsibility
22 for the study?

23 A I helped design the study, as you correctly
24 stated, but I'm not responsible for each and every question

1 on that questionnaires. When you work in a group and design
2 something, you make certain suggestions, and then you
3 finally arrive at a protocol by consensus. But, that
4 doesn't mean that I have to agree with every question that's
5 on this questionnaire or that I feel that every question is
6 important.

7 Q But, when you said you arrived at a consensus, you
8 did indeed participate in the proposal and you did, includ-
9 ing you, arrive at a consensus. Now, that question is in
10 there; and I know that you discussed it with the people
11 before it was put in there; I know you considered it,
12 you're that type of scientist; and I'm sure that you had in
13 your mind at that time what you would expect the general
14 population to reveal would be a symptom of dizziness when
15 asked such a question. Now, I'm now asking you today what
16 percentage of the population do you believe would have
17 dizziness?

18 A I believe that most people at some point have
19 dizziness, and I don't think it was a good question.

20 Q Doctor, I know; we've said that.

21 A And that was my opinion--

22 Q But that question, if you put in in expecting
23 that answer, then there would be no point in putting it in,
24 because the answer would be 100 percent. What did you

1 expect to get a normal percentage of population to answer
2 in the framework that you asked the question designed to
3 discover health effects?

4 A In my opinion it was a meaningless question. That
5 was my personal opinion.

6 Q Now, Doctor, if you expect a hundred percent of
7 the people to have dizziness to answer in the affirmative,
8 then it would be revealing indeed that only 15 percent with
9 a high risk exposure were dizzy. That would suggest to you
10 as a scientist, wouldn't it, ma'am, that dioxin has an
11 effect upon the body that would prevent a person from being
12 dizzy?

13 A No.

14 Q Oh, it wouldn't? If you expect a hundred percent
15 affirmative answers, and you only got 15 percent?

16 A It just reveals that maybe people answered the
17 question in some way where they only considered dizziness
18 of a profound dizziness, or I don't know how--it's a very
19 soft assessment of a health effect.

20 Q Doctor, that may be, but it was one of the factors
21 you used to assess health effects. And by "you" I mean you
22 as a participant in this Missouri Heath Study. And, there-
23 fore, I'm obligated to ask you about it. If you say today
24 all of these questions were meaningless, then what you are

1 telling me is that your health study was meaningless and
2 that CDC participated in a meaningless event or scientific
3 endeavor, one that was designed from the outset to show
4 nothing and designed to tell the world there's nothing
5 wrong with anybody. We at the CDC, we at the Missouri
6 Public Health System, and we at St. Joseph's Hospital
7 conducted this great survey of the exposed people, and we
8 find nothing wrong with them; we find them to have no prob-
9 lems that are not existent in the general population. It
10 sounds to me like, and I submit to you that you can either
11 disagree or agree with this statement of mine, it sounds to
12 me like you created a phony study for the purpose of a
13 publicity and taking away from the effects of dioxin. Is
14 that correct, Dr. Kimbrough?

15 MR. HEINEMAN: Object to the speech, your Honor,
16 and move that it be stricken as not part of the question.
17 Improper.

18 THE COURT: It was proper--in viewing the
19 question in it's totality, it's a proper question in cross
20 examination. Overruled.

21 A I did not say that all of these questions were
22 meaningless. I just simply said that dizziness was
23 something that occurred commonly in the general popu-
24 lation, and that if you just take one question like that out

1 of context without evaluating all of the other things that
2 we did in this study that--it just doesn't mean anything.
3 And to ask me what I think the prevalence of this would be
4 in the general population really all by itself is meaning-
5 less. It depends on how persistent the dizziness is with
6 somebody that has this symptom. You then have to examine
7 them to see if there are other things wrong with them. But,
8 just by itself--people every once in a while when they get
9 up very rapidly out of bed, they may feel that they are
10 slightly dizzy early in the morning, or they may have a
11 hangover, or they may have some dizziness. So, it's
12 something that can be very common. But, in the context of
13 all of the other things, it may mean something. That's why
14 we ask these questions. And we partly ask the questions,
15 because at the moment we really don't know--that was also
16 the problem with the design of the Ranchand Study--what the
17 health effects are that might be caused by ICDD. It's like
18 throwing out a net and then seeing whether there are
19 differences and then trying to interpret that and see
20 whether there actually may be some health effects that may
21 be associated with this type of exposure. That's what
22 epidemiology of--this type of epidemiology is all about when
23 you don't do clinical trials.

24 Q Doctor, I suggest you didn't answer the question

1 that I posed to you. Was this study designed simply to
2 placate the public? That is, to let the public believe
3 that you were doing something about the dioxin problem and
4 then ask meaningless questions and come up with meaning-
5 less means taking--lumping all the laboratory findings
6 together and getting just means? Was it for the purpose of
7 letting the public believe that you were doing something
8 about the dioxin problem and then announcing the results
9 that there's no difference between the two groups exposed;
10 they all have ailments that everybody has; and therefore
11 dioxin doesn't cause any problems?

12 A No, of course not. We tried the best we could.
13 What I'm trying to explain to you that there are limi-
14 tations to what is called observational epidemiology, and
15 you are trying to misrepresent and misinterpret our work.

16 Q Doctor, what I've asked you, every question that
17 I've asked you about so far that you submitted to the
18 people, every single one that I've asked you about so far
19 you've in effect said is meaningless because you can have
20 swelling in the hands at any time in your life, because you
21 can have--everybody has headache, because everybody has
22 joint and muscle aches, because everybody has dizziness,
23 because everybody has a peripheral neuropathy. These
24 questions then, every single time you've answered you've

1 said in effect that question is meaningless; isn't that
2 correct?

3 MR. HEINEMAN: Objection, your Honor, mischar-
4 acterizes the witness' testimony.

5 THE COURT: Overruled.

6 Q Isn't that correct?

7 A No.

8 Q Which question did you say was meaningful?

9 A For instance, I said that losing weight, ten
10 pounds--over ten pounds of weight--

11 Q I do stand corrected; you did say that was mean-
12 ingful.

13 A --was important. And I never said that any of
14 these questions were entirely meaningless. They are only
15 meaningless if you take them out of context; and that's what
16 you are doing. See, you have to understand and you have to
17 evaluate all of this together rather than just saying--

18 Q Now, Doctor, before we can evaluate it all to-
19 gether, we have to arrive at what was found and the basis
20 for determining the validity of what was found. And I do
21 agree that you did say the weight loss had meaning, but all
22 the other questions thus far you've said have no meaning,
23 that they can't in effect use it to asses the health
24 conditions of these people; isn't that correct?

1 A I didn't say that they had no meaning; I said that
2 this was something that was very prevalent in the general
3 population and it was difficult to interpret. That's what
4 I said.

5 Q Well, you didn't interpret it at all?

6 A Or that's what I tried to say anyway.

7 Q You gave no significance to the fact that 36 and
8 41 percent of the people respectively had persistent
9 headaches, did you, ma'am, because you said what--a hun-
10 dred percent of the population--was that the one you said a
11 hundred percent have headaches--50 percent of the population
12 have headaches; isn't that right, ma'am?

13 A We were talking about numbers here.

14 Q Isn't that what you said?

15 A We weren't talking about headaches in general.

16 Q Isn't that what you said, ma'am?

17 A I said that headache is very prevalent in the
18 general population.

19 Q No, you said that half the people or better have
20 headaches?

21 A Yes.

22 Q Twenty-five percent of the other people have
23 swollen legs, swollen limbs, swollen fingers?

24 A That's the way it is. I mean, there's nothing I

1 can do about it.

2 Q Well, Dr. Kimbrough, I'm not asking whether or not
3 that's the way it is; I submit to you that that's a flip
4 answer that you've given to me and not one that's meant to
5 enlighten me. Dr. Kimbrough, I'm asking you specifically
6 as to the meaning of these questions and as to the meaning
7 of this study. I would appreciate if you would respond
8 accordingly. Doctor--

9 MR. HEINEMAN: Object to the speech, your Honor,
10 and move it be stricken.

11 THE COURT: Overruled.

12 Q Doctor, what percent of the population do you
13 believe will have loss of sensation in their extremities in
14 the context of the study that was conducted in the way the
15 question was posed for the purpose of using and putting that
16 question in, what percent of the people in the general pop-
17 ulation would you expect to answer that they had loss of
18 sensation in the extremities?

19 A What do you mean by loss of sensation?

20 Q Whatever you meant in the question that you put to
21 the people?

22 A I mean, are they totally numb?

23 Q I'm sorry, whatever you meant, ma'am. I don't
24 know what you meant; you were the ones that designed the

1 study, I did not; it is your question, not mine. Whatever
2 you expected to get as a response. What response did you
3 expect to get from the general unexposed population when
4 you asked that question?

5 A There will be some people who will report occa-
6 sional loss of sensation--

7 Q Doctor, to save some--are you going to give me a
8 percentage?

9 A Yes.

10 Q All right.

11 A Up to somewhere between 25 and 30 percent. On the
12 other hand, total loss of sensation and inability to feel
13 hot and cold in addition to that would be a percentage that
14 would be around five or less.

15 Q Well--and in what context did you ask the ques-
16 tion? Which one of those parameters controlled the
17 question you asked?

18 A In this case, it was the broader question, as I
19 remember. I would have to go back to the questionnaire.

20 Q So, you would expect what--50 percent of the--

21 A No, I said around 25 percent.

22 Q Twenty-five percent of the people to answer in the
23 affirmative?

24 A For the broader question, which is not total inca-

1 pacity. But, I would have to go back to the questionnaire
2 to sort out what additional questions there were to
3 determine whether we were dealing with the total loss and
4 whether you could actually gather that from the question-
5 naire. I don't remember.

6 Q And you don't have the questionnaire here, so I
7 can't really examine you on that either; can I?

8 A No. It's really a study, as you correctly stated,
9 done by the Missouri State Health Department. And that's
10 where the questionnaires and all that would be.

11 Q Doctor, if you would expect 25 percent to have
12 these kind of problems, and you only end up with 20 percent,
13 that would indicate that dioxin is doing something to the
14 nervous system as well; wouldn't it?

15 A I'm sorry, could you--

16 Q If you expected 25 percent to answer in the
17 affirmative, and you only got 19 or 20 percent, that would
18 be significant; wouldn't it, ma'am?

19 A No.

20 Q You don't think so?

21 A No. It just depends on--you see, you are asking me
22 about the general population.

23 Q Yes.

24 A And then, it depends on the age distribution and a

1 lot of other things.

2 Q Doctor, you designed this study with the age in
3 mind of that very group; did you not?

4 A Of that very group, but the general population.

5 Q You picked your group to mirror the general popu-
6 lation; did you not?

7 A No.

8 Q You did not?

9 A No, because we had a comparison group; and that's
10 why we picked--

11 Q What comparison group did you have?

12 A That's the low risk group.

13 Q The low risk group was exposed. What kind of
14 comparison group is that?

15 A Well, we didn't think they had any exposure.

16 Q Now, Doctor, you just got through telling me yes-
17 terday that if they walked on the streets of Times Beach
18 they had exposure; did you not? Didn't you tell me that
19 yesterday? Didn't you tell me that yesterday?

20 A That's what you said.

21 Q No, that's what you said, Doctor. Did you not say
22 that yesterday that if they walked on the streets of Times
23 Beach they had exposure?

24 A As far as we could determine--

1 Q Doctor, answer my question, please. Isn't that
2 what you said yesterday?

3 A Could we read back what I said yesterday?

4 Q No, because she doesn't have it. I asked you the
5 question if people walked on the streets of Times Beach and
6 were included in this questionnaire and in the low risk
7 group, and you said they were. I said, "Well, then they had
8 exposure; did they not?" And you said, "Yes, they did."

9 MR. HEINEMAN: Objection, your Honor, misrepres-
10 sents the witness' testimony.

11 THE COURT: Overruled; it does not.

12 Q Don't you recall that being asked?

13 A I would have to go back to the record. It's on the
14 record, so you can clarify it.

15 Q I know it's in the record. But, now you are saying
16 that the people had no exposure; aren't you?

17 A I'm saying that it was a low risk group, and we--

18 Q Doctor, that's not what you are saying now, that
19 they had no exposure. They did indeed have exposure in the
20 low risk group, most of them; didn't they?

21 MR. HEINEMAN: Object to the question; interpret-
22 ted the witness' answer; argumentative.

23 THE COURT: Not responsive; objection is properly
24 made; your objection is overruled.

1 A No.

2 Q Doctor, did you not say that the people in the low
3 risk group, most of them had exposure? Could you answer
4 that question directly?

5 A No.

6 Q Are you in fact answering the question saying "no"?

7 A I'm not understanding any more where we are.

8 Q Doctor, did you not testify yesterday that most of
9 the people in the low risk group had some kind of exposure
10 to dioxin?

11 A I would like to go back--

12 Q Doctor, could you answer that question directly,
13 please?

14 A As I recall the conversation, you said that they
15 walked across the street and couldn't they have had some
16 exposure walking across the street. And I said yes.

17 Q Yes. And you agreed that they lived in Times
18 Beach; did you not, ma'am?

19 A Not all of them; some of them.

20 Q All right. Most of the people lived in these
21 contaminated areas, did they not, that were in the low risk
22 group?

23 A That's the question you asked me yesterday, and I
24 said yes.

1 Q Yes. All right. And then, after you agreed that
2 most of the people in the low risk group lived in the
3 contaminated areas, I then asked you, "Well then, if they
4 just walked on the streets that were sprayed with dioxin,
5 they had exposure; didn't they, ma'am?" And you then said
6 yes; did you not, ma'am?

7 A I think we had some--

8 Q Excuse me, could you answer that question, because
9 that's exactly what I asked you.

10 A No, your question was slightly different.

11 Q How was it slightly different?

12 A In that they would have had to use the streets
13 sometimes; wouldn't they?

14 Q Yes.

15 A And I said yes.

16 Q And then, if they used the streets that were
17 exposed with the dioxin, they had exposure?

18 A They might have had exposure, yes.

19 Q Yes. And your answer was yes to that question;
20 correct, ma'am?

21 A Yes.

22 Q Isn't that correct?

23 A Yes.

24 Q All right. Then the people in the low risk group,

1 most of the people in the low risk group had exposure to
2 dioxin; did they not, ma'am?

3 A The amount of exposure--

4 Q Could you answer that question directly, Dr.
5 Kimbrough?

6 A There is something in toxicology called a response
7 curve--

8 MR. CARR: Your Honor, would you order the witness
9 to answer that question.

10 THE COURT: Doctor, you are so ordered. The
11 question was clear. You have to answer it directly.

12 THE WITNESS: Could I have the question again?

13 THE COURT: Could you read back the question?

14 (The previous question was read back by the court
15 reporter, as requested.)

16 A Yes.

17 Q Now, Doctor, the control group then that you used
18 here, most of the people in the control group had exposure
19 to dioxin; did they not, ma'am?

20 A They had negligible exposure to dioxin.

21 Q Is the answer to my question yes they did have
22 exposure, but you consider it negligible?

23 A Yes.

24 Q And most of these people that had exposure to

1 dioxin--well, you compared the group that had the exposure
2 with dioxin, what you considered a negligible exposure, to
3 people that you considered to have not a negligible expo-
4 sure; isn't that correct, ma'am?

5 A That had high exposure, yes.

6 Q Is the answer to my question this group in the high
7 risk group had significant exposure or at least not negligi-
8 ble?

9 A Yes.

10 Q Yes. Now, Doctor, what is the range of exposure
11 that you consider negligible? That is, would encompass your
12 low risk people? And what's the range of exposure that you
13 would consider not negligible? That is, significant and
14 would compose your high risk people?

15 A That is in the document that you have. And the
16 criteria that we used were, I believe, people that lived, I
17 think it was, two years in--

18 Q Now, Doctor, I want to know the level of dioxin
19 contaminant that you considered in the high risk group and
20 the level of contaminant that you considered in the low risk
21 group?

22 A The area where these people lived had spotty
23 contamination; it wasn't uniform. And the people that were
24 living or in close proximity in areas that had 200 parts per

1 billion---I guess the cutoff was really 20 parts per billion,
2 but then had levels up to almost 1 part per million in the
3 soil were the people that were in the high risk group. And
4 they would have had to live there for a period of time in
5 order to qualify for the high risk group. And they would
6 have had to be gardening and have relatively intimate
7 contact with the soil.

8 Q All right. If I understand you correctly, then,
9 your high risk group consisted of people that lived in areas
10 that were known to be contaminated of dioxin or worked or
11 had extensive soil activity in areas that were known to be
12 contaminated with levels from 20 parts per billion up to 1
13 part per million?

14 A Yes.

15 Q And your low risk group, what? Your low risk group
16 would be anything under 20 parts per billion?

17 A These were people where there actually was no
18 contamination and they had no intimate contact with soil,
19 but they might have walked across the street or they might
20 have--in other words, they were in the general environment,
21 but they had no intimate contact as far as we could
22 establish with such contaminated soil.

23 Q Well, they would have been living in areas that
24 could indeed be contaminated with less than 20 parts per

1 billion and have activity in an area that's contaminated
2 with less than 20 parts per billion of TCDD; isn't that
3 correct?

4 A No.

5 Q No?

6 A We took people that didn't have that. We were just
7 careful to call them a low risk group, because we are still
8 trying to establish their--

9 Q Doctor, you are talking in generalities, and I'm
10 trying to get specific. These people that lived in Times
11 Beach, part of whom were in your low risk group--now, in the
12 parts of Times Beach that they lived in, did they live in
13 areas that were contaminated with less than 20 parts per
14 billion? Did you select any of your low risk group from
15 people who lived in a section of Times Beach that was
16 contaminated with greater than 20 parts per billion, or were
17 they--all the ones that were from Times Beach--were they all
18 from a part of Times Beach that was contaminated with less
19 than 20 parts per billion?

20 A As far as I recall, they should not have had any
21 intimate contact with soil that was contaminated above 1
22 part per billion. That was my recollection.

23 Q Doctor, I didn't say intimate contact with soil in
24 my question; I said lived in the section that was contami-

1 nated. Are you telling me that some of the low risk people
2 could live in the section of Times Beach that's contaminated
3 from 20 parts per billion to one part per million, but if
4 they did not have intimate contact with the soil they were
5 not considered high risk and thus could be in the low risk
6 group?

7 A They would have lived in areas that had less than 1
8 part per billion.

9 Q In areas in Times Beach that had less than 1 part
10 per billion?

11 A Yes.

12 Q Then your phrase "intimate contact" really didn't
13 mean anything, did it, "intimate contact with the soil"?

14 A In order to assure more--

15 Q Could you answer that question? Did the phrase
16 that you used, "intimate contact with the soil", to describe
17 your high risk people; did it mean anything?

18 A Yes.

19 Q All right. Did you select people that lived in
20 Times Beach in areas that were indeed contaminated with 20
21 parts per billion or greater but where they had no history
22 of intimate contact with the soil or frequent working with
23 the soil or anything of that sort?

24 A Not for the high risk group.

1 Q No, I meant for the low risk group?

2 A No.

3 Q How many of your low risk group were actually from
4 Times Beach?

5 A I don't exactly know the number; we would have to
6 get that from Missouri.

7 Q Well, we've already established that. All of the
8 people from Times Beach, now, whether they lived in the--
9 strike that. Were there some streets in Times Beach that
10 were sprayed with this contaminated oil and other streets of
11 Times Beach that were not sprayed with it?

12 A Yes.

13 Q And you could use--or did you use in your low risk
14 group people who lived on streets not sprayed with the
15 contaminated oil?

16 A Yes.

17 Q Ma'am; is that correct?

18 A As far as I know, but--

19 Q Yes.

20 A But to make sure, we would have to contact Mis-
21 souri.

22 Q But, these people then in that low risk group that
23 lived on streets not sprayed with the oil could quite easily
24 have and indeed would have access to the streets that were

1 sprayed with the contaminated oil; correct, ma'am?

2 A Yes.

3 Q And they could drive on those streets or walk on
4 those streets, and dust on those streets would blow to them
5 and vapors from those streets could blow to them as well;
6 correct, ma'am?

7 A No; it doesn't volatilize.

8 Q I'm sorry?

9 A TCDD doesn't really evaporate.

10 Q Doctor, that's another side issue. We have plenty
11 of evidence in this case that it does. We've got sworn
12 testimony from Monsanto employees that it does. And we have
13 statements from others that it does. We've got lots of--
14 Monsanto has put on lots of testimony on that point already;
15 I don't want to argue. But, assume if you will, that this
16 does evaporate, that it does volatilize. Would you assume
17 that, ma'am?

18 A Okay.

19 Q And just insight, you are familiar with the work of
20 Nash and Beall; aren't you?

21 A I'm sorry?

22 Q You are familiar with the works of Nash and Beall;
23 aren't you, ma'am?

24 A Yes.

1 Q And they did find that TCDD in the air in their
2 studies; did they not, ma'am?

3 A That was never a published and a reviewed article.

4 Q It was published and a peer reviewed article. Are
5 you not familiar with it?

6 A I didn't see the peer reviewed article, no.

7 Q Doctor, back to my point anyway. The point is that
8 people that lived on the noncontaminated streets of Times
9 Beach had exposure and would use the contaminated streets of
10 Times Beach; would they not?

11 A Yes.

12 Q And they would--might visit back and forth, back
13 yards from one house with a noncontaminated street might butt
14 right up against the back yard of another house on a contam-
15 inated street; correct?

16 A I'm not absolutely sure, but it's possible.

17 Q And your low risk group then had--was it their
18 residences that had soil with less than 1 part per billion
19 of TCDD in it?

20 A Yes. I mean, the outside of the house; not the
21 inside.

22 Q So, you would take people and did include people in
23 your low risk group who lived in areas where the contamina-
24 tion was 900 parts per trillion or less?

1 A No, I didn't say that.

2 Q Well, you said you excluded anybody in the group
3 with 1 part per billion; did you not?

4 A Our analysis, at least for some of the contract
5 laboratories, the limit of detection for TCDD in soil was
6 around 100 parts per trillion. So, there could have been
7 nothing or there could have been something below 100 parts
8 per trillion in some cases. I wouldn't know.

9 Q Doctor, I thought you told us that the low risk
10 group included only those people who lived in areas that
11 were contaminated with 100 parts per billion of TCDD or
12 less?

13 A The only reason I said that was because of the way
14 the chemical analysis was set up.

15 Q Doctor, is what you are saying is that your low
16 risk people included people who lived in residences or lots
17 that could be contaminated with dioxin up to 100 parts per
18 billion?

19 A Or there could be nothing.

20 Q Or there could be nothing?

21 A Right.

22 Q Is that correct that they could have lived in
23 residences where they had up to 1 part per billion of TCDD
24 contamination?

1 A We were only quantitating the 1 part per billion
2 and slightly below that, and then beyond that, although on
3 a qualitative base we would be able to say, "Well, there
4 really wasn't any TCDD" we made no effort to quantitate it.

5 Q Could you answer the question that I asked you?

6 A I can't, only what I told you.

7 Q Doctor, I submit that you can.

8 MR. CARR: And would you read the question to
9 her?

10 (The previous question was read back by the court
11 reporter, as requested.)

12 A Because of the scientific limitations, I cannot--

13 Q Could you answer that question, ma'am?

14 A I can't really answer it. I can't give you tech-
15 nical information.

16 Q Did you hear the word "could" in that question?

17 A That's speculation.

18 Q My question is: People you selected from the so-
19 called noncontaminated areas of the TCDD to include in your
20 low risk group could have included people who had homes
21 that were--and areas around the homes--that were contami-
22 nated up to 1 part per billion of TCDD; isn't that correct,
23 ma'am?

24 A That's mere speculation, and I don't speculate;

1 I'm a scientist.

2 Q Did you hear when I said the word--Dr. Kimbrough,
3 the word "could" is in there.

4 A Yes. But, I don't want to speculate, because I'm
5 a scientist.

6 Q Well, Doctor, you are required to answer that
7 question when I ask it.

8 A I can't.

9 Q I'm sorry?

10 A I cannot.

11 MR. CARR: Your Honor, would you direct the
12 witness to answer the question?

13 THE COURT: Doctor, you have to answer the
14 question. It's a proper question.

15 THE WITNESS: If I can't give an answer that is
16 correct, then why should I answer it?

17 THE COURT: You understand the question; the
18 question is a proper question to ask of an expert witness
19 such as yourself in a court of law in the state of Illi-
20 nois; therefore, you have to answer it.

21 A No.

22 Q Doctor, do you have any--you did select people
23 that were from Times Beach; did you not, ma'am?

24 A Yes.

1 Q And there were variations of contamination in
2 Times Beach; wasn't there, ma'am?

3 A Yes.

4 Q And you identified those areas that had contami-
5 nation of 1 part per billion or above; did you not, ma'am?

6 A Yes.

7 Q And you did not identify any area of being contam-
8 inated other than 1 part per billion or above; did you not?

9 A Qualitatively.

10 Q Qualitative what? That's not an answer.

11 A That was what I was trying to explain earlier.

12 Q Doctor, could you--do you understand what I'm
13 asking you? Is it not a fact--maybe I can put it more
14 plainly--is it not a fact that you identified areas of
15 Times Beach that was contaminated from 20 parts per billion
16 to 1 part per million?

17 A Yes.

18 Q And did you then identify parts of Times Beach
19 that were contaminated from 1 part per billion to 20 parts
20 per billion?

21 A Yes. You always say "you". All of this work was
22 really done by the Environmental Protection Agency.

23 Q Well, I mean by those participants in the study.
24 The values that you used in the study, whether you did the

1 identifying or not. I'm not suggesting that you personally
2 or you at CDC did; my question said the values that you
3 all used; all right?

4 A Yes.

5 Q And I can understand your problem with that
6 question. There was identified in Times Beach--whether it
7 was by you, or by God, or by EPA, or by whoever--the areas
8 of Times Beach were identified by level of contamination;
9 were they not, ma'am?

10 A Yes.

11 Q And there was identified those areas of Times
12 Beach that had contamination from 20 parts per billion to
13 1 part per million; is not that correct, ma'am?

14 A Yes.

15 Q And you selected from those areas, as you have
16 previously stated, high risk participants; did you not,
17 ma'am?

18 A Yes.

19 Q Now, there were areas of Times Beach that were
20 identified as having contamination of less than 20 parts
21 per billion and down to 1 part per billion; isn't that
22 correct, ma'am?

23 A And down to nothing.

24 Q Could you answer the question, first of all, as I

1 gave it to you?

2 A Yes.

3 Q And did you select from the areas that were
4 contaminated, or is it possible that any of the low risk
5 participants came from the areas that were identified as
6 having contamination from 20 parts per billion down to 1
7 part per billion?

8 A As far as I know, we did not try to take anybody
9 out of that middle group.

10 Q That isn't what I asked you. I did not ask you
11 what you tried to do. What I'm asking you--because I
12 understand it was not your intention to go by this kind of
13 parameter for contamination--what I'm asking you, ma'am, is
14 it possible that some of your low risk participants were
15 taken from the group that lived in areas contaminated with
16 20 parts per billion down to 1 part per billion of TCDD?

17 A As far as I know, it's not possible.

18 Q All right. Now, did you also--or was there
19 identified at Times Beach parts of the community that had
20 contamination of 1 part per billion and below, down to
21 nothing?

22 A Most of those analysis were reported as negative
23 or trace or--and so, I don't really know.

24 Q Well, the word trace means there's something

1 there, although according to some people in this case it's
2 defined trace as being up to 10 parts per million.

3 A No.

4 Q Others in this case have identified as trace down
5 to 45 parts per billion. We have a wide range of testi-
6 mony as to what is meant by trace in this context. So,
7 you'll forgive me if I won't accept your use of the word
8 trace without knowing what you mean by it; what you mean by
9 the word trace.

10 A Something that's below 100 parts per trillion.

11 Q Something that's below 100 parts per trillion is
12 trace to you?

13 A Yes.

14 Q All right.

15 A I'm not talking about our own analysis; I'm only
16 talking about the soil analysis that the EPA did.

17 Q I understand that. Down to 100 parts per trillion
18 in the EPA analysis is trace. From what to what? One part
19 per billion down to 100 parts per trillion?

20 A That again varies with the different laboratories.
21 Some laboratories still reported positive findings in parts
22 per trillion at lower levels, and some laboratories didn't.
23 And sometimes they would report it, and sometimes they
24 wouldn't. The lower you go down with soil analysis, the

1 more difficult the quantitation becomes.

2 Q I understand that, Doctor, but I'm simply trying
3 to--

4 A So, I really am not competent to answer those ana-
5 lytical questions.

6 Q Well, I know, and I'm not asking you, ma'am. I'm
7 asking you how you use the word trace? What values were
8 included when you said these people lived in areas that had
9 trace amounts of dioxin in the soil?

10 A I cannot answer this question without consulting
11 the EPA and finding out what different laboratories did
12 where.

13 Q Well, up to what level--where would it get not to
14 be trace? At what level?

15 A As we were told, all laboratpries had a--at least
16 limit of detection of 100 parts per trillion. Now, some
17 had a lower limit of detection, but since we weren't
18 concerned very much about that anyway, we didn't--

19 Q Dr. Kimbrough, I understand that. But, I'm trying
20 to pin something down here. In general, was trace used to
21 describe contamination that would be below the limits of
22 detection for any laboratory involved?

23 A I'm not clear.

24 Q Well, that's the reason I'm trying to find out

1 what you are talking about. When the word trace is used by
2 you as you've adopted it from the laboratories, do you mean
3 to say that trace is that quantity which we cannot accur-
4 ately identify quantitatively or qualitatively?

5 A Yes. And also we are not absolutely sure that
6 that's really the 2,3,7,8-tetrachlorodibenzo-para-dioxin.

7 Q So, any time you can't be sure of what it is, then
8 you--or the amount that it is, it's then--and by "you" I
9 mean the laboratory, the chemists involved, the analytical
10 chemists involved--it is then that the word trace is used.
11 Is that correct?

12 A By some laboratories, yes. I don't know what all
13 laboratories do.

14 Q But you used the word trace, ma'am. And how were
15 you using it?

16 A I was using it in that context, yes.

17 Q All right. If it can't be accurately quantitated
18 or identified as to the isomer, then it's considered trace?

19 A That's what the chemists have explained to me.

20 Q All right. But, above that--and that's the way
21 you used the word; correct?

22 A Yes.

23 Q But, above that it is not trace?

24 A Yes.

1 Q Now, the participants in the low risk group, what
2 was the--strike that. How much of Times Beach--or how many
3 streets were there in Times Beach, Dr. Kimbrough?

4 A I don't know.

5 Q How many streets--were all the streets sprayed by
6 Bliss? Did all the streets receive the contaminated oil?

7 A Not as far as I know.

8 Q Well, what part didn't?

9 A I sort of, if I remember correctly, it's sort of a
10 third maybe maybe. But, I would have to go back to the
11 maps.

12 Q All right. What you are doing now is trying to
13 resurrect your memory, and again you're--

14 A But, I just can't relate to that.

15 Q And you don't really know; is that right?

16 A Right.

17 Q Well, to get it down to what you do know is that
18 the high risk group had to live and have intimate contact
19 in soil of 20 parts per billion and above, and your low
20 risk group was taken from people who lived in areas at
21 least less than that. Is that right?

22 A Less than 1 part per billion.

23 Q All right. Now--and were people--there were more
24 than one site involved in this study--what was it; Minker

1 Stout, Quail Run--there were a whole number of places that
2 were included in your contaminated sites. From what
3 areas--we've already identified the Times Beach area. Did
4 you select volunteer participants from the Quail Run area?

5 A That's a different study that's still in progress.

6 Q Now, I'm talking about the Missouri study, the one
7 that we are talking about now. Did you take anybody from
8 that area?

9 A No.

10 Q Were the--

11 A Not as far as I know.

12 Q Were the people that you took just from the Times
13 Beach area?

14 A As far as I know it was a Times Beach area study.

15 Q All right. And none of these other--not Minker
16 Site or Minker Stout; is that right?

17 A Yes.

18 Q All right. And all of these--did all of these
19 participants in this study actually live in Times Beach
20 then?

21 A I'm not absolutely certain. There may have been
22 some controls who were slightly outside or who had moved
23 away. I mean, nobody really lived at Times Beach at the
24 time.

1 Q At the time of the study?

2 A Yes.

3 Q Well, that was inaccurately put. The participants
4 in the study were drawn all from people that had lived in
5 Times Beach--that had lived in Times Beach or near Times
6 Beach; is that correct, ma'am?

7 A Yes.

8 Q All right. And that's 100 percent of both groups
9 either lived in Times Beach or near Times Beach; is that
10 correct, ma'am, to the best of your knowledge?

11 A To the best of my knowledge, yes.

12 Q All right. And how often the people that actually
13 went on the contaminated streets is unknown to you?

14 A Yes.

15 Q All right. What you did do was try to select out
16 these people, put the--divide them in two groups, the
17 people that had the less known or less obvious or less
18 often or less intense contact with the contaminated--actual
19 contamination in one group and those with the known, more
20 intense, more active, more frequent participation in these
21 contaminated--actual known contaminated areas in the other
22 group; is that right, ma'am?

23 A Yes.

24 Q All right. Now, in the--in order to speed this up

1 a little bit, if I were to ask you the questions about how
2 many people would be expected to have persistent feelings
3 of pins and needles, and cramps, and loss of power, and
4 burning in body, and tingling in fingers and toes, would it
5 be your answer that you have no judgment that would be of
6 any significance in this case?

7 A You mean all of these things together or just--

8 Q Or independently?

9 A --or independently?

10 Q Yes.

11 A Independently I would say that 25 percent of the
12 people of the total general population might report some-
13 thing like that, but they wouldn't have all of these
14 things.

15 Q At the same--all right. What you are saying is 25
16 percent of the population would have persistent feelings of
17 pins and needles in the body, within the meaning of the
18 question and the way it was asked in the Times Beach pilot
19 study?

20 A No. Maybe 5 or 10 percent would say that, and
21 some others would say they had heart burns and--

22 Q All right. But, anyway, what I'm asking you is a
23 specific question. You say 5 to 10 percent of the people
24 would respond yes they have persistent feelings of pins and

1 needles in the body; is that what you are saying?

2 A In their hands or in their feet.

3 Q All right. And what about cramps? What per-
4 centage of people would respond that they have muscle
5 cramps?

6 A Judging from the experience yesterday, I would
7 say--strike that. At some time everybody has muscle
8 cramps.

9 Q Yes, Doctor, we've established that already. I'm
10 asking you again, in the way the question was asked by the
11 people that did the asking, and they had follow-up
12 questions to pinpoint the problem as you've suggested this
13 morning. In the context of this health study, this review
14 that went on, the interviews that went on, in the context of
15 that question posed in that way--and so I need not say it
16 again--will you assume that all of these things that I'm
17 asking you is put in that context about these symptoms and
18 findings and problems--will you do that ma'am?

19 A All right.

20 Q What percentage of people would have cramps?

21 A Persistent cramps?

22 Q I'm sorry?

23 A You mean persistent cramps?

24 Q The word cramps was used. I don't know what the

1 question--I don't have the advantage, the same advantage
2 that you have. You read the questions; I did not. All I
3 have are the results, see. So, you have an advantage over
4 me. In the way the question was asked, as I've already
5 told you, ma'am, what percentage of people would report
6 that they had cramps in the general population?

7 A Persistent cramps could be reported in 10 to 15
8 percent of the population.

9 Q And loss of power? What percentage would report
10 loss of power?

11 A That would be lower; somewhere between 1 and 5
12 percent.

13 Q And burning in body?

14 A I can't answer that; I don't know what burning in
15 body--that's one of those catch all questions where we want
16 to know--

17 Q It's one of the questions you threw in to test--
18 I'm not going to say honesty, because they were all honest
19 presumably--but to test the subjective view of their
20 health; is that right?

21 A Partly, and also to try and evaluate their under-
22 standing of the question.

23 Q All right. So, that's a question that would have
24 no--that wasn't designed to bring out a health effect; if I

1 understand what you said before?

2 A Well, that's not quite right. If they may answer
3 that, we may then go back and see what else they are, and
4 see how that all fits together. And we may want to go back
5 and examine them more if we think they haven't properly
6 answered the questionnaire.

7 Q All right. More so than the other questions, it
8 can't stand by itself; it's a more unique question than the
9 others, and you would definitely have to do other things in
10 order to give the answer to that question meaning; is that
11 right?

12 A Yes.

13 Q All right. What percentage of the people would
14 you expect to respond that they had tingling in fingers and
15 toes?

16 A I've already answered that earlier.

17 Q No, I'm sorry, but the question that was asked
18 before was persistent feelings of pins and needles in body.
19 This is a different question.

20 A Okay. That's again, the tingling and pins and
21 needles--

22 Q I didn't make the questions; don't look at me. I
23 didn't design the study. Tingling in fingers and toes.
24 What percentage of the general population would respond

1 that they had tingling in fingers and toes in your esti-
2 mation?

3 A It's the same thing as pins and needles; it's the
4 same question asked in a different way.

5 Q All right. What percentage then?

6 A And I said, it was somewhere between 10 and 15
7 percent.

8 Q All right. Now, on--in the general population,
9 what percentage of people would you expect to respond that
10 they had prolonged infections?

11 A Could be up to 25 percent.

12 Q And as far as findings are concerned in the
13 immune, how many--in the general population, what would you
14 expect to find to have marked depression in lymphocyte pro-
15 liferation?

16 A That's not very well known; and I can't answer
17 that question.

18 Q You have no judgment at all?

19 A No.

20 Q Could be anywhere from 5 percent to 100 percent?

21 A I don't know.

22 Q You have no judgment at all?

23 A No.

24 Q Would you expect 100 percent to have it?

1 A I don't know.

2 Q You've done no work in this area at all?

3 A I have read the literature, and I've reviewed it.
4 I had first got involved with that when I was dealing with
5 Love Canal, and there just isn't enough information at the
6 moment.

7 Q What you are saying then is that any figure would
8 be meaningful; but, on the other hand, any figure would not
9 necessarily have any meaning?

10 A Right, until we get more information. That's an
11 area of research that we don't have good information in
12 yet.

13 Q And so, it could be that if as much as 10 percent
14 of the population had a marked depression in their lym-
15 phocyte proliferation that that could have real signifi-
16 cance; couldn't it?

17 A I just cannot answer those questions at the
18 moment; I just don't know enough about it.

19 Q Doctor, I submit that if you don't have any scien-
20 tific basis to dispute it, then what I say to you, anything
21 I say to you you will have to accept as true unless you do
22 have some scientific basis to dispute it. And that's the
23 reason--I'm asking this question to test whether or not you
24 in fact have any scientific basis as you say you do not

1 have. Could be, could it not, ma'am, that if 10 percent
2 of the exposed population have a marked depression in
3 lymphocyte proliferation, that could be significant;
4 couldn't it, ma'am?

5 A Lymphocyte proliferation is effected by so many
6 things that--significant for what? I mean, I don't under-
7 stand.

8 Q In determining whether or not one has had an
9 adverse health effect from exposure to a chemical involved?

10 A No.

11 Q Pardon?

12 A No.

13 Q It could not be then? It could have no signifi-
14 cance? You are saying that--

15 A You cannot answer that question in a vacuum like
16 this.

17 Q Doctor, if I ask you and you have no knowledge, if
18 I ask you it could be that there are a million planets in
19 this universe that have human beings, or humanoids, or
20 creatures like humans, you could not dispute that; could
21 you, ma'am?

22 A I sure could.

23 Q How so?

24 A I can also say that I believe that's not true.

1 Q No; but I'm not asking your belief. I'm asking
2 you is it possible, ma'am, that there are a million planets
3 in this universe that have humans on it? Is that possible?

4 A I'm saying no.

5 Q And why are you saying no?

6 A Because I don't think it's possible.

7 Q Why do you think it's not possible?

8 A Because of my experience that I've had and the
9 general knowledge that I have acquired.

10 Q All right. What is that experience and general
11 knowledge that tells you that there cannot possibly be a
12 million or a hundred or a hundred million other planets in
13 this universe that have humans on them? What is your
14 background? Is it religious, or is it scientific that
15 tells you that that's no so?

16 A Both.

17 Q From a religious viewpoint you believe that then
18 there couldn't be anybody--any place except earth that's
19 got humans on it?

20 A I didn't say that.

21 Q All right. Do you believe that there could be
22 another planet in the universe that has humans on it?

23 A I don't know.

24 Q I'm not asking you of your knowledge; again, I'm

1 testing the way you are using the words that you are using,
2 Dr. Kimbrough. Is it possible, Dr. Kimbrough, that in the
3 billions and trillions and billions of other solar systems
4 that exist in this universe, is it possible that there is
5 one single other planet out there that have human like
6 beings on them--on it?

7 A There may be another planet that may have some
8 life on it, but I don't think there would be humans.

9 Q Or human like?

10 A Human like creatures.

11 Q And now, are you giving that answer from a scien-
12 tific viewpoint or from a religious viewpoint?

13 A That's from a scientific viewpoint.

14 Q All right. Now, what in science tells you that in
15 all these countless--and they are countless--unimaginable
16 number of solar systems out there--haven't yet reached the
17 end of the--we don't know yet the end of the universe--we
18 don't even know, there might be more than one universe out
19 there. What in your scientific knowledge tells you that it
20 isn't possible that there could be another planet out there
21 with human like beings on it?

22 A You changed it slightly; you said human like.

23 Q No, I said that before, ma'am.

24 A Oh, I'm sorry; I didn't hear that. I wouldn't

1 think that the evolution in any one planet would be just
2 exactly the same--

3 Q And I carefully did not say--

4 A Okay; I didn't catch that.

5 Q Initially I did say humans, and you were correct
6 in humans. But, then I said--my next question said human
7 like.

8 A Oh, I'm sorry; I didn't hear the "like".

9 Q So--by your hesitation here and by your inquiry
10 here, are you saying that you believe it is possible that
11 there could be another planet out there that has human like
12 beings on it?

13 A That could be possible.

14 Q Is it possible there could be a hundred planets
15 out there that could have human like beings on it?

16 A I don't know.

17 Q I'm sorry?

18 A I do not know.

19 Q No, I didn't ask you whether--

20 A I mean, I can't even guess.

21 Q Dr. Kimbrough, I suggest to you that if there
22 could be one out there, as you've agreed that there could
23 be, then there could be two; couldn't there, ma'am?

24 A The earth could be flat.

1 Q Well, but we know the earth isn't flat; we don't
2 know what's out in the universe as far as life is con-
3 cerned; do we, ma'am?

4 A Not--we know a little bit, but we don't know a
5 lot.

6 Q We don't know enough to say that there couldn't be
7 human like creatures out there; do we, ma'am?

8 A No.

9 Q We don't know enough to say that there could not
10 be a hundred planets out there with human like creatures;
11 do we, ma'am?

12 A Since this is totally out of my area, I'm not
13 really qualified to discuss that; but, I think a hundred
14 would be an exaggeration.

15 Q Why, ma'am? How many millions of planets--or how
16 many millions of solar systems would you have to have to
17 produce one with atmosphere and conditions like we have on
18 the earth?

19 A I don't know.

20 Q You haven't the vaguest idea, and nobody else has,
21 ma'am. Nobody knows. There could be, it's possible that
22 there could be billions of solar systems out there that
23 have a planet that goes around that sun the same way this
24 earth goes; isn't that possible, ma'am? Could be billions

1 of such out there?

2 A IF you--

3 Q On the other hand, there could be none; isn't that
4 right, ma'am?

5 A There could not be any other solar systems.

6 Q No solar systems with planets that have the same
7 conditions that cause human life to evolve on this planet?

8 A Yes.

9 Q There could be billions of such planets; couldn't
10 there, ma'am?

11 A Billions?

12 Q Billions of such planets out in the countless
13 universe?

14 A That's--I don't think so.

15 Q Why not, ma'am?

16 A Some of those creatures might have made contact
17 with us by now.

18 Q You are saying might have. Again, they might not
19 have as well; is that right, ma'am?

20 A I would think they would have.

21 Q Doctor, what makes you think that they would have
22 evolved any more rapidly than we?

23 A Because I'm an optimist.

24 Q Doctor, I'm not talking about your optimism; I'm

1 asking strictly--and I know this gets to be ludicrous--
2 strictly in possibilities, ma'am. What it boils down to,
3 what I'm saying is, it is possible, even though you might
4 say that it's not likely, it is possible that there are
5 hundreds of planets out there, billions of planets out
6 there with human like creatures on them; isn't that right,
7 ma'am?

8 A I have problems making these sweeping statements,
9 because they don't mean anything.

10 Q Well, I know they don't mean anything, but that's
11 the reason I'm asking the question, ma'am, to establish
12 that what you've said about your marked depression in lym-
13 phocyte proliferation. If you have no knowledge as to the
14 significance of it, then you can't say that it does not
15 have significance, if you have no knowledge one way or the
16 other? That's the whole point of this exercise, Dr. Kim-
17 brough.

18 A I didn't say it had no significance; I said that
19 there were many things--I was trying to say that there are
20 many things that effect the immune system, that at the
21 moment we have not sorted that out and we need to do more
22 work in science--

23 Q And that's the reason I asked you, ma'am: it is
24 possible, is it not--and I used the word "possible" ma'am--

1 it is possible that a 10 percent depression in lymphocyte
2 proliferation may be? And I used two words--it's possible,
3 might be; and I said it may have significance in showing
4 dioxin exposure. Now, isn't that possible, ma'am?

5 A It's also possible that something entirely
6 different could--

7 Q I agree. I agree, and have no dispute on that
8 point. One is possible; the other is possible; isn't it,
9 ma'am?

10 A Well, if one is possible, then the other may not
11 be possible.

12 Q No, both could be possible. There could be a
13 thousand possible solutions to the problem. When in fact
14 there's only one real solution, there are a thousand--until
15 we identify it, there are a thousand possible solutions.
16 In this particular case, ma'am, do you not agree that if
17 one is possible, the other might also be possible? Perhaps
18 not as likely, but possible?

19 A That's putting it a little too loose. I think by
20 carefully reviewing these people's records and the find-
21 ings, doing some follow-up, and doing some other things, we
22 could limit down the possibilities.

23 Q Yes; but that hasn't been done, and I'm using--has
24 it, ma'am?

1 A No.

2 Q I'm obligated here to prove this case with what
3 we've got; not what we might have someday; but what we have
4 at this time. Could be absolutely wrong; could be a
5 thousand percent wrong. But, I'm using the tools that we
6 have. And I'm suggesting to you that a marked depression
7 in lymphocyte proliferation might have significance in this
8 case; might it not, ma'am?

9 A It might.

10 Q Yes. All right. Now, Doctor, how about the T4:T8
11 ratio being less than one. What percent of the population
12 would have that ratio of less than one of the general popu-
13 lation?

14 A We're just going to go through the same thing. It
15 all goes together. I don't know.

16 Q Would your answer be then that you don't really
17 know the significance of that related to this case, but it
18 might possibly have significance? Is that the answer to
19 the question?

20 A Yes.

21 Q All right. What about porphyrins, ma'am? I know
22 that you've worked with porphyrins. What percent of the
23 population would you expect to have chronic hepatic
24 porphyria as defined and used in the Missouri Health Study?

1 A Now, there is a human disease called porphyria
2 cutanea tarda--

3 Q Now, Doctor, I asked the question specifically,
4 chronic hepatic porphyria as used in the Missouri Health
5 Study that you helped design? I don't want to get into all
6 kinds of porphyria that there might be; I'm asking you a
7 specific question on the study you designed. What percent
8 of the general population would you expect to have chronic
9 hepatic porphyria?

10 A The disease, which is porphyria cutanea tarda--

11 Q Doctor--Doctor, did you understand my question?
12 I'm talking about the chronic hepatic porphyria defined,
13 discussed, identified, used in the Missouri Health Study
14 which you helped design. What percent of the general
15 population would you expect to have chronic hepatic
16 porphyria?

17 A Since we seem to have difficulties with semantics,
18 I'm trying to explain what I mean by my percentages.

19 Q Doctor, I don't want an explanation; all I want
20 for you to tell me is in this study that you designed--that
21 you helped design--and I know you had a great deal of input
22 on the porphyria section; did you not, ma'am?

23 A Yes.

24 Q In that study, ma'am, in the way you used the term

1 chronic hepatic porphyria, the way you defined it then,
2 the way you took it then, the tables you used and every-
3 thing you did in that study, what percent of people did you
4 expect to find had chronic hepatic porphyria in the general
5 population?

6 A What I mean by chronic hepatic--

7 MR. CARR: Your Honor, would you direct the
8 witness to answer the question as I've posed it.

9 THE COURT: Doctor, you have to answer the
10 question, Doctor; it was directly posed; it did not call
11 for an explanation of the term.

12 A The percentage would be very low; it would be one
13 in a thousand or less.

14 Q Doctor, how much time did you all spend at least
15 that you are aware of in discussing what kind of parameters
16 to put up in your tests dealing with chronic hepatic
17 porphyria?

18 A I don't understand the question.

19 Q How much--what I mean is how much time did you
20 devote to that--to setting up or designing that as part of
21 your study?

22 A We started several years ago to set up a method,
23 and we've done a lot of work in that area with other pop-
24 ulations, and so it is something that we now routinely do.

1 Q All right. And as far as the Missouri Health
2 Study is concerned, then, you had a great deal of back-
3 ground when you designed and suggested and had made the
4 porphyria protocol part of that study; is that correct?

5 A Yes.

6 Q It wasn't done as an off-the-shelf kind of thing;
7 it was done after careful and deliberate thought?

8 A Yes, and also because we put time into developing
9 the hot pressure liquid chromatology method.

10 Q All right. And as a pathologist, you were well
11 versed in the various kinds of porphyria?

12 A Yes, to some extent.

13 Q Yes. And you knew all about Doss and Strik and
14 their work; did you not, ma'am?

15 A Yes.

16 Q Doctor, what percent of the general population
17 would you expect to come up with the results that would not
18 be typeable in your porphyria exam as far as the type of
19 porphyria they may have?

20 A There are--all the porphyrias that would not fit
21 into this classification; is that--

22 Q No.

23 A I don't understand the question.

24 Q No. All right. In your Missouri Health Study,

1 you put down the number of people that had various kinds of
2 lab results and you determined whether or not that was or
3 was not an indication of hepatic porphyria--or chronic
4 hepatic porphyria. All right?

5 A Yes.

6 Q There was a category that you put, not in the
7 normal--you had two sections, you had the normal and you
8 had the chronic hepatic porphyria section. And then you
9 had an untypeable section. Do you follow me? You had
10 normal, you had chronic hepatic porphyria, and then you had
11 untypeable.

12 A Yes.

13 Q What percent of people do you expect to be--to
14 fall into that untypeable classification?

15 A There are--there's probably about a third of the
16 population that has some variance from the rest of the
17 population. We feel that it's a variance in the general
18 population which has nothing to do with disease.

19 Q That isn't what I asked.

20 A Is that--

21 Q Probably not, but I think it would be so long to
22 get an appropriate explanation to you so that I could get
23 an answer that would fit my needs; I think it would prob-
24 ably be best if I use this time for something else. And do

1 let me pass on to something else, Doctor. You have
2 testified here yesterday as to the means and methods by
3 which you could be used to testify in other cases. And you
4 mentioned that you were in one case in Missouri, did you
5 not, by way of deposition? To refresh your memory, you
6 gave a deposition, did you not, in the case of Patricia
7 Drinkard, Paul Drinkard, Lori Platt, and Andrea Platt
8 versus Independent Petrochemical Corporation, which was on
9 file in the Circuit Court in the City of St. Louis, State
10 of Missouri, case number 782-559. You gave such a depo-
11 sition; did you not, ma'am?

12 A Yes, I guess so.

13 Q You didn't mention it, but--

14 A I'm sorry, but--

15 Q That's all right. You see, this is your depo-
16 sition, deposition of Renate Kimbrough.

17 A Yes.

18 Q And it took place on the 18th day of February
19 1983, as a matter of fact, just 12 days after this case
20 started. No--did we start in '83 or '84?

21 THE COURT: We started February of '84.

22 Q All right. Your deposition was given a year,
23 then, before this case started.

24 A Okay.

1 Q All right. Do you remember that now?

2 A Yes. There were a number of things we went round
3 and round about it, but I'm not really quite sure--

4 Q No, all I want to establish is that you gave an
5 evidence deposition in that case.

6 A Yes; okay.

7 Q Did you not, ma'am?

8 A Yes.

9 Q And you gave an evidence deposition in the case
10 filed in the Circuit Court of Pike County, Missouri. You
11 gave it a long time ago. That was the 28th of February
12 1975. Did you not, ma'am? And I could forgive you for
13 forgetting that one.

14 A Yes.

15 Q That was the case of Frank J. Hampel and Judy
16 Platt versus Russell Bliss and a whole bunch of others, and
17 some chemical companies. Do you recall that?

18 A Yes. Now I remember the lawyer's name again, too.

19 Q That's all right. And that was also an evidence
20 deposition that you gave; was it not?

21 A Yes.

22 Q You also gave an evidence deposition in the case
23 of--

24 A Evidence deposition means what?

1 Q Will be read in the proceeding that follows with-
2 out your coming in person like you have here, for instance?

3 A Okay.

4 Q In other words, you give your testimony in Atlan-
5 ta, Georgia, as you did in the two cases I've just talked
6 to you about--

7 A Yes.

8 Q And it's subsequently read at the trial.

9 A I don't know that; you see, that would be some-
10 thing you would have to talk to--

11 Q Okay; I'll just eliminate the word "evidence" for
12 now. And you did--well, I'll have to say evidence
13 deposition, because that's what it was--you gave an
14 evidence deposition in the case of Jerry Russell Bliss
15 versus Fred Lafser, State of Missouri, Number HW 81-1A, did
16 you not, ma'am, on December 8, 1982?

17 A Yes.

18 Q Is that correct, ma'am?

19 A Yes.

20 Q All right. Now, in that--in the situation of the
21 Missouri Health Study, there is such a thing as a--strike
22 that. What health effects do you expect to come from long
23 time and or low dose exposure to TCDD, if any?

24 A There may not be any; that's--

1 Q Well, there may be some?

2 A --that's what we hope.

3 Q Well, what are the signs that may be present, or
4 is it simply you do not know what it may be?

5 A We don't know.

6 Q And the reason you don't know, ma'am, is why? Why
7 don't you know what the effects of long term low dose expo-
8 sure to dioxin may be in human beings?

9 A Two reasons. One is that different animal species
10 respond quite differently; we don't know where humans are.
11 And then, the only experience that we've had has been in
12 workers that have been exposed to very high doses and often
13 over short periods of time. And even there, any chronic
14 health effects that have been reported, if you really
15 examined all of that information, it isn't very clear, and
16 some of it may actually be chronic disease that you get
17 with aging. And so, it's--that's also because of that.
18 And it's very difficult to design epidemiology studies, and
19 you have to sort of throw out a big net and then try and
20 see whether there are any differences between that and a
21 comparison group. The things that we have concentrated on,
22 partly because of the animal data, has been the sensory
23 nervous system, the immune response, and the porphyria
24 cutanea tarda. And there are things in the workers with

1 acute exposure that have had some general malaise, and so
2 we have included all of those things, too.

3 Q Well, to get it back to what I thought I was
4 asking, is that you have not reached--and by you I mean the
5 scientific and medical world in general--you have not
6 reached yet a state where you can be absolutely sure as to
7 what the chronic health effects in humans will be because
8 of, one, the human life span is so much longer than the--
9 most of the animals that you tested and studied, and there
10 there isn't yet a sufficient history length of time to come
11 to any results positive--or absolutely sure results in the
12 case of long time low dose exposure in the case of human
13 beings?

14 A Yes. The only thing is chloracne.

15 Q And chloracne may be present in some instances,
16 and it may not be present in others; isn't that correct?

17 A That's a very complicated question. Most people
18 that have had--most workers that have had exposure to high
19 concentrations have developed chloracne.

20 Q Yes. But you are talking about a high concentra-
21 tion; aren't you? My question is aimed at chronic long
22 term low dose exposure to dioxin. Ma'am?

23 A Could I get the question again?

24 Q Well, you said chloracne.

1 A Yes.

2 Q And when I asked you what were the findings from
3 long term low dose exposure, in that general area, you said
4 chloracne was one of the things. But, in point of fact,
5 the chloracne that you are familiar with had been acute
6 high dose exposure to dioxin; isn't that correct, ma'am?

7 A Yes.

8 Q Yes. And whether--and chloracne is not--let me
9 ask it another way as well. Even in those instances,
10 chloracne is not a constant finding; is it, ma'am?

11 A In most people it is; not in everybody, but in
12 most people.

13 Q My question is: you know a number of cases where
14 they didn't have chloracne, for instance; don't you, ma'am?

15 A They are rare.

16 Q Pardon?

17 A They are rare in those situations.

18 Q But, my question is: you know of cases in Europe--
19 you know of cases in this country where people working side
20 by side in the same plant, the one guy gets chloracne and
21 his fellow right next to him doesn't get chloracne. You
22 know that; don't you, ma'am?

23 A As far as the 2,3,7,8-tetrachlorodibenzo-para-
24 dioxin is concerned, there were a few workers, maybe two or

1 three, in the Spulana factory that Dr. Jirasek reported
2 that didn't have any chloracne.

3 Q Yes, but as a matter of fact, what happened there,
4 as you pointed out in one of your statements or papers,
5 something that I read, they just really studied the people
6 that had chloracne. Those were the ones that they thought
7 were exposed, and those were the ones they went after;
8 isn't that right?

9 A That's true.

10 Q So, actually what that study was and what so many
11 of these studies were, including the Suskind 49 studies,
12 these are studies of people that have chloracne; isn't that
13 correct?

14 A Yes.

15 Q And they are not studies of people who had
16 exposure to 2,3,7,8-tetrachlorodibenzo-para-dioxin per say;
17 are they, ma'am?

18 A They also had exposure to TCDD.

19 Q Who?

20 A The people with chloracne had exposure to TCDD.

21 Q Right. I didn't mean to say they did not.

22 A Yes.

23 Q What it was a study of--what most of these studies
24 if not all of the studies was were studies of people who

1 were exposed to 2,3,7,8 TCDD and got chloracne; isn't that
2 correct, ma'am?

3 A Yes.

4 Q They were not studies of people who were exposed
5 to 2,3,7,8 TCDD period; were they, ma'am?

6 A No.

7 Q No.

8 THE COURT: Is this a point for a short break?

9 MR. CARR: Sure, your Honor.

10 THE COURT: Okay. We'll take a short break at
11 this time and resume testimony.

12 (At this time a short break was taken.)

13 (The following proceedings were had out of the
14 hearing and presence of the jury.)

15 THE COURT: Mr. Carr?

16 Q Doctor, on the point that we were discussing on
17 the effect of long term low dose exposure, there's been a
18 population that has been considered to fall into that
19 category, but in fact that have not, and that's the Seveso
20 group of people; isn't that correct, ma'am?

21 A They have not had long term exposure?

22 Q Right. They've had low dose exposure, but not
23 long term?

24 A They had initially a relatively high exposure, and

1 then they really haven't had long term exposure.

2 Q Well, what was the extent of the exposure that you
3 would call high initially?

4 A The exposure to the cloud and the vegetation
5 during the first two weeks after the accident.

6 Q I understand that. But, I want to know the level.

7 A I'm sorry.

8 Q The level of contamination?

9 A I don't know what the contamination in the cloud
10 was; on the vegetation there are some measurements of 15
11 parts per million.

12 Q And there were--are you familiar with the studies
13 that--the tests that were performed later on showing--I
14 think there's exhibits in this case which if I had time I
15 could pull it out and show you--but are you familiar with
16 the studies that showed that the contamination in general
17 was much less than that, down into the low parts per
18 billion or even down in the parts per trillion?

19 A In the soil measurements--or there are three
20 zones; and except for Zone A, all of the soil measurements
21 in Zone B and Zone C were in parts per trillion.

22 Q Yes. And the people living in those areas,
23 including some of them in Zone A--Zone A, if I remember
24 the map, was that small area that was in the direct path of

1 this cloud, and I've seen the drawings that I have, like a
2 large long teardrop of water. That would be the Zone A
3 that you are speaking about?

4 A It was adjacent to the plant.

5 Q Yes.

6 A Now, recently they have redefined the zones, but
7 I'm talking about the original zones.

8 Q Actually, as far as those people are concerned
9 then, they did not actually have long term exposure; did
10 they, ma'am?

11 A The people that lived in B and C, no.

12 Q Well, in A, B, and C. None of the people in
13 Seveso had what's considered long term exposure; did they,
14 sir--ma'am?

15 A No.

16 Q Is your answer to my question yes, that's correct,
17 they did not have long term exposure?

18 A Yes, to--

19 Q I'm sorry?

20 A To levels that would be important.

21 Q By your definition of importance?

22 A Yes.

23 Q Well, none of those people would have those
24 levels. What do you consider important; what levels?

1 A There is some--there is some contamination in the
2 part per trillion range.

3 Q Well, but you don't consider that important; do
4 you?

5 A No.

6 Q Well, I want to know what you do consider impor-
7 tant. In what range?

8 A We have developed this paper that gives you all of
9 the rational on soil levels.

10 Q I understand the rational; but, I'd like to know
11 what level of contamination is it that you consider impor-
12 tant?

13 A We said that anything below 1 part per billion.

14 Q I know what you said, ma'am, but my question is
15 what do you consider important level of contamination?

16 A Below 1 part per billion is negligible.

17 Q And do you mean, then, that exposure to--or strike
18 that--contamination above 1 part per billion is important,
19 and contamination levels below 1 part per billion are not
20 important?

21 A Levels below 1 part per billion are negligible.
22 They are not important in residential areas.

23 Q Okay. Then, the answer to the question is they
24 are not important if they are below 1 part per billion?

1 A In residential areas.

2 Q Well, in any other area are they important?

3 A If you had pastures where cattle was grazing, you
4 might have to go down to lower levels. It depends on the
5 circumstances.

6 Q What about lakes or ponds where fish are located,
7 where you have drain off into those ponds--run off?

8 A That is not really my area. This is the responsi-
9 bility of the Environmental Protection Agency, and I have
10 not evaluated that.

11 Q Doctor, you have evaluated and you do know,
12 however, that if one eats fish contaminated, that his
13 levels of dioxin--that one can accumulate in one's body
14 levels of dioxin from eating just that contaminated fish.
15 You know that; don't you, ma'am?

16 A Yes.

17 Q And you can get that significantly high concentra-
18 tions simply because of eating the contaminated fish and
19 absorbing the dioxin from that fish; correct, ma'am?

20 A It depends on the level of contamination.

21 Q Dioxin accumulates in the body; doesn't it, ma'am?

22 A Yes.

23 Q And any time you are exposed to dioxin, you--and
24 you ingest it, absorb it--you are accumulating some of

1 that dioxin; aren't you, ma'am?

2 A Yes.

3 Q Because of it's half-life?

4 A Yes.

5 Q And every day if you are exposed in a fashion that
6 you will be ingesting or taking into your body portions of
7 dioxin, you are accumulating some part of that which you
8 are ingesting or taking in daily; isn't that correct,
9 ma'am?

10 A Yes.

11 Q And, depending upon it's half-life, you would
12 continue to accumulate until such time as you reach a point
13 or the amount that you are excreting or disposing of on a
14 daily basis becomes equal to the amount that you are taking
15 in--equal to or greater than the amount that you are taking
16 in on a daily basis; isn't that correct, ma'am?

17 A Yes.

18 Q And that to a great extent depends upon the half-
19 life of the dioxin?

20 A Yes.

21 Q In human tissue; isn't that right?

22 A Yes.

23 Q And all during that period of time, whether you
24 are exposed to it in the air, in the soil, in the dirt, in

1 liquid, in fish, in beef, in chickens, and however you
2 might be getting it into your body, you are accumulating
3 dioxin; aren't you, ma'am?

4 A Yes.

5 Q And you'll accumulate it until you reach a point
6 where your excretion becomes greater than your intake;
7 isn't that correct, ma'am?

8 A Or equal to.

9 Q Or equal to.

10 A Greater or equal to.

11 Q Equal to or greater than. All right, ma'am.
12 That's one reason that the F.D.A. or whoever made the rules
13 on eating fish said there's a certain level of fish that
14 you should not eat; correct, ma'am?

15 A Yes.

16 Q Because of the bio-accumulation effect?

17 A Yes.

18 Q All right. And of course, that's a reason that
19 you at CDC set the level in soil, again, because of the
20 bio-accumulation factor?

21 A Yes.

22 Q Now, a lot of this depends upon half-life in
23 humans then. What is the half-life of humans that you
24 believe to be the appropriate half-life in fat tissue in

1 humans?

2 A There is really not enough information. There's
3 one scientist who took some TCDD--

4 Q Dr. Froyer. We know that.

5 A Right; I heard that story, too. And that's all I
6 know.

7 Q Well, you know that the volunteer wasn't described
8 as a scientist, but in the abstract that came out, it was a
9 volunteer took some radiomarked TCDD and measured the half
10 life of that TCDD in his tissue; correct, ma'am?

11 A Yes.

12 Q And that it was concluded by Folger and Schlatter
13 at that time that half-life was right at four and a half
14 years, five years--what is it; I forget now?

15 A Something like that.

16 Q Yes. And do you have any reason to doubt the
17 validity of their experiment and the result?

18 A No, except that it was a single dose and just one
19 person.

20 Q That I understand. But, my question is: do you
21 have any reason to doubt that validity of that single
22 experiment with that single person?

23 A No.

24 Q And you used and relied upon works and experiments

1 of Poiger and Schlatter in other instances; have you not,
2 ma'am?

3 A Yes.

4 Q For instance, in your book--in your health assess-
5 ment document, I noted that you relied upon a number of
6 Poiger and Schlatter results; did you not, ma'am?

7 A Yes.

8 Q Now, dioxin is by consensus, and by yourself as
9 well I'm sure, the most potent or one of the very most
10 toxic--I shouldn't say potent--toxic chemicals made by man;
11 isn't that correct?

12 A Yes.

13 Q And, however, it is not the most toxic substance
14 or material known; is it?

15 A No.

16 Q The botulina toxin is more potent than dioxin; is
17 it not, ma'am?

18 A Yes. And there are some chemical war gasses.

19 Q Chemical war gasses that I guess the rest of us,
20 we don't know about yet; correct?

21 A Yes.

22 Q All right. But, the difference between the
23 botulina toxin and dioxin is that the botulina toxin will
24 not bio-accumulate; will it, ma'am?

1 A Yes.

2 Q Is that correct, ma'am?

3 A Yes.

4 Q So, the toxicity of dioxin can be greatly expanded
5 and magnified over and above the botulina toxin toxicity
6 because of the difference? That is, one accumulates in
7 the body and the other--that is, the botulina toxin--does
8 not accumulate in the body; isn't that correct, ma'am?

9 A That doesn't necessarily follow. It's just a
10 difference. One causes chronic toxicity, might cause
11 chronic toxicity, where the other might not. There is
12 also, in humans at least, a protective mechanism in that
13 they--the human--while he has a lot of trouble excreting
14 it, stores it away in fatty tissue where it is not as
15 effective on the cells.

16 Q But, that's--most of that is speculative; isn't
17 it, ma'am?

18 A Yes and no. Monkeys, for instance, and also
19 guinea pigs have very little fatty tissue, and they are
20 extremely sensitive to these types of compounds. And that
21 may be one reason why they are.

22 Q All right. That's not an important point that I
23 really want to pursue. You made a mention about dioxin in
24 the half-life in soil. It is a fact, isn't it, ma'am, that

1 as far as when we're talking about half-lives, that in the
2 soil dioxin doesn't readily decay in the environment and
3 it's extremely persistent in soil?

4 A It's extremely persistent wherever it does not
5 come in contact with UV light.

6 Q Well now, Doctor, that's not exactly correct.
7 It's got to be in contact with UV light and it has to be
8 associated with some kind of solvent as well; does it not,
9 ma'am?

10 A It has to have a hydrogen donor.

11 Q Yes.

12 A But, they are also in the environment.

13 Q Doctor, didn't Crosby point out that there has to
14 be this solvent as well?

15 A No. I mean, I don't know what Crosby pointed out,
16 but you need to have a hydrogen donor; any hydrogen donor,
17 will do.

18 Q Didn't he study half life in soil, and haven't you
19 agreed that half life in soil is anywhere from what--one
20 year to ten years?

21 A Crosby published a paper where he, I think,
22 measured the degradation on vegetation which was exposed.
23 And we may be talking about different papers.

24 Q May well. But, I want to talk about the soil and

1 not the vegetation anyway.

2 A I don't know about Crosby's work in soil.

3 Q All right. And, Doctor, you have stated in the
4 past, have you not, that the half-life in soil is what?
5 Ten years?

6 A I've estimated that; nobody really knows.

7 Q Yes. And is that still your best judgment that
8 the half-life in soil, or you best estimate I should say,
9 is ten years?

10 A Yes, in soil that is not exposed to UV light.

11 Q Well, an exposure to UV light takes precious
12 little shading or a very thin layer of soil to prevent that
13 sunlight from reaching it; doesn't it, ma'am?

14 A Yes.

15 Q And nobody knows yet what happens to the dioxin
16 vapor in the air--you don't agree that it turns into
17 vapor--but if it does turn into vapor in the air, nobody
18 knows what happens to it in the sunlight in that form; do
19 they, ma'am?

20 A I don't know.

21 Q And others have testified in this case on that
22 point. You have nothing to add, I take it, to what they've
23 said on the point; isn't that correct?

24 A Well, I don't know what they've said.

1 Q Well--

2 A But, I don't know anything about it.

3 Q You don't know anything about the subject?

4 A Yes.

5 Q Is that correct, ma'am?

6 A I'm sorry; is what correct?

7 Q That you don't know enough about the subject of
8 the resistance or life of dioxin in the soil or in the air
9 to make--to give us an expert opinion on the view on the
10 issue?

11 A That's correct.

12 Q All right. Now, Doctor, to sum up your knowledge
13 as to the long term low dose exposure to dioxin--well,
14 first of all, you consider low dose to be in the lower
15 parts per billion, do you not, ma'am, and below? Or is it
16 fair to say that you consider anything above one billion a
17 high dose exposure--one part per billion?

18 A This is in soil, or where people ingest it, or--I
19 mean, what--

20 Q Well, whatever? Well, in soil, for instance?
21 Anything above 1 part per billion in soil, do you consider
22 that to be high exposure?

23 A No.

24 Q All right. What is the level of contamination in

1 the soil that you would consider to be high exposure?

2 A That would depend on the circumstances.

3 Q In a residential area where people will be exposed
4 to it?

5 A I would call anything--anything below 1 part per
6 billion I would not be concerned about at all. That's one
7 category. The next category of low exposure--and you were
8 asking me about low exposure or high exposure?

9 Q High exposure.

10 A High exposure. Then, anything above 100 parts per
11 billion I would consider high exposure.

12 Q In the soil? If the soil is contaminated with
13 that?

14 A Yes. And that would be of great concern. Any-
15 thing above 20 would be in sort of an intermediate range,
16 between 20 and 100, as far as I'm concerned.

17 Q All right.

18 A Now, there are other variables. In Missouri, and
19 that's why we were always--we always said that whatever we
20 evaluated was for Missouri. In addition to the 2,3,7,8-
21 tetrachlorodibenzo-para-dioxin, this material was also
22 mixed in oil. And it's possible that that would increase
23 it's biodegradability versus other areas where you would
24 not have this addition of the oil.

1 Q All right. You mentioned from 20 to 100 is an
2 intermediate zone. And from 20 parts per billion and
3 below, down to 1 part per billion, what do you consider
4 that zone?

5 A In a residential area with small children, I would
6 also be concerned. In an industrial site, depending on the
7 situation, and depending on the type of exposure--and of
8 course, all of this is explained in our paper--

9 Q I know.

10 A I would not--you might not have a lot of concern,
11 and your actions might be different.

12 Q I'm talking about residential zones right now.
13 And from 1 part per billion and below is what you consider
14 low dose or--I'm sorry, not low dose, but exposure--well,
15 yes, I do mean low dose exposure. Correct; ma'am?

16 A I consider that as of no concern.

17 Q And you consider--well, all right. You consider
18 it of no concern. But, you have no knowledge as to what
19 the long term health effects will be from exposure to
20 levels of 1 part per billion and below; isn't that correct,
21 ma'am?

22 A Based on the knowledge that I have, and based on
23 animal experiments, and my own experience in the area of
24 toxicology, I don't think there will be any health effects,

1 or I don't think there are any health effects.

2 Q That isn't really what I asked you. You don't
3 know the health effects from that kind of exposure; isn't
4 that correct, ma'am?

5 A Yes, I do; they are none.

6 Q I'm sorry?

7 A I do. There are none.

8 Q There are none?

9 A Yes.

10 Q Where have you had human long term exposure to low
11 doses to allow you to come to that conclusion, ma'am?

12 A The general population has been exposed to low
13 doses.

14 Q And how do you know that the general population
15 hasn't been effected by it?

16 A The health of the general population--the health
17 of the general population seems to be improving. We live
18 longer now and our life expectancy is increasing.

19 Q Doctor, that doesn't mean that our health is
20 improving. You can have--you can live 80 years with pains
21 in the back; you can live 80 years with joint pains; you
22 can live 80 years with having colds; you can live 80 years
23 having headaches; you can have all kinds of health effects
24 and have long life; can you not?

1 MR. HEINEMAN: Object to the question as argu-
2 mentative, your Honor.

3 THE COURT: Overruled. It's proper cross.

4 A These sorts of health effects have always been
5 there. They've been there before.

6 Q There's no doubt about that, ma'am. But, if they
7 are increased or exacerbated by exposure to dioxin, that
8 still is a health effect caused by dioxin; is it not?

9 A They are not increased or exacerbated.

10 Q How do you know that?

11 A If you compare what data we have from years in the
12 past, and I've sometimes tried to do that, to what we know
13 now, there either is no difference, or there is something
14 like the increase in cancer of the lung because of smoking,
15 or there are declines in health effects.

16 Q Well now, Doctor, you are talking about signifi-
17 cant health effects when you talk about lung cancer. I'm
18 talking about just general health. Let me put it a differ-
19 ent way. Isn't it a fact that whether or not there will be
20 chronic health effects is not known yet, because it takes a
21 long time for such a health effects to show up, and because
22 of the life span in humans is very long?

23 A If you are talking about the low level background
24 contamination in our environment, we have now had that, as

1 Far as commercial products are concerned, for--

2 Q Pardon?

3 A As far as commercial products are concerned, for
4 at least since right after the Second World War. And as
5 far as the fire and combustion and incinerators are con-
6 cerned, we've had that longer than that.

7 Q Doctor, would you answer my question?

8 A There has been enough long term exposure that,
9 this low level long term exposure, that you could make some
10 judgment.

11 Q And when did you make that judgment, ma'am? How
12 long have you had that opinion?

13 A I've had that opinion for several years and for
14 some--for quite a number of years.

15 Q How many would that be?

16 A Five or six, maybe. I don't remember. There's a
17 paper that shows the contamination with TCDD in different
18 areas of sediment, I think in Lake Michigan, which give us
19 also some information about some of this background contami-
20 nation.

21 Q No; but, you've had this opinion as to the long
22 term health effects--chronic health effects--for at least
23 five years or seven?

24 A I have started looking at that in connection

1 with--in the publications--

2 Q Can you answer--

3 A I don't quite know the year, you see. When the
4 papers came out about the incineration, and also this paper
5 about the various levels of TCDD that were found in the
6 sediment in Lake Michigan where they found an appreciable
7 increase over a period of time and then tried to relate
8 that to the period when the sediments were put down.

9 Q Did you have that opinion at least by the time you
10 wrote your article "Health Complications of 2,3,7,8-tetra-
11 chlorodibenzo-para-dioxin Contamination in Residential
12 Soil"; you and Falk and Stahr wrote?

13 A Yes.

14 Q You had that opinion at that time?

15 A After--

16 Q Could you answer that question?

17 A Yes.

18 Q And that--published that in '84. Did you have
19 that opinion in--are you talking--when you talk about your
20 sediment in Lake Michigan, you are talking about the
21 Kingston Ottawa Study?

22 A I think that's the study; I'm not--

23 Q With the fish?

24 A I--

1 Q Now, Doctor, in your deposition that you gave in
2 1982, did you have that opinion then?

3 A I probably did; I don't remember whether it came
4 up.

5 Q Well, let me read you what you answered at that
6 time. And this is--I'm giving it to you as part of your
7 answer--

8 MR. HEINEMAN: May I see it, please?

9 MR. CARR: In a moment.

10 Q "Whether there will be chronic health effects is
11 very--not known yet, because it takes a long time since the
12 life span in humans is very long." Did you make such a
13 statement? You recall that; don't you, ma'am?

14 A But, that's in connection with high level
15 exposure, and you are asking me about background exposure.

16 Q No, I'm asking about low level exposure.

17 A You were talking about 1--below 1 part per
18 billion.

19 Q I was talking about low level exposure--chronic
20 long term low level exposure.

21 A To me that goes into the background exposure that
22 the general population is getting, and that I don't--has no
23 effect on the general well-being of the population.

24 Q Well, what about exposure like at Seveso?

1 A The long term exposure is generally in that--first
2 of all, that population hasn't had any long term exposure;
3 it only had short term acute exposure. They were then
4 removed, the place was cleaned up, they were moved back in.

5 Q Doctor, the question was asked you relating to
6 Seveso, on page 57, "Were there any reported--anything
7 reported in connection"--and this is at the deposition in
8 December 1982 where Bliss is suing Lafser--the question
9 asked you, "Were there reported--anything else reported in
10 connection with the Seveso, Italy incident with which you
11 agree?" You answer was, "There were some abnormal liver
12 function tests, and there were some abnormal nerve con-
13 duction tests. I've not actually reviewed that in detail.
14 Whether there will be chronic health effects is very--not
15 known yet, because it takes a long time since the life span
16 in humans is very long." Do you recall that answer at that
17 time?

18 A That population had--

19 Q My question is: do you recall that being your
20 answer?

21 A I don't recall that answer, but--

22 Q That would have been the truth at that time?

23 A Yes, that's what I said; but that was talking
24 about the population in Seveso, which was a population that

1 had high level short term exposure. So, it's--

2 Q Some of them had high level short term exposure;
3 some of them had low level exposure?

4 A Some of those tests that they are talking about
5 there were in people that actually had chloracne.

6 Q Yes; but, that test isn't what I'm directing your
7 attention to. I'm directing your attention to the fact
8 that you said there as far as chronic health effects, it is
9 not known yet, because it takes a long time since the life
10 span in humans is very long.

11 A Yes. That's for high level exposure.

12 MR. HEINEMAN: Excuse me, Doctor. Objection,
13 your Honor, the question is taken out of context.

14 MR. CARR: I've read the entire question and her
15 answer, your Honor.

16 THE COURT: Do you have anything else to say on
17 the objection?

18 MR. HEINEMAN: Yes. The first part of it, he
19 read--he read a much longer part where he's talking about
20 certain results--

21 THE COURT: Let me see the question.

22 MR. CARR: Sure.

23 (At this time the deposition was taken to the
24 bench and reviewed by the Court.)

1 THE COURT: Your objection is overruled. I don't
2 think it's out of context.

3 Q Now, Doctor, your answer there regarding the
4 Seveso people were based upon people who had a short term
5 exposure, and you responded that whether or not there are
6 going to be chronic health effects from the exposure the
7 people of Seveso had is not known yet, because it takes a
8 long time since the life span in humans is very long.
9 Isn't that what you said, ma'am?

10 A Yes.

11 Q And you were referring to the fact that these
12 people in Seveso had this exposure at that point in time
13 and that because human life is so long, it had not yet had
14 time for long term health effects to show up. Isn't that
15 correct, ma'am?

16 A For that population.

17 Q Yes; right. Now, ma'am, on the high dose or high
18 level exposure, what are the health effects that you expect
19 to be--show or develop from this high level exposure, and
20 exposure to higher levels or concentrations of dioxin?

21 A The thing that hasn't been worked out properly
22 is--the one question is cancer.

23 Q All right. That hasn't been worked out yet. So,
24 there's a question--you certainly would worry about cancer;

1 would you not, ma'am?

2 A That would be a chronic health effect that you
3 would--

4 Q I'm sorry?

5 A Yes.

6 Q And, what other health effects are there from high
7 levels of exposure to dioxin?

8 A There are no health effects that we know of. The
9 things we would worry about would be things like cancer.

10 Q Are you saying that there are no risks involved
11 with exposure to high levels of dioxin other than the risk
12 of cancer?

13 A There have not been any demonstrated health
14 effects other than chloracne.

15 Q My question is that sofar as you, Dr. Kimbrough,
16 is concerned, there are no health effects connected with
17 high dose exposure other than chloracne and the possible
18 worry about cancer?

19 A We're not talking about chronic health effects--

20 Q Yes, we're talking about any kind of health
21 effects, Doctor, from exposure to high levels of dioxin.

22 A Any kind of health effect is different from
23 chronic health effect to me.

24 Q Well, then, let me include it to any kind of

1 health effect. What are the health effects that are conse-
2 quences of exposure to high levels of dioxin?

3 A There have been in workers acute health effects
4 which have been described.

5 Q And those are what?

6 A And some of--there's the chloracne; there can be
7 hyperpigmentation; there have been things like general
8 malaise; and there have been some abnormal liver function
9 tests. There have been some complaints in the GI system;
10 and there have been problems with sensory neuropathy.
11 Those acute effects have usually resolved themselves over
12 the years.

13 Q Usually, but not always?

14 A Except for the chloracne, which seems to be
15 extremely persistent.

16 Q Now, the others, you say usually they resolve
17 themselves. But not always?

18 A Not always.

19 Q Doctor, in addition to those that you mentioned,
20 there are other organs that are affected, which are the
21 liver, the thymus, the kidney--

22 A I mentioned the liver.

23 Q Oh, you did?

24 A Yes.

1 Q Well, what about the thymus and the kidneys--the
2 thymus and the kidneys? Aren't they also effected?

3 A We don't know about the thymus; and as far as the
4 kidney is concerned, the only acute effect that we saw was
5 in that one girl in Missouri that had the hemorrhagic
6 cystitis. But, that has not been reported in any other
7 people--in workers.

8 Q Doctor, didn't you testify in this Lafser case
9 when they asked you, "What are the symptoms that you as a
10 toxicologist would look for or expect to see when an animal
11 or human, etc., was exposed to dioxin. Aside from hyper-
12 caratosis and the chloracne, are there other symptoms?"
13 And you said, "The symptoms and signs in different species
14 vary. The organs that might be effected are the liver, the
15 thymus, the kidneys. In addition, there seems to be a
16 general effect which produces severe weight loss; and often
17 loss of adipose tissue, fatty tissue. If the exposure
18 occurs to high degrees or high concentrations of dioxin,
19 there may be an effect on reproduction. From long term
20 exposure, you worry about cancer." Wasn't that your answer
21 to that question at that time?

22 MR. HEINEMAN: Excuse me, your Honor. Excuse me,
23 Doctor. May Counsel approach the bench, your Honor?

24 THE COURT: Sure.

1 (The following proceedings were had at the
2 bench.)

3 MR. HEINEMAN: Your Honor, I object to that
4 questioning as not being impeaching and an improper use of
5 a prior deposition, because it clearly states that she was
6 asked at that time about both animals and humans, and on
7 this occasion she was asked about humans. And therefore,
8 that's not impeaching. And I object to it as an improper
9 use of the prior deposition.

10 MR. CARR: Her answer, she did not limit it to
11 animals; her answer was a response to a question that said
12 animals and--or was it or--an animal or a human. It
13 doesn't say just animals; it says animals or humans.

14 THE COURT: She had the opportunity to limit it
15 if she wanted to limit it during the answer. Apparently
16 she didn't. I don't think that the fact that it was asked
17 of either or takes away from its value as impeachment
18 given the answer that was made. Overruled.

19 (The following proceedings were had out of the
20 hearing and presence of the jury.)

21 Q And Doctor, when you said "and for long term
22 exposure you worry about cancer" your answer there
23 certainly was directed to a human being--worry about human
24 beings; wasn't it?

1 A It was directed to the animals and human beings.
2 And we have found cancer in animals.

3 Q Well, my question is that your answer related to
4 animals and human beings; did it not, ma'am?

5 A My answer related to animals and human beings,
6 yes.

7 Q All right. And you said for long term exposure
8 you worry about cancer; didn't you say that, ma'am?

9 A Yes.

10 Q That was the truth at that time; wasn't it, ma'am?

11 A Yes.

12 Q Related to human beings; wasn't it, ma'am?

13 A Also, yes.

14 Q Now, Doctor, in point of fact, you haven't really
15 done any study or any work to see what some of the lesser
16 type ailments might be that result from dioxin exposure
17 such as headaches, and peripheral neuropathies, weakness,
18 and the joint aches, and general malaise? You really
19 haven't done any studies or work connected with dioxin and
20 those being the symptoms you are looking for; have you,
21 ma'am? Other than the Missouri Study?

22 A When you say "you" do you mean all of CDC or do
23 you mean me?

24 Q I mean CDC.

1 A We have--NIOSH is part of CDC.

2 Q Well, NIOSH just works on cancer.

3 A No, they also do cross sectional studies.

4 Q Did they do some studies on dioxin exposure and
5 these other types of problems?

6 A There hasn't been anything published.

7 Q There's nothing that we can see or read or that's
8 available to us?

9 A No.

10 Q Actually the only study that we've got in which
11 they went out and asked questions and tried to expose these
12 general kind of problems that I've discussed to you are non
13 specific or less specific kind of problems that I've dis-
14 cussed with you. The only thing we've got is this Missouri
15 Health Study; is that correct, ma'am?

16 A That's the only thing that has been published.

17 Q Yes. And insofar as your--the study that you
18 published in 1984, that is, "The Health Complications of
19 2,3,7,8 TCDD Contamination in Residential Soil", the only
20 really thing that you used in estimating your risks and
21 arriving at your levels was the risk of cancer; and then
22 you used just the risk of cancer in animals as a criteria;
23 isn't that right, ma'am?

24 A Yes.

1 Q So, actually when you set a level of 1 part per
2 billion as being below that--or above that of concern,
3 you're actually talking about of concern for risk of
4 cancer; aren't you, ma'am?

5 A Yes.

6 Q And you are not talking about any other single
7 health effect; are you, ma'am?

8 A All other single health effects you could proba-
9 bly have--for other single health effects, you could have
10 higher doses and you would not have a problem.

11 Q That isn't what I've asked you, ma'am. This
12 study, this publication that you had, purports to and deals
13 only with the single ailment, that is, cancer, and related
14 only to the risk of getting cancer from exposure to these
15 levels of dioxin; isn't that correct, ma'am?

16 A Yes.

17 Q And there are a world of other health problems--
18 heart attacks, brain disease, paralysis, porphyria--there's
19 any number of other health problems besides cancer; isn't
20 that correct, ma'am?

21 A Yes.

22 Q And this paper of yours did not address the health
23 complications of any of those other problems; did it,
24 ma'am?

1 A There was no reason to do that.

2 MR. CARR: Your Honor, would you tell the witness
3 to answer that question.

4 THE COURT: I don't think that was responsive.
5 You have to answer the question, please.

6 THE WITNESS: Could I have the question again,
7 please?

8 (The previous question was read back by the court
9 reporter.)

10 A Yes, it did.

11 Q And what other problems did it address in addition
12 to cancer?

13 A It addressed reproduction, and it also discussed
14 the human health effects.

15 Q What level did--where did you--well, you discussed
16 those things, but--maybe my question was imprecise. The
17 risk assessment that you undertook for just related to
18 cancer; did it not, sir--ma'am?

19 A No. We also looked at the effects on repro-
20 duction in monkeys.

21 Q All right. You are correct. You said, "The
22 exposure assessment used was for estimating risks being for
23 carcinogenicity and reproductive health effects." Correct,
24 ma'am?

1 A Because those seemed to be the most sensitive.

2 Q Excuse me, could you answer my question? Just
3 those two things that you used in your exposure assess-
4 ments?

5 A No.

6 Q Isn't that what you said? Didn't you use and
7 didn't you say on page 80, ma'am, "For these reasons this
8 study was not used for risk assessment calculations, but
9 only the chronic toxicity studies which demonstrated a
10 carcinogenic response in rodents were used." Didn't you
11 say that, ma'am?

12 A But, I have reasons for that.

13 Q Excuse me; my question is: didn't you say that,
14 ma'am?

15 A I said, "For these reasons", yes.

16 Q And on the next page, didn't you also say, "It
17 must be stressed that the exposure assessments used in
18 estimating risks for carcinogenicity and reproductive
19 health effects contain critical assumptions that are not
20 likely to be actually encountered." Isn't that correct,
21 ma'am?

22 A Yes.

23 Q And did you also discuss about these are
24 calculations for--that you made for long term risk as far

1 as cancer is concerned?

2 A Yes.

3 THE COURT: Is this a good point to break?

4 MR. CARR: Yes, your Honor.

5 THE COURT: Okay. We'll start Monday morning at
6 9:30. Thank you, Doctor.

7 (At this time Court adjourned for the day.)

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1 STATE OF ILLINOIS }
2 COUNTY OF ST. CLAIR }

SS.

6 I, TRACY LYBARGER, C.S.R., Official Court

7 Reporter in and for the Twentieth Judicial Circuit, and the
8 Official Court Reporter who transcribed the above-styled
9 cause had on January 10, 1986, do hereby certify that the
10 foregoing transcript of proceedings is a true, correct and
11 complete transcript of the proceedings had on said date.

12 DATED this 16th day of January, 1986.

18 Tracy Lybarger
19 TRACY LYBARGER, C.S.R.

20 Official Court Reporter

STATE OF ILLINOIS)
COUNTY OF ST. CLAIR) SS.

I, RICHARD P. GOLDENKERSH, Circuit Judge in and for the Twentieth Judicial Circuit, hereby certify that the above is a true and correct transcript of the proceedings had in the case captioned: FRANCES E. KEMNER, ET AL v. MONSANTO COMPANY, Cause No. 80-L-970, heard on January 10, 1986.

DATED this _____ day of January, 1986.


RICHARD P. GOLDENKERSH, Circuit Judge