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IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

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THOMAS A. DINE, JOAN C. DINE and AMY E. DINE AND LAURA R. DINE, infants by and through their parents, THOMAS A. DINE and JOAN C. DINE,	:	
Plaintiffs,	:	
vs.	:	Civil Action
WESTERN EXTERMINATING COMPANY, INC. d/b/a WESTERN TERMITE AND PEST CONTROL, WESTERN EXTERMINATING COMPANY OF MARYLAND, INC. d/b/a/ WESTERN TERMITE AND PEST CONTROL, WESTERN EXTERMINATING COMPANY, INC., d/b/a WESTERN TERMITE AND PEST CONTROL and VELSICOL CHEMICAL CORPORATION,	:	No. 86-1857 GASCH, J. (OG)
Defendants.	:	

Washington, D.C.

December 29, 1987

DEPOSITION OF:

RAYMOND HARBISON

a witness called for oral examination by counsel for the Defendant, 2207 Hidden Valley Drive, Little Rock, Arkansas, beginning at 4:20 p.m., on Tuesday, December 29, 1987, before SALLY V. WEEKS, Court Reporter, and LINDA JAMES, a Notary

Public in and for the State of Arkansas, when were present on behalf of the respective parties:

APPEARANCE OF COUNSEL

On Behalf of the Plaintiffs:

Connerton & Bernstein
BY: RONALD SIMON, ESQUIRE
1920 L Street, Northwest
Fourth Floor
Washington, D.C. 20036-5004

On Behalf of the Defendant Western Exterminating Company, Incorporated:

DENNIS HART, ESQUIRE
Judiciary Manor
301 Eye Street, Northwest
Washington, D.C. 20001

On Behalf of the Defendant Velsicol Chemical Corporation:

Spriggs, Bode & Hollingsworth
BY: JOE G. HOLLINGSWORTH, ESQUIRE
1015 Fifteenth Street, Northwest
Suite 1100
Washington, D.C. 20005

Also Present:

Robert Douglas

* * *

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PROCEEDINGS

Whereupon,

RAYMOND HARBISON

was called as a witness and, having been first duly sworn by Linda James, a Notary Public in and for the State of Arkansas, was examined and testified as follows:

EXAMINATION BY COUNSEL FOR THE PLAINTIFFS

BY MR. SIMON:

Q. Would you state your name for the record, please.

A. My name is Raymond Harbison.

Q. And your business address?

A. 2301 West Markham, Little Rock, Arkansas 72207.

Q. By whom have you been retained in this case?

A. I have been retained by Mr. Hollingsworth.

Q. On behalf of whom?

A. I don't know. I guess on behalf of Velsicol.

Q. Were you asked whether you have any opinions on any areas with regard to this case?

A. I'm sorry?

Q. Were you asked to render any opinions with regard to this case?

A. Yes, I was.

MR. HOLLINGSWORTH: Before we get to that, can I make a statement, please?

MR. SIMON: Yes.

MR. HOLLINGSWORTH: I will be brief. It is my understanding that the witness has been contacted a number of times recently by telephone by counsel for the plaintiffs and the witness was not informed by counsel for the plaintiffs that the attorney to whom he was speaking was indeed counsel for the plaintiffs and not counsel for the defendants or not a member of Spriggs, Bode & Hollingsworth.

The witness was even advised by this counsel for the plaintiffs that if he didn't schedule his deposition at such and such a date, he would be precluded from testifying in this case, which I suppose is counsel for plaintiffs' opinion; but, nevertheless, I wanted to state that this series of facts, this scenario has occurred and I object to it. I don't know if it is unethical or not, it is certainly not traditional.

It is not common practice in my experience for counsel from my adversary to call expert witnesses whom I have named on behalf of my client in a case. Certainly I have never contacted any expert witnesses officially named

and identified by counsel for the other side and I suppose if those are the rules we are playing by in this case, I am glad to know about them now finally. I don't think those are the rules we should play by here and I object to counsel for plaintiffs calling expert witnesses by telephone or contacting them in any way regarding this case after an expert has been identified by me or by my client in a matter.

Certainly I object to counsel for the plaintiffs calling my expert witnesses or my designated witnesses and not identifying the fact that counsel is indeed counsel for an adversary in the matter.

MR. SIMON: Well, while we are giving speeches on the record, let me just state for the record that to my knowledge no one in my office called Dr. Harbison. I never spoke to Dr. Harbison or anyone in his office, but some day late last week on Christmas Eve, one of the clerks in my office told me that he was called by Dr. Harbison's office. I think it was his secretary.

The message I got was that Dr. Harbison would not be available for the deposition we would schedule and I asked the legal assistant to tell Dr. Harbison's secretary on the

phone that we needed to depose him before the end of the year because there was a discovery cutoff.

I particularly object, and I will say this on and off the record to Mr. Hollingsworth, that if there are misunderstandings and I think this is a misunderstanding, we didn't call Dr. Harbison, that he could mention it to me without giving these long-winded speeches for the record.

We were called by Dr. Harbison. I don't know whether anybody identified to his secretary who called our office who we represented, but I want to state that we didn't call his office and that I had no reason to think that he didn't know it was our office. The merits of the case weren't discussed and I just really don't understand what the whole nature of this complaint really is about.

His secretary called. I think probably there is a note around our office of her first name and we just informed her that we needed the deposition this week because of the discovery cutoff, and it was a call before Christmas.

Obviously, by Mr. Hollingsworth's indication of calling the witness by his first name as we started, he obviously knows the witness rather well and he obviously knows that he engaged him and I believe that the witness or

whoever from his office called knew that my office wasn't Mr. Hollingsworth. I think this is just one more silly speech that doesn't make any sense in regard to this case.

Now, can we continue with the deposition or do you want to give another one?

MR. HOLLINGSWORTH: Well, my understanding of the facts are entirely at odds with what you just stated the facts to be. My understanding of the facts are that a lawyer from your office has called Dr. Harbison a number of times.

MR. SIMON: Why would a lawyer from my office initiate a call to Dr. Harbison?

MR. HART: I think that is best answered by you.

BY MR. SIMON:

Q. Dr. Harbison, did you ever speak to a lawyer from my office?

A. I spoke to a Mr., I believe his name was O'Neill.

Q. Did he call you or did you call him?

A. He called me.

Q. What did he call you about?

A. The deposition.

Q. What did he call you to do?

A. To schedule it.

Q. When was that?

A. I believe it was last week.

Q. Was that the first call, or was he calling back in response to another call?

A. I believe that was probably the second call or the third call.

Q. Who made the first call?

A. The person from your office.

Q. There wasn't a call initiated from your office, Dr. Harbison?

A. How would I possibly know where to call? I mean, I wouldn't know where to call.

Q. I don't know, sir.

A. I don't believe any call was initiated from this office.

Q. Well, I believe it was.

MR. HOLLINGSWORTH: Well, we don't believe that it was.

MR. SIMON: What do you want to do? Shall we continue with the deposition now?

MR. HOLLINGSWORTH: Yes.

BY MR. SIMON:

Q. Will you state your name for the record again?

A. My name is Raymond Harbison.

Q. By whom have you been engaged to testify in this case?

A. I have been engaged by Mr. Hollingsworth.

Q. Do you have any opinions with regard to this case?

A. Yes, I do.

Q. What are those opinions?

A. My opinions are that the complaints of Joan Dine, of Amy Dine, of Laura Dine and I think -- Mr. Dine's name is John?

Q. Tom.

A. I'm sorry?

Q. Tom.

A. -- Tom are not consistent with the known effects or the effects of exposure to chlordane.

Q. Do you have any other opinions with regard to this case?

A. That the levels of chlordane and Heptachlor and metabolites found in the blood and fat of the Dines do not support a claim that exposure has resulted in any dose of chlordane which would have changed the levels that they

already had in them.

Q. Any other opinions?

A. I believe that would be it.

Q. What complaints of Joan Dine are you familiar with in this case?

A. Severe headache, dizziness, coughing and congestion, throat irritation, insomnia, nightmares, weakness and fatigue, forgetfulness, nervousness and anxiety, tingling of skin, irregular menses, and a questionable miscarriage.

Q. How did you become aware of those symptoms?

A. By reviewing her medical records.

Q. Which records did you review?

A. You mean specifically the records? I don't have them specifically here.

Q. Well, which do you recall that you reviewed?

A. I just don't recall them.

Q. With regard to headaches, what is your opinion about headaches?

A. What is my opinion about headaches?

Q. About the headaches that Joan Dine had.

A. Well, my opinion is that those headaches were not caused by chlordane.

Q. Why not?

A. Because the levels of chlordane that were found in the house would not produce headaches and that headaches is not a consistent finding, is not a finding from exposure to chlordane, and that chlordane doesn't cause headaches and it is also a nonspecific finding.

Q. What do you mean by nonspecific?

A. It is not associated with any particular material.

Q. When you say it is not associated with any specific material, do you mean that it is impossible to say that any material causes headaches?

A. Headaches occur naturally. Headaches occur usually. Headaches are not necessarily caused by exposure to a chemical.

Q. Could they be caused by exposure to a chemical?

A. There might be circumstances in which that could happen.

Q. Do you know any chemicals that are known to cause headaches?

A. I can't give you a list of chemicals that specifically cause headaches.

Q. Can you give the name of one?

A. High levels of exposure to trichloro ethylene can be associated with headaches.

Q. Any other chemicals that can give headaches?

A. High levels of exposure to tetrachloro ethylene could cause headaches.

Q. Any others?

A. Those are the ones that I can think of as examples at this time.

Q. Any other substances you can think of the exposure to which causes headaches?

A. No, I just can't give you any others at this time.

Q. What is your opinion with regard to the dizziness experienced by Mrs. Dine?

A. That dizziness is not produced as a result of exposure to chlordane as measured in the air of the Dine home.

Q. What levels in the Dine home are you referring to?

A. The various measurements that were made.

Q. What are the highest levels that you noted in the home?

A. I believe that they are around five micrograms per cubic meter for chlordane.

Q. Does chlordane cause dizziness at any levels of exposure in the air?

A. I do not know of a level of chlordane that causes dizziness.

Q. What is your opinion with regard to the coughs Mrs. Dine experienced in the house?

A. That chlordane at the levels that were measured in the house would not cause coughing or congestion.

Q. Does chlordane at any level cause coughing or congestion?

A. I do not know of a level of chlordane that causes coughing and congestion.

Q. Dr. Harbison, with regard to the last two symptoms, when I asked you what your opinion was with regard to the symptoms Mrs. Dine had, you said they were not produced by chlordane at the levels she was exposed. Then when I asked you whether chlordane caused them at any levels, you said you did not know of any levels that caused it.

I am wondering, given the second answer to both questions, why when you answered the first question that it was not produced because the levels Mrs. Dine was exposed, why you needed to mention the levels if you don't know of any

levels that cause it.

A. Well, there may be a level, if one were to drink chlordane, that could produce dizziness and in fact could produce coughing. If you drank chlordane, I would expect that you might in fact see those symptoms.

Q. Is your testimony, then, that no level of inhalation of chlordane would cause those symptoms?

A. I do not know of a level of inhalation of chlordane that would cause those symptoms.

Q. So would your testimony be that Mrs. Dine's dizziness and coughs and headaches were not caused by chlordane because chlordane, when inhaled, doesn't cause those symptoms, to your knowledge?

A. Well, again, at the levels that are there, those levels would not cause those symptoms and I do not know of a level of chlordane in the air that would cause those symptoms.

Q. If the levels were ten times what the levels were, would your testimony be the same?

A. Yes it would.

Q. If they were a hundred times the level, would they be the same?

A. Let me go through the mathematics. Yes, they would.

Q. A thousand times?

A. I don't know about a thousand.

Q. Mrs. Dine's reported throat symptoms, do you have an opinion about whether they were caused by chlordane?

A. Yes. My opinion is that throat irritation is not caused by chlordane at the levels measured within the Dine home.

Q. Is throat irritation caused by chlordane at any levels?

A. I do not know of a level that causes throat irritation. Again, that is excluding drinking the chlordane.

Q. Mrs. Dine's insomnia, in your opinion was that caused by exposure to chlordane?

A. No, it was not.

Q. Why not?

A. Because, again, the levels of chlordane in the air of the home would not cause insomnia.

Q. Are there any levels of chlordane exposure that would cause insomnia?

A. I don't know of a level that would cause insomnia, again, excluding the possibility of drinking chlordane.

Q. Do you have an opinion with regard to whether Mrs. Dine's nightmares were caused by exposure to chlordane?

A. Yes. My opinion is they were not.

Q. Do you believe any level of exposure to chlordane causes nightmares?

A. I don't know of any level that causes nightmares.

Q. Mrs. Dine's reported muscle weakness, do you have an opinion as to whether that was caused by exposure to chlordane?

A. Yes. My opinion is that it was not at the levels of exposure in the Dine home.

Q. Does any level of exposure to chlordane cause muscle weakness?

A. If you drink chlordane and are exposed to extremely high levels of chlordane, one might experience weakness and fatigue.

Q. You say and "if you drink chlordane and are exposed." Does that mean that you drink a lot or do you mean by "and are exposed" or are exposed?

A. I'm sorry, I don't understand what that means. Let

me see if I can explain it. If you drink chlordane or if you were to dowse yourself with chlordane all over your skin or your body, there might be a possibility that one could experience weakness and fatigue.

Q. Mrs. Dine's reported forgetfulness, do you have an opinion as to whether that was caused by her exposure to chlordane?

A. Yes. My opinion is that it was not.

Q. Are there any levels of exposure to chlordane that cause forgetfulness?

A. I don't know of any levels that cause forgetfulness.

Q. Do you have an opinion as to whether Mrs. Dine's nervousness was caused by exposure to chlordane?

A. Yes, I have an opinion.

Q. What is that?

A. My opinion is that her nervousness was not caused by exposure to chlordane at the levels measured in the Dine home.

Q. Does exposure to chlordane at any level cause nervousness?

A. Again, if you were to drink chlordane, pure

chlordane, or if you were to spill it all over your skin, there is a possibility that chlordane could result in an excitation or an irritability which might be thought of as a nervousness or an anxiety.

Q. Do you have an opinion as to whether Mrs. Dine's irregular menses was caused by her exposure to chlordane?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that it was not.

Q. Do you have an opinion as to whether chlordane at any levels can cause irregular menses?

A. I do not know of any level of chlordane that would cause irregular menses.

Q. Do you have an opinion as to whether Mrs. Dine's miscarriage was caused by her exposure to chlordane?

A. Yes, I do.

Q. What is your opinion?

A. My opinion is that it was not.

Q. Is exposure to chlordane at any level the cause for miscarriages?

A. I do not know of a level of chlordane that would result in a miscarriage. Again, that is excluding drinking

chlordane.

Q. Now, with regard to all the symptoms you mentioned for Mrs. Dine, I won't go through them again, starting with headaches and ending in miscarriage, you repeatedly said that you know of no levels that would cause any of those symptoms. When you say that, do you mean with regard to human beings?

A. Yes.

Q. Do you mean that also with regard to animals?

A. Well, again, in animals, you could not measure headache. Dizziness would be difficult to measure. You certainly couldn't measure throat irritation, insomnia, nightmares. One could measure weakness, you couldn't measure forgetfulness, at least not easily. Nervousness, irregular menses would not be easily measurable. At very high doses of exposure, for example orally to chlordane, I think that one might be able to produce dizziness and perhaps weakness and fatigue.

Q. But other than dizziness and weakness and fatigue, your testimony is that none of the other symptoms that Mrs. Dine had could be caused by exposure to chlordane in animals?

A. I do not know of those symptoms being caused by chlordane in animals.

Q. What symptoms of Amy Dine are you aware of?

A. Symptoms of Amy Dine are severe headaches, frequent forgetfulness, irritability, fatigue, poor appetite, and urinary frequency.

Q. Do you have an opinion as to whether any of those symptoms in her were caused by exposure to chlordane?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that those symptoms were not caused by chlordane at the levels of chlordane measured in the Dine home.

Q. Do you have an opinion as to whether those symptoms can be caused by exposure to chlordane in human beings at any level of exposure?

A. Well, again, if one were to drink chlordane or one were to splash pure chlordane all over your skin, fatigue, irritability, and poor appetite might be caused by drinking chlordane.

Q. Other than by drinking it or pouring it all over your skin, is your opinion, then, that none of those symptoms

are caused by chlordane in humans?

A. No, not at the level in the Dine home.

Q. What about at any level other than drinking it or pouring it on your skin?

A. At any level, again, I would have to be specific. I don't know.

Q. At a hundred times the level in the Dine home?

A. At a hundred times, no.

Q. At a thousand times?

A. I don't know about a thousand.

Q. Why is it that you don't know about a thousand?

A. Well, because I have never evaluated a thousand, I have evaluated a hundred.

Q. What evaluations did you do of it at a hundred?

A. At a hundred, that would be the occupational exposure level.

Q. Yes, and what evaluations did you do of that?

A. I reviewed the occupational literature, the epidemiology, the human experience with concentrations at those levels.

Q. What symptoms can you identify that chlordane, at the occupational level, causes in humans?

A. Chlordane does not cause symptoms at the occupational levels.

Q. What illnesses does chlordane cause at the occupational levels?

A. Chlordane does not cause illness at the occupational levels.

Q. Do you know of any illnesses or symptoms that exposure to chlordane causes in humans?

A. At any level?

Q. Yes.

A. If one were to drink chlordane or if one were to splash or pour chlordane or get chlordane in pure form on your skin, chlordane can cause central nervous system stimulation, it can cause muscle rigidity, it can cause fatigue, it can cause those effects which would be associated with stimulating the central nervous system.

Q. Any other effects you can identify?

A. No, those would be the effects.

Q. Is it fair to say, then, your testimony is that in humans, other than drinking chlordane or splashing it all over your skin, that it causes no effects in humans?

A. Well, within the restrictions that I just talked

about.

Q. What restrictions are those?

A. Well, at the occupational level and below.

Q. So with regard to twice the occupational level, do you have an opinion as to whether exposure to chlordane causes any illnesses or symptoms?

A. I haven't evaluated twice the occupational level.

Q. Do you have an opinion?

A. I don't have an opinion at this time.

Q. So if I understand your testimony, your testimony is that at the occupational level, it causes no illnesses or symptoms and that at the level of drinking it or splashing it all over your skin, it causes central nervous system stimulation and in the area between the occupational level and the level of drinking it or splashing it all over your skin, you have no opinion whatsoever?

A. Not at this time.

Q. Have you ever had an opinion of the area between the occupational level and the drinking it or splashing it all over your skin?

A. I don't recall.

Q. Now, what symptoms or illnesses are you aware of

that exposure to chlordane causes in animals?

A. What symptoms?

Q. Or illnesses.

A. It would be those that I just described. It would be those primarily associated with the central nervous system.

Q. Any others?

A. No, I don't believe so.

Q. Then exposure to chlordane in animals, in your opinion, only causes central nervous system symptoms or illnesses?

A. Well, it would cause those primarily associated with the central nervous system.

Q. Well, what do you mean by primarily?

A. Well, that would be the primary effects of chlordane.

Q. Well, what nonprimary ones do you mean?

A. I don't really know of nonprimary ones.

Q. What symptoms or illnesses of Laura Dine are you aware of?

A. Intermittent headaches, forgetfulness, increased difficulty falling asleep.

Q. Do you have an opinion as to whether those symptoms are caused by exposure to chlordane?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that they are not at the levels of exposure in the Dine home.

Q. Do you have an opinion as to whether those symptoms are associated with or caused by chlordane at any levels in human beings?

A. Well, again, if you drink it or if you splashed it all over yourself, I just don't know. One might have difficulty falling asleep. I just don't know.

Q. Would one have headaches if they drank it?

A. I don't know of headache as a symptom. I just don't know.

Q. What symptoms would you have if you drank it?

A. Again, those that I just described to you, those associated with the central nervous system.

Q. Could you go through those again for me, please.

A. Well, it would be central nervous system stimulation, which would be muscle rigidity, irritability, perhaps muscle fatigue, those symptoms associated with

stimulation of the central nervous system.

Q. Any other symptoms that you would have from drinking chlordane?

A. Those would be the primary ones.

Q. Could you die from drinking chlordane?

A. Sure.

Q. How much would you have to drink to die?

A. I would estimate probably several ounces. I don't really know the answer to that.

Q. Less than ten ounces?

A. I really don't know. I would have to calculate it. There are case reports on that.

Q. What symptoms of Tom Dine are you aware of?

A. Mr. Dine, irritability, eye irritation. Those would be the primary ones.

Q. Do you have an opinion as to whether those symptoms in Mr. Dine were caused by exposure to chlordane?

A. Yes, I do.

Q. What is your opinion?

A. My opinion is that they were not caused as a result of exposure to chlordane at the levels in the Dine home.

Q. Is irritability in humans caused by exposure to

chlordane at any level?

A. I have already said that about three times, that if you drink chlordane, irritability would certainly be one of those symptoms associated with drinking chlordane.

Q. Would eye irritation be associated with any level of exposure to chlordane?

A. If one were to dump chlordane in your eyes, they would be irritated.

Q. Would exposure at any other level other than dumping it in your eyes cause eye irritation?

A. Well, again, I would restrict my opinion to the occupational level.

Q. Would eye irritation be caused by exposure at the occupational level?

A. No.

Q. Do you have an opinion as to whether it would be caused by exposure at twice the occupational level?

A. I don't know the answer to that. I haven't determined that.

Q. With regard to Mrs. Dine's symptoms, her headaches, do you have an opinion as to what did cause her headaches?

A. She had, as I recall, a history of headaches. Why

they occur, I don't really have a cause at this time. I just don't know.

Q. Do you have an opinion as to why they might have been more frequent or more intense while she was in the house?

A. I don't have an opinion. I don't know if they were or were not.

Q. Hypothetically, if they were more intense or frequent while she was in the house, do you have an opinion as to what caused that?

A. I don't have an opinion as to what caused it. My opinion is that it was not caused by chlordane.

Q. With regard to Mrs. Dine's dizziness, do you have an opinion as to what caused that?

A. Again, I don't have an opinion as to what caused her dizziness, although she has a history of sinus problems. Dizziness is frequently associated with sinus problems.

Q. With regard to Mrs. Dine's cough and throat irritations, do you have an opinion as to what caused those?

A. Again, I don't know specifically what caused them, but she has a history of sinus problems and sinus drainage is a known cause of coughing and congestion.

Q. With regard to her insomnia and nightmares, do you have an opinion as to what caused those?

A. I don't have an opinion as to what caused her insomnia and nightmares.

Q. With regard to her muscle weakness, do you have an opinion as to what caused that?

A. I do not know the cause of her muscular weakness.

Q. With regard to her nervousness, do you have an opinion as to what caused that?

A. No, I do not.

Q. With regard to her irregular menses, do you have an opinion as to what caused that?

A. I believe that she was going through menopause.

Q. What makes you believe that?

A. The records that I reviewed.

Q. What records are those?

A. I can't remember the name of the doctor. Dr. Chow?

Q. Chua.

A. Chua.

Q. Do you have an opinion as to whether premature menopause is caused by exposure to chlordane?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that premature menopause is not caused by chlordane.

Q. Do you have an opinion as to whether ovarian failure is caused by exposure to chlordane?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that ovarian failure is not caused by chlordane.

Q. Do you have an opinion as to whether ovarian failure in animals is caused by exposure to chlordane?

A. Yes.

Q. What is that?

A. That it is not.

Q. Do you have an opinion as to whether there are any adverse reproductive effects in humans caused by exposure to chlordane?

A. Well, at the levels of exposure in the Dine home and at levels in excess of that, up to a hundred times that, my opinion would be no.

Q. That up to a hundred times the level in the Dines'

home, there are no adverse reproductive effects caused by chlordane; is that your testimony?

A. Yes.

Q. What about above 100 times the level in the Dines' home, do you have an opinion as to whether that causes adverse reproductive effects?

A. I don't know the answer to that. I haven't determined that.

Q. Do you have an opinion as to whether exposure to chlordane causes adverse reproductive effects in animals?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that in the absence of maternal toxicity, chlordane does not cause abnormal reproductive effects.

Q. What do you mean by maternal toxicity?

A. If the level is high enough to make the mother ill so that there is overt toxicity either exhibited as loss of body weight, inability to move, the presence of muscle contractions or other central nervous system stimulant effects and the absence of those effects, chlordane does not produce abnormal reproductive effects.

Q. Are you aware of experiments that show abnormal reproductive effects in animals with exposure to chlordane?

A. Well, again, with those restrictions, no I am not.

Q. The studies that you are aware of, though, as I understand your testimony, all show that there is maternal toxicity either in terms of loss of weight, inability to move or muscle contraction in the mothers?

A. I'm sorry. Am I aware that such studies exist?

Q. Yes.

A. I would have to go back and look at the studies. I don't really recall any such studies.

Q. You said that in the absence of maternal toxicity, there are no studies. I am trying to reverse that and see if I understand your testimony that if there is maternal toxicity from exposure to chlordane, then there are adverse reproductive effects?

A. I can't recall of any study in which that has occurred at this time.

Q. Why did you then put that limitation on it when I asked you if there were any animal studies showing reproductive effects and you added the phrase in absence of maternal toxicity. I just wonder what you meant by adding

that phrase?

A. By adding that phrase, what I am doing is telling you that maternal toxicity can result in abnormal reproductive effects. At the present time, I do not recall any studies in which there was actually maternal toxicity. There are probably a dozen or more studies and I just can't recall them all. I can go through them individually, but I just don't recollect them all specifically.

Q. So if your statement is based on the fact that you don't recall those, then you are not aware of any study that shows reproductive effects in animals as a result of exposure to chlordane?

A. I do not recall. Actually, the IRDC had some maternal toxicity, but I don't recall any abnormal reproductive outcomes. The only thing I recall is a couple of early deliveries, so that would be one case in which there was maternity toxicity that was observed.

Q. That is a case where there was maternity toxicity?

A. Yes.

Q. You remember that in the IRDC study?

A. Yes, both from the 1971 and 1972 studies.

Q. Now, if I understand your testimony right, they

would have maternity toxicity because they essentially drank chlordane or dowsed their skin in it; is that right?

A. No, it was an oral study. They were fed chlordane.

Q. But that oral study where they were fed chlordane would be at approximate doses equal to what you referred to before as drinking the chlordane?

A. Well, I don't know. I would have to go through that calculation. They were given the chlordane in the food or they were given the chlordane orally and not in the diet. They were gavaged. They were force fed the chlordane.

Q. So that all the answers you have given up to now where you said you don't know any effects of chlordane except if a person were to dowse in it or drink it, can I infer from that that what you mean is that by dowse in it, or drink it, you are extrapolating from the animal studies in which they were either gavaged or fed chlordane?

A. No.

Q. What should I conclude from that?

A. Well, that there are human case reports where people have drunk chlordane.

Q. What generalizations do you draw from the animal

studies regarding chlordane?

A. With regard to reproductive toxicity?

Q. Right.

A. Well, again, that in the absence of maternity toxicity, there are no abnormal reproductive effects seen.

Q. What other adverse health effects or symptoms reported in animals with exposure to chlordane?

A. What other adverse health effects?

Q. Or symptoms.

A. Well, again, it would be those primarily associated with central nervous system stimulation.

Q. Have you ever testified before on behalf of Velsicol Chemical Corporation regarding termiticides containing chlordane or Heptachlor?

A. I have testified for attorneys who represented Velsicol.

Q. How many times?

A. I believe it has been three times.

Q. Would you identify those cases?

A. I testified in the Hardeman County matter, in the Mullaney case and also in the Slowey case.

Q. Have you ever testified on behalf of an applicator

of termiticides containing chlordane and Heptachlor?

A. By testify, do you mean in court or anything?

Q. Deposition or court.

A. Yes, I have given a deposition.

Q. What case is that?

A. I don't recall the case. It was for Oliver Goldsmith, an applicator in Texas.

Q. Other than the three cases that you say you have testified on behalf of Velsicol and the one case in which you have testified on behalf of the applicator in Texas, have you been engaged to render an opinion on behalf of Velsicol in other cases?

A. Yes, I have and I just don't recall which ones those are.

Q. How many others?

A. I think it has been twice.

Q. What about other cases on behalf of applicators?

A. No, sir.

Q. Are there any other cases other than these cases that I have mentioned on behalf of Velsicol or applicators in which you have testified or been engaged with regard to the toxic effects of chlordane and Heptachlor?

A. No.

Q. Have you ever been engaged with regard to the toxicity of other chemicals?

A. Yes.

Q. Tell me about those.

A. I'm not sure I can recollect all of them.

Q. Well, tell me the ones you recollect.

A. I have evaluated the health effects associated with exposure to PCB.s, to chlorinated hydrocarbons, to various metals, to dioxin, and to chlorinated solvents. Those would be the ones I could recall.

Q. Now, with regard to the health effects of PCB.s, who retained you in that case?

A. I worked for an attorney in Michigan who represented Monsanto.

Q. What was your opinion with regard to the health effects of PCB.s?

A. Well, I didn't have a general opinion with regard to the health effects of PCB.s, it was specifically for the allegations that were being made regarding PCB.s.

Q. What allegations were those?

A. They were allegations of -- I just don't recall. I

think it was muscle weakness. I just don't recall all those names.

Q. Did you find that any of those symptoms, in your opinion, were caused by exposure to PCB.s?

A. No. In my opinion they were not.

Q. The next instance you mentioned was chlorinated hydrocarbons. Which particular chlorinated hydrocarbons did you work on?

A. Trichloro ethylene, perchloro ethylene. Those are the ones I recall. There are others, I just don't recall.

Q. Who engaged you in those instances?

A. The United States Department of Justice.

Q. Which case was that?

A. United States vs. Price was the title.

Q. Where was it?

A. In New Jersey.

Q. Were there any allegations of personal injuries?

A. It was an allegation regarding the health risks associated with drinking water containing those chlorinated hydrocarbons.

Q. Did you have an opinion?

A. Yes, I did.

Q. What was your opinion?

A. I just don't recall that opinion. Generally that the levels that were in the water should not be consumed because of potential health risks.

Q. Who was the attorney you worked with on that case?

A. His name was Charles Walsh.

Q. Was that an attorney in Washington?

A. No, he was in the U.S. Attorney's office in New Jersey.

Q. Did you render a written opinion in that case?

A. By a written opinion, you mean an affidavit?

Q. Or a written report or anything which --

A. No, sir, I don't believe there is a written report.

Q. Did you render an affidavit?

A. Yes, I believe I did.

Q. Any other cases involving chlorinated hydrocarbons?

A. Yes.

Q. What were those?

A. I testified for the United States Department of Justice in another litigation in New Jersey.

Q. Yes?

A. Yes what?

Q. Go ahead and tell me more about it.

A. I don't recall the specific chlorinated hydrocarbons. I think it was the same ones that I already mentioned to you.

Q. What were the allegations in that case?

A. Again, I think it was risks associated with exposure to those materials.

Q. What was your opinion?

A. I just don't recall in that case.

Q. What attorney did you work with in that case?

A. The attorney's name was -- I think it was Charles Walsh again. There was another attorney, I just don't remember his name.

Q. Was your opinion that there were substantial risks associated with the levels of chlorinated hydrocarbons in the water or were not sub --

A. I just don't remember my opinion in that matter.

Q. Were there any other cases involving chlorinated hydrocarbons?

A. Yes.

Q. What were those?

A. I have testified for the City of Salinas, California regarding the levels of chlorinated hydrocarbons in the drinking water.

Q. What was your opinion in that case?

A. That the levels in the drinking water did not represent a risk associated with exposure to those materials.

Q. Which attorney did you work with in that case?

A. The attorney's name was Stephen Lankes.

Q. Where does that attorney work?

A. Salinas, California.

Q. Was did for the city government or a private firm?

A. I don't know the answer to that.

Q. What other cases did you work on regarding chlorinated hydrocarbons?

A. Those are the ones that I can recall.

Q. The next cases you mentioned you said regarded metals.

A. Yes, sir.

Q. Tell me the first case involving metals.

A. That would have been United States vs. Price for

the Department of Justice.

Q. What was your opinion regarding the metals?

A. That the levels in the drinking water exceeded the safe drinking water standards and should not be consumed.

Q. In that case, did you have evidence that the levels at which the metals existed, there was proof that they caused injury to human health?

A. I don't recall that at all.

Q. With regard to the chlorinated hydrocarbons, I believe you said your opinion was that the water should not be consumed?

A. That's correct.

Q. Was that because the chlorinated hydrocarbons existed in the water, there was evidence that it caused injury to human health?

A. No, that there was a risk.

Q. What other cases did you work on concerning metals?

A. Metals were also in the Bridgeport litigation.

Q. Which case is that, sir?

A. United States vs. Bridgeport.

Q. What were the allegations in that case?

A. Again, that metals were contaminating water and that people were exposed to the water.

Q. What was your opinion?

A. I just don't recall in that case.

Q. On whose behalf did you appear?

A. United States Department of Justice.

Q. You don't recall whether your opinion was that the metals presented a danger or not?

A. I just don't recall.

Q. What other cases involving metals?

A. Those are the only ones I recall.

Q. The next topic you mentioned was dioxin. Could you name the case that you worked on involving dioxin?

A. Yes. I testified for and worked with an attorney in New Orleans who represented, I believe, Monsanto.

Q. What were the allegations in that case?

A. That dioxin caused an ailment in an individual.

Q. What ailment was that?

A. Porphyria.

Q. Did you have an opinion in that case?

A. Yes, I did.

Q. What was your opinion?

A. My opinion was that the dioxin did not cause the porphyria.

Q. Is your opinion that the dioxin does not cause porphyria in general?

A. Acute intermittent porphyria, yes. My answer would be yes, that it does not.

Q. Does it cause any other porphyria?

A. No, it does not appear to cause porphyria cutanea tarda either.

Q. Any other cases involving dioxin?

A. In which I have testified or given a deposition, or either?

Q. Or have been retained to render an opinion.

A. Yes.

Q. Tell us about that case.

A. I was retained by the state of Arkansas in Arkansas vs. United States Environmental Protection Agency to evaluate the health risks associated with removal of dioxin at the Vertac plant site.

Q. What was your opinion?

A. My opinion was that there were risks.

Q. On whose behalf did you appear?

A. The State of Arkansas.

Q. Now, what was the position of the United States with regard to those risks?

A. The position of the United States was that there was not a risk.

Q. What other cases concerning dioxin did you work on?

A. I have worked on an exposure assessment for Times Beach.

Q. On whose behalf are you working in that case?

A. Syntex Drug Company.

Q. What do you mean by exposure assessment?

A. To evaluate the exposure of the inhabitants of various houses and trailers that were located at the Times Beach area.

Q. Have you reached an opinion in that case?

A. No, I have not.

Q. What other cases concerning dioxin have you worked on?

A. The other one is an exposure assessment of residents living near a landfill that contained dioxin and other chemicals as a result of a production facility that was

operated, I believe, by Vertac Chemical Company.

Q. Where is that landfill?

A. It is in Jacksonville, Arkansas.

Q. On whose behalf did you appear in that case?

A. I am working for a law firm which I believe represents Vertac.

Q. Have you reached any opinions in that case?

A. I have not reached opinions.

Q. Any other cases you are working on regarding dioxin?

A. No, sir.

Q. The next category I wrote down was chlorinated solvents. Would you tell me the first case that you have been working on regarding chlorinated solvents?

A. The chlorinated solvents was Salinas, California.

Q. That was the case that you worked with Mr. Lankes and your opinion was that they did not present a risk?

A. That's correct.

Q. Any other cases involving chlorinated solvents?

A. No, that's the only one I recall at this time.

Q. Any other cases that you can recall at this time regarding the health risks or injuries caused by chemicals on

which you have worked in any other way that you can remember?

A. I just can't recall. I am sure there are others, I just can't recall them.

Q. Have you worked on any projects regarding the human health of chemicals and any administrative bodies?

A. I'm sorry, I don't know what that means.

Q. Before the United States Environmental Protection Agency or a state agency.

A. Yes, I have.

Q. Could you tell me about those?

A. I have evaluated human health risks associated with a variety of chemicals for the State of Florida.

Q. Which department of the State of Florida?

A. I don't know the answer to that. I think it is the Department of Health and Human Rehabilitative Services.

Q. When did you do that?

A. Approximately a year ago.

Q. Now, did you produce a document?

A. I produced some documents, yes, sir.

Q. Would you be willing to send me a copy of those?

A. I don't think I can do that. I have a

confidentiality agreement. These are being used to promulgate water standards. Those standards have not been promulgated and as a result that information is not available.

Q. What other administrative bodies have you worked on projects for?

A. I have reviewed rebuttable presumptions for the U.S. EPA.

Q. Which are those?

A. I'm sorry?

Q. Which rebuttable presumptions have you reviewed?

A. I don't recall all of them. I did one, I believe, for arsenic and I believe I did one for cadmium.

Q. What was your opinion with regard to arsenic?

A. I just don't recall.

Q. Do you recall your opinion with regard to cadmium?

A. No, I do not.

Q. What other administrative bodies have you worked on behalf of?

A. In any capacity at all?

Q. Right.

A. I have worked for the U.S. EPA in evaluating

chemical emergency spills or emergency chemical spills or chemical spills in general. I have evaluated worker safety programs. I have developed medical monitoring programs for U.S. EPA field investigation teams, for U.S. EPA technical assistance teams. I have evaluated research programs for the National Academy of Sciences, for the National Institute of Environmental Health Sciences, National Institute of Occupational Saftety and Health. Those are some that I can recall.

Q. What other administrative bodies have you worked on behalf of?

A. The United States Department of Agriculture.

Q. What did you do for them?

A. I evaluated the health effects associated with the use of various pesticides and control of the gypsy moth and other pests and I just don't recall the other pests.

Q. When was that?

A. That would have been approximately two years ago.

Q. Did that process concern itself with chlordane or Heptachlor?

A. No, it did not.

Q. What other administrative bodies have you worked on

behalf of?

A. I have worked for the State of Tennessee, Attorney General's office.

Q. What case was that, what matter?

A. Evaluating environmental contamination, participating in the evaluation of the cause of death of Elvis Presley, testifying before the Medical Examiner's Board.

Q. Is that with regard to this Elvis Presley matter?

A. Yes, sir.

Q. What other administrative bodies have you worked on behalf of?

A. I believe that's all I can recall at this time. I just don't recall any others.

Q. Have you ever given any testimony to any legislative bodies?

A. Testimony before any legislative bodies?

Q. Right.

A. Yes, I have.

Q. Which are those?

A. The United States Congress.

Q. Could you tell us what you testified?

A. I testified before Congressmen Scheuer and Fuqua regarding hazardous waste site investigations. I testified before Congressman Waxman's committee regarding chlordane.

Q. When was that?

A. Oh, I believe it was approximately four or five months ago.

Q. What did you testify at that committee?

A. What did I testify?

Q. Yes. What was the substance of your testimony?

A. It concerned the reproductive toxicity and I believe it was the mutagenicity of chlordane.

Q. Would you be willing to send me a copy of your testimony?

A. I don't know if I have it. If I do, I will send it to Mr. Hollingsworth and he can decide whether he wants to send it to you or not.

MR. SIMON: Mr. Hollingsworth, if he sends it to you, will you?

MR. HOLLINGSWORTH: Yes.

BY MR. SIMON:

Q. On behalf of whom did you testify at Congressmen Waxman's hearing?

A. I testified on behalf of Velsicol.

Q. Did they pay you to testify that day?

A. Well, they didn't pay me to testify. I was paid for my time.

Q. How much did they pay you for your time in that to testify?

A. I believe it was a thousand dollars.

Q. What other legislative bodies have you testified in front of?

A. I believe that's all.

Q. Other than the three cases that you mentioned and the testimony at the Waxman hearings, have you ever done any projects for Velsicol Chemical Corporation?

A. No, I have not.

Q. Do you have any opinions with regard to studies of toxicity on animals as to their applicability to humans?

A. Do I have any opinions in that regard?

Q. Yes.

A. Well, it would depend on what the question is. I don't know. You mean in general?

Q. Yes, in general.

A. Well, in general there can be differences between

animals and man and often animal data is not extrapolatable to man.

Q. Have you ever given testimony that animal data is extrapolatable to man?

A. I don't know the answer to that. I just don't recall.

Q. Have you ever given testimony on behalf of the United States Environmental Protection Agency regarding whether animal data was reliable as a predictor of effects in humans?

A. I just don't recall. I may have in the Price matter. I just don't remember.

Q. Is your view in general that animal data is not reliable with regard to predicting health effects in humans?

A. Well, my opinion is that animal data is useful for establishing public policy and in the absence of information in humans, that animal data can be used to establish public policy. Animal data cannot be used in general to establish the cause of a disease in man, so I would discriminate my testimony regarding public policy from that regarding the cause of an individual's ailment or illness.

Q. Why do you make that distinction?

A. Well, because the same rigorous evaluation is not required for public policy. One can evaluate animal data in a much more conservative way to establish public policy and the rigorous evaluation of a cause and effect relationship is just not required.

Q. Why is that?

A. Well, I don't know why it is. That's just the way public policy is promulgated. That is simply the way it is.

Q. I believe what I wrote down for the second opinion that you had is you testified that the levels of chlordane and Heptachlor and their metabolites in the blood and fat of the Dines do not support a claim that exposure would have changed the levels that were already there. Is that a fair repeating of what your opinion is?

A. Yes, that the levels in the fat have not demonstrated that in fact there was an exposure that resulted in a dose to those individuals.

Q. Could you explain that, please?

A. Well, exposure is only the opportunity to get a chemical or anything else into the body. What ultimately matters is the dose that you get, not what the exposure is. In evaluating those levels, there is no evidence that in fact

that exposure resulted in any dose.

Q. Why is that?

A. Well, because they are not different from the levels in the general population.

Q. So your testimony that there is no dose is based on a comparison with the levels in the general population?

A. That's correct.

Q. Is it based on anything else?

A. It would be based upon that comparison.

Q. Now, when you base it on the general population, what estimates of the levels in the general population are you relying on?

A. That would be the U.S. EPA fat and blood survey.

Q. Which is that?

A. Well, it is done every year.

Q. Which one are you relying on?

A. Well, I will rely upon a number of them from 1979 through 1986.

Q. Do you want to identify each of those by its proper name?

A. I can't do that right now. I just don't have them here.

Q. Well, could you give me a little better identification so the record will be clear what you are relying on?

A. Well, it is the United States Environmental Protection Agency, I think it is called "The Fat and Tissue Survey," in which fat samples and other tissue samples are taken and evaluated for pesticides, PCB.s, and a variety of other substances.

Q. Now, your testimony is that the levels of Heptachlor and chlordane and their metabolites in the blood and fat of the Dines, as they compare to the general population, do not indicate there was a dose?

A. That's correct.

Q. Is there any other basis? I mean is it your testimony that they didn't have a dose?

A. Well, that's the way that I would ultimately determine whether they got a dose or not, is to measure it, but I would also use the levels that were measured in the house and that based upon those levels, you would not expect to see any change in the chlordane or Heptachlor levels based upon exposure to those levels.

Q. Could you explain that?

A. Well, that the dose that one would get from that would not change the levels that people already have in them.

Q. Now, could you explain what your basis for that is?

A. Well, I would have to go through the entire exposure scenario, which I just can't do at this time.

Q. Do you have any studies or literature that you are relying on or authorities for the proposition that the levels of chlordane, Heptachlor in the house were not of an order of magnitude that would change the levels of chlordane and Heptachlor or their metabolites that were found in the serum of the Dines?

A. It would be based upon general knowledge of metabolism, in elimination and excretion of these materials.

Q. Other than your comparing the levels in the Dines to the general population as measured by the EPA and your opinion that the levels that were found in the air in the house would not be of a magnitude to cause a level in the serum to change, what other facts or ideas contribute to your opinion that there was no dose?

A. Well, I think those would be the facts that I would

rely upon.

Q. Any other facts that you rely on?

A. I can't recall any at this time.

Q. Have you looked at any blood or serum samples from before they entered the house?

A. No, I have not.

Q. Would they be relevant if you had them?

A. They may be. I would expect them to be the same.

Q. Is your opinion based on the levels of other substances that were found in the blood, such as DDE.?

A. I don't understand that question.

Q. I will move on. When we were talking earlier about various health symptoms of the Dines, you indicated that all of the symptoms they reported were not caused, in your opinion, by chlordane and you also indicated that at the levels the Dines were exposed or even at a hundred times the levels, in your opinion, none of those symptoms could be caused by chlordane; is that correct?

A. That's correct.

Q. I think you also testified, I just want to catch myself up, that no human health effects are caused by chlordane except the central nervous system effects that are

caused by drinking or dowsing yourself in it; is that correct?

A. That if you drank or dowsed yourself in it, those would be the symptoms that would be seen, yes.

Q. But other than that, you wouldn't expect to see any symptoms in humans from exposure to chlordane?

A. No, those would be the symptoms.

Q. Does the opinion on the symptoms that are not caused by chlordane based on the fact that there is no evidence that those symptoms are caused by chlordane, or is it based on the fact that there have been tests to determine whether those symptoms are caused by chlordane and those tests have proven negative?

A. Well, that there have been many people exposed to chlordane and those symptoms are not seen in those people.

Q. So you think there is not only an absence of information to prove that the symptoms are caused by chlordane but there is affirmative proof that they are not?

A. Yes, I think that the evidence that is available shows that those symptoms are not caused by chlordane.

Q. And you think that the evidence that is available is sufficient in your mind to come to a conclusion that they

are not caused by it, or do you think more information is needed?

A. No, I think that at the levels of exposure and those symptoms that more information is not needed.

Q. Are you familiar with a document entitled "Guidance for the Reregistration of Pesticide Products Containing as the Active Ingredient Chlordane"? It is an Environmental Protection Agency document dated December 31st, 1986?

A. I don't believe I am familiar with that.

Q. You are not? Are you familiar with any opinion of EPA regarding data gaps concerning chlordane?

A. I don't know of that opinion.

Q. Do you believe that there are data gaps with regard to the effects of chlordane on human health?

A. I don't know of data gaps, no, sir.

Q. Have you reviewed or ever seen a document entitled "Review of Toxicology of Chlordane and Heptachlor" by Velsicol Chemical Corporation, January 1985?

A. I don't think so.

Q. Have you ever seen a document entitled "The Toxicology Review of Chlordane and Heptachlor" by Grutsch, Khasawinah dated 1982 by Velsicol Chemical Corporation?

A. I don't believe so.

Q. Do you know who Mr. Khasawinah is?

A. Yes, I do.

Q. Who is he?

A. Well, he is an employee of Velsicol. I think he is in the toxicology group. I don't really know his position.

Q. Have you ever spoken to Mr. Khasawinah?

A. Yes, I have.

Q. What have you spoken to him about?

A. Well, I certainly don't recollect the conversations. I have spoken to him, I guess, about chlordane, levels in houses. I just can't recall specific conversations.

Q. Do you have an opinion as to what level of chlordane is safe in the air of a house?

A. I don't have a precise number, no.

Q. Do you think chlordane at the level of the occupational standard is safe in a house?

A. I think that probably that level should be lowered for a residential area.

Q. How much should it be lowered to?

A. I haven't gone through that calculation.

Q. If I understand your testimony, it was that at the occupational level there have been no health effects that you know that chlordane causes. Why isn't it safe to have it at the occupational level in people's houses?

A. Probably because exposure would be a little longer than the workplace exposure, so one would have to adjust for that level.

Q. Once you have adjusted the occupational standard, which is based on eight hours, to the time that a person spends in a house, would that be an adequate adjustment to set a safe level for chlordane being in a residence?

A. Again, I haven't gone through that calculation. It is still my opinion that at that level, I would not consider that hazardous, but I haven't gone through that entire calculation. So I just don't know the answer to that.

Q. If you had chlordane at the occupational level in your house, what would you do?

A. Well, I think if chlordane were at the occupational maximum or above that I would probably recommend not living in that house until that level was reduced.

Q. If the level couldn't be reduced below the occupational level, what would you recommend?

A. I would probably recommend that you not live in that house.

Q. What about if the level were half the occupational level, what would you recommend?

A. Again, I haven't gone through that calculation, so I can't give you an answer to that.

Q. Why is it, if there are no health effects at the occupational level, you would recommend that people not live in the house?

A. Why would I go through that exercise?

Q. Right.

A. Well, again, it is a matter of public policy. If you are asking me about the level that I would recommend be in houses, I would make a public policy toxicology decision based upon human experience, occupational exposures and a safety factor applied to that occupational exposure. If you are asking me about a specific injury caused by exposure to those levels, those are two different questions. I would have to answer them differently.

Q. I am asking you a really different question, though, which is about yourself. What would you do if you had in your own house, not a public policy decision, but what

would you recommend or what would you do in your own house if the levels were one half the occupational level and you had adjusted the occupational level for time so that it was one half the level once the time had been adjusted.

A. Now, I just really can't answer that question because I haven't gone through that determination. I mean, I just don't know.

Q. Well, what would your opinion be?

A. I can't give you an opinion because I haven't gone through that process. I can give you an opinion regarding the occupational level and above that. My opinion is that I think you should not continue to live in that house.

Q. Why is it if it is a judgment involving public policy and not a scientific proof that there is injury at the level, why is it that you are clear at the occupational level and not half of it?

A. I'm sorry, I didn't understand that.

Q. If there is no proof in your mind that chlordane at the occupational level causes injury, why is it that you have an opinion at the occupational level, feel confident there of an opinion, but don't have one at half the occupational level?

A. Well, because I haven't gone through that process. I simply haven't evaluated half of that level.

Q. What process have you gone through with regard to the occupational level, except the only process I have heard you describe is to say it is safe at that level.

A. Well, at that level there is no adverse effects associated with exposure to that level, that's correct.

Q. So, then, why is it that you recommend moving out at that level?

A. Well, because exposure would be for longer than eight hours. The exposure might be ten hours, it might be 14 hours, it might be 20 hours.

Q. Well, assuming that you adjusted the level so that the level was at the occupational level, having adjusted the hours, would you still recommend moving out?

A. I think I have already answered that question. I would have to go through that process. I would have to look at the concentration, the hours, the workplace standard, calculate a dose, look at margins of safety, apply those margins of safety and ultimately make a determination regarding a 24-hour level. I haven't done that.

Q. Well, assuming that you did the calculation and

that you adjusted all the figures in the level of exposure that a person got in the house was exactly the same level of exposure they got, the maximum of the occupational level, then what would you recommend?

A. I'm sorry, I don't understand that question either.

Q. Well, the occupational level gives a certain amount that you are exposed to in terms of a dose and then over time and assume that you calculated the person lived in the house either more or less time and then you essentially adjusted the numbers so that the dose the person got in every 24-hour or one-week period was the same dose that the person got at the maximum of the occupational exposure under the eight-hour rule, what would your recommendation be about continuing in the house at that point?

A. You mean if the level was at the occupational level?

Q. Right.

A. Well, I think I have already answered that. If it is at the occupational level or above, my recommendation would not be to continue to live in that house.

Q. Having said that, why is it that you would

recommend that if at the occupational level there are no injuries caused?

A. Well, let me say it again. Because the time of exposure would be extended beyond that which exists in the workplace, which is eight to ten hours, so there would have to be an adjustment made for that additional exposure time which may result in a different dose based upon a longer period of exposure.

Q. Doctor, I don't think I am clear. What if you had now made that adjustment, and assume for a second having made the adjustment that the longer time of exposure was coupled with a reduction in the amount of exposure at any given time so that in the end result the person was exposed to the exact same amount that they would be at the occupational level, in other words less but for more time or more but for a shorter time, and you got an exposure that was approximate to the maximum of the occupational level, in other words you had done the calculations and got it at the same amount, would you recommend leaving the house then?

A. This is for public policy matter?

Q. No, for you personally. Would you recommend that you leave the house, your family?

A. I think for me personally, again, I would go through a public policy determination and I would apply some safety factor to that evaluation, so I would probably further lower that number.

Q. The question of this public policy or process that you would go through in determining what you would do, what would be your best estimate as to what that level would be, that would be the maximum acceptable level in a house adjusted over time?

A. I haven't gone through that process. I just haven't done it.

Q. Are you aware of the NAS/NRC recommended guidelines for exposure?

A. Yes, I am.

Q. What are those?

A. Five micrograms per cubic meter for chlordane and two micrograms per cubic meter for Heptachlor.

Q. What is your opinion of those?

A. Those are guidelines. Those are guidelines that were established for military housing based upon the level that could be achieved by cleaning up or removing the applied material from the military housing.

Q. What is your opinion as to what you would recommend to a person who is exposed to levels at or above those guidelines?

A. Oh, I think above those guidelines, my recommendation within certain limits would not be to move.

Q. Give me some idea of the order of magnitude of those limits.

A. You are asking me the same question from another end. I can't give you that answer. Clearly four or five, even ten times above that, I think just from what I know about chlordane, would not be a risk.

Q. What about 20 times above it?

A. I don't know the answer to that.

Q. But at ten times you feel that there is no risk?

A. Yes, sir.

Q. But you don't feel comfortable at 20?

A. Actually I think at 20 I wouldn't have a problem with that either.

Q. What about 30?

A. I don't know.

Q. Why do you feel comfortable at 20 but not at 30?

A. Well, just based upon my general knowledge of

chlordane.

Q. Well, what knowledge is there that seems to make some kind of impression in your mind between 20 times and 30 times the NAS guidelines?

A. Well, again, it is simply my experience, my knowledge of chlordane, having reviewed the literature, just my general knowledge about chlordane that would lead me to that estimate.

Q. What documents have you seen in this case other than the Dines' medical records?

A. I have seen the -- included in those medical records would be the fat and the blood testing?

Q. Right.

A. I have seen, I believe, some of the house sampling data. I'm sorry, I don't have it here.

Q. You mean the monitoring as to whether there was chlordane and Heptachlor in the air or the surfaces?

A. Yes, sir.

Q. Those are the data that led to your conclusion that it was at safe levels of chlordane?

A. Yes.

Q. What other data or information have you seen in

this case?

A. I believe that's it. No, I'm sorry. I have the deposition of Dr. Chua.

Q. Right.

A. I believe -- let's see, I had the deposition of Mr. and Mrs. Dine.

Q. Right.

A. I think that's it. And then the medical records of various physicians.

Q. How much time did you spend on this case prior to the deposition today?

A. I would estimate, I don't know, probably about six hours.

Q. In your conversations, Doctor, with someone from my office about scheduling this deposition, did anybody ask any questions about your opinions or anything about the substance of the case?

A. No. No questions were asked about my opinions.

Q. Is it fair to say that the subject of these conversations, whoever introduced them or started them, was solely about the scheduling of the deposition?

A. Yes, it was about the scheduling of the deposition

and about my inability to testify if I didn't do that.

Q. When were those conversations?

A. Those conversations were last week, probably Monday or Tuesday.

Q. Was it true as of last week that there was a tentative time scheduled for this deposition that you were not able to comply with?

A. I'm sorry, that there was a time --

Q. Was there a tentative time scheduled for this deposition prior to these telephone conversations?

A. I'm sorry, I didn't hear your question.

Q. Was there a tentative time scheduled for this deposition prior to last week?

A. Yes, I believe so.

Q. Was the reason these conversations took place last week because you were unable to be deposed at the tentative time?

A. No, I don't believe so.

MR. SIMON: Thank you very much. That's the end of my questions, Doctor. Anybody else?

EXAMINATION BY COUNSEL FOR THE DEFENDANT

BY MR. HOLLINGSWORTH:

Q. Dr. Harbison, this is Joe Hollingsworth.

A. Yes, sir.

Q. I have a short series of questions about Tom Dine. Have you reviewed Tom Dine's medical records?

A. Yes, sir.

Q. Were you aware that Tom Dine is a diabetic?

A. Yes.

Q. Were you aware that his insulin requirement went up, apparently, while he lived in the house at issue in this case?

A. I was not aware of that.

Q. Are you aware that he has made the claim that his diabetes condition went out of whack during the time he resided in the house at issue in this case?

A. I was not aware of that, no.

Q. I would like you to assume three things, that he has claimed that his diabetes went out of whack during the time that he was a resident in the house at issue in this case, that his insulin requirement went up during that time period and, thirdly, that the insulin requirement stayed up after exposure had terminated allegedly, that is after he

left the house and discontinued residence in the house at issue in this case. I would like to ask you whether you have an opinion as to whether or not chlordane caused his diabetes to go out of whack and his insulin requirement to go up?

A. Yes, I have an opinion.

Q. What is your opinion?

A. My opinion is that chlordane would not have caused his diabetes to go out of whack or to increase his requirement for insulin.

MR. HOLLINGSWORTH: Thank you.

MR. HART: I have nothing.

MR. SIMON: No further questions.

You have a right, Doctor, to read your deposition and sign it or not do that. That's your choice. You can confer with Mr. Hollingsworth or decide now, whatever you prefer.

THE WITNESS: I would prefer to read and sign it, Joe.

MR. HOLLINGSWORTH: Thank you, Dr. Harbison.

(Whereupon, the deposition of RAYMOND HARBISON was concluded at 5:53 p.m.)

CERTIFICATE OF DEPONENT

I hereby certify that I have read the foregoing Pages 4 through 75 of my deposition testimony taken in this proceeding, and the same is a true, correct and complete transcription of the testimony given by me, and any changes and/or corrections appear on the attached errata sheet signed by me.

_____ _____

(Date) RAYMOND HARBISON

* * *

CERTIFICATE OF NOTARY PUBLIC

Subscribed and sworn to before me this the_____ day of _____, 1988.

_____

NOTARY PUBLIC IN AND FOR

My commission expires:

WITNESS: Raymond Harbison CASE: Dine vs. Velsicol

Please note any errors and the corrections thereof on this errata sheet. The rules require a reason for any change or correction. It may be general, such as "To correct stenographic error," or "To clarify the record," or "To conform with the facts."

PAGE	LINE	CORRECTION	REASON FOR CHANGE

CERTIFICATE OF REPORTER

I, Sally V. Weeks, do hereby certify that the foregoing proceedings were taken by me in stenotype and thereafter reduced to typewriting under my supervision; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and further, that I am not a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of the action.

_____

Sally V. Weeks
Court Reporter