UNITED STATES DISTRICT COURT
DISTRICT OF CONNECTICUT

NEVADA POWER COMPANY, a Nevada Corporation, Plaintiff, vs. MONSANTO COMPANY, a foreign corporation; GENERAL ELECTRIC COMPANY, a foreign corporation; WESTINGHOUSE ELECTRIC CORPORATION, a foreign corporation; and DOES I-XXV, inclusive, Defendants.	CASE NO. CV-S-89-555-LDG (LRL)

DEPOSITION OF WILLIAM FESSLER, TAKEN BEFORE LEE ANN BIANCUCCI, R.P.R., A NOTARY PUBLIC IN THE STATE OF CONNECTICUT, PURSUANT TO NOTICE AND THE FEDERAL RULES OF CIVIL PROCEDURE, AT THE OFFICE OF BRANDON REPORTING SERVICE, 11-A CAPITOL AVENUE, HARTFORD, CONNECTICUT, ON JANUARY 25, 1993, AT 1:15 P.M.

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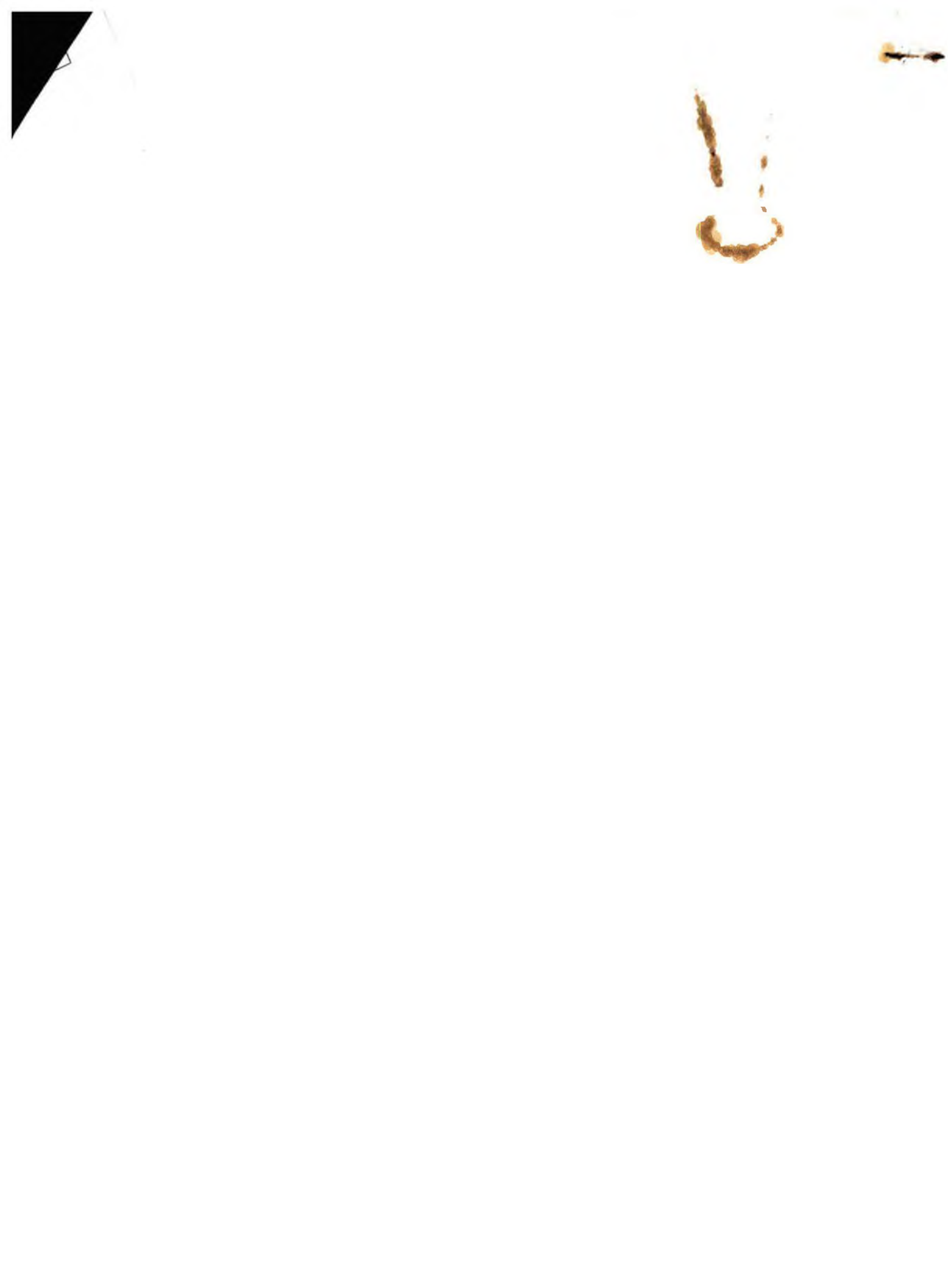

APPEARANCES:

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I N D E X

PLAINTIFF'S DEPOSITION EXHIBITS

(For Identification)

(Reporter's Note: Exhibits filed with original transcript)

(Deposition commenced at 1:15 p.m.)

WILLIAM FESSLER, Deponent, of 91 Spadina Parkway, Pittsfield, Massachusetts 01201, having first been duly sworn by Lee Ann Biancucci, R.P.R., a Notary Public in the state of Connecticut, was deposed, and stated as follows:

DIRECT EXAMINATION BY MR. BRADLEY

Q (By Mr. Bradley) Mr. Fessler, before I begin your deposition, let me introduce myself again. My name is Ralph Bradley. I am part of a group of attorneys representing Nevada Power Company in the lawsuit which you have been noticed to testify in today. There is one matter that I want to raise before I begin asking you questions.

MR. BRADLEY: Nevada Power Company showed up at 8:30 this morning to have the deposition taken of Steve Hamilton which had been noticed for this morning at 8:30 and Nevada Power Company paid for a videographer to travel from Florida to appear at 8:30 this morning for the sole purpose of having Mr.

Hamilton's deposition videotaped. Mr. Hamilton didn't show up.

We have a series of letters where Nevada Power responded to a letter of Williams & Connolly where Williams & Connolly had indicated that they may have Mr. Hamilton be a 30(b)(6) witness, and we wrote back saying let us know if he is going to be. I am going to have this marked as Deposition Exhibit 1 which is the correspondence that went back and forth between the offices.

Richard Hinckley is counsel for Nevada Power Company and he is telefaxing to us a statement indicating that he spoke with counsel for Defendants last week where it was confirmed that Mr. Hamilton would have his deposition taken at 8:30 this morning by videotape and that the other two deponents scheduled for today would not have their depositions taken by videotape.

General Electric brought with them a letter which I saw for the first time today which is a letter from General Electric to me that, again, I didn't receive but cancels the deposition for today and which appears to be

in conflict with what Mr. Hinckley was told just last Friday. Would you like to have your letter marked?

MR. KIERNAN: No. Do you have any questions for Mr. Fessler today?

MR. BRADLEY: I am moving on to Mr. Fessler at my own pace.

(Plaintiff's Deposition Exhibit 1: Marked for Identification)

Q (By Mr. Bradley) Mr. Fessler, when was the first time you learned that there was a lawsuit involving Nevada Power Company versus General Electric Company?

A Two weeks ago.

Q Did you know that prior to that time your name had been given to Nevada Power as a potential witness in this case?

A No, I did not.

Q Did you review any materials in preparation for today's deposition?

A One document which I understand has been submitted in this case already and was given to me by the attorneys.

Q Which document is that?

A It's a report of -- a trip report from a National PCB Conference in 1975.

Q The document that you reviewed, is it the proceedings of that conference?

A No. It is my trip report.

Q Did you bring it here with you today?

A I have it in my briefcase out in the lobby. Yes, I understand it's part of the record of this case.

Q I don't have it with me. Would you mind taking a few moments to go get it for me to review?

(Pause)

A (Handing).

MR. BRADLEY: Would you mark that, please?

(Plaintiff's Deposition Exhibit 2: Marked for Identification)

Q (By Mr. Bradley) Is it Mr. Fessler or Dr. Fessler?

A Dr. Fessler.

Q Dr. Fessler, did you review any other documents in preparation for today's deposition?

A No, I did not.

Q Let's talk for a moment about Deposition Exhibit 2 which is the trip report that you prepared.

A Yes.

Q When did you prepare it?

A When I returned from the trip in November of 1975.

Q For whom did you prepare it?

A Basically for my management, for my boss at the time and the people managing the laboratory.

Q To whom did you distribute your report?

A I don't remember. At least to my boss. Whether it became part of the circulated documents of the lab, I don't know.

Q Who was your boss when you wrote this trip report?

A Robert Osthoff.

Q What was his title?

A Manager of insulation materials laboratory operation.

Q Does he work with any particular department of General Electric?

A He is dead.

Q Did he work in a particular department at General Electric at the time he was your boss and you wrote the trip report?

A He worked for the power delivery operation, power delivery business.

Q Do you know whether in addition to your trip report whether he received any other reports regarding polychlorinated biphenyls?

MR. KIERNAN: If you know.

A Do I --

Q (By Mr. Bradley) Mr. Fessler, you can't answer questions you don't know. I don't want you to speculate or guess. It's your deposition and mine. If you know the answer, give it to me.

A I know he received other reports, yes.

Q If I were to make a request for those files, to whom would I make the request and what documents, where would I find the file?

MR. KIERNAN: Let me speak on that. You will make the request to counsel. We represent Dr. Fessler and GE. Make the request to us and we will take it under advisement.

Q (By Mr. Bradley) Mr. Fessler, did you understand my question?

A Yes, I did.

Q Please answer it.

A I would say you would make the request to our attorneys and they would handle that.

Q Where would you expect the files to be within

General Electric?

A If they are still around, they would be somewhere in Pittsfield.

Q In which department?

A If there are any of them, they probably are in the laboratory, residual laboratory files, things that are left over.

Q Did you bring a curriculum vitae with you?

A No, I did not.

Q Please then tell me about your educational background and your work history?

A I have a Ph.D. in chemistry -- organic chemistry from the University of Notre Dame. I worked for six years as a chemist at the General Electric Research and Development Center. I moved to Pittsfield as a development chemist in the group technical resources operation. I advanced there to senior chemist and to a unit manager in the insulation materials unit and became manager of the materials laboratory when the manager retired in 1987 and converted it to the environmental laboratory which I manage today.

Q Give me the year that you began working for General Electric?

A 1966.

Q Your job title in 1966?

A Chemist.

Q What kind of work did you do as a chemist in 1966?

A Polymer synthesis.

Q Pardon me?

A Polymer synthesis.

Q What is polymer synthesis?

A Research into the methods for making various polymeric materials.

Q What is a polymeric material?

A It's a generally organic material made up by the linking together of many smaller molecules.

Q Are chlorinated hydrocarbons polymeric material?

A No, they are not.

Q Are PCBs polymeric material?

A No, they are not.

Q When, if ever, did --

A May I reanswer an earlier question, that as I think about --

Q Certainly.

A Polymers can be chlorinated hydrocarbons such as polyvinyl chloride.

Q When did you change job responsibilities at General Electric?

A Since -- It's basically been an evolutionary

process. It's hard to draw a line. I moved to the Pittsfield laboratory in 1972. I continued as basically a -- fundamentally as a synthetic polymer chemist. I advanced into management and had then responsibilities -- continuing responsibility for much of the polymeric development and characterization work. Also took over --

Q When did you do that?

A 1983, '82; '83. Since part of that unit included analytical chemistry and as the business phased out the polymeric work, I continued managing the synthetic or analytical chemistry people and that's basically how I am involved in analytical chemistry today.

Q You know what polychlorinated biphenyls are; don't you?

A Yes.

Q What are they?

A They are organic -- aromatic organic compound made by the chlorination of biphenyl molecule.

Q When did you first learn about their existence?

A I guess the first I can really -- could really remember would be shortly after -- right around the time I came to Pittsfield.

Q Around 1972?

A Yes.

Q Prior to 1972, was there anyone that you knew of within General Electric who was working with PCBs?

A I did not know anyone prior to '72, no.

Q How did you first learn about PCBs in 1972?

A I began working in the transformer department, or the transformer laboratory in that -- in the laboratory in the transformer department, and some of the work going on there had to do with askarels.

Q Could you spell it?

A A-S-K-A-R-E-L.

Q Does the building where you worked in 1972 in Pittsfield have a number?

A Building 11.

Q What work did you do relative to askarels in 1972?

A None.

Q Did you do any work relative to askarels at any time that you have been employed with General Electric?

A Yes.

Q When did that first begin?

A Late 1973.

Q Who was it that first informed you about the presence of PCBs or what a PCB is?

MR. KIERNAN: Objection.

Q (By Mr. Bradley) Go ahead and answer the question.

MR. KIERNAN: Just so the record is clear, I don't think he stated that anybody had informed him about PCBs.

If you can answer his question as it's phrased, go ahead.

A Well, I really can't tell you who it was. As an organic chemist, if I had been brought cold into this room and you told me -- asked me what was a polychlorinated biphenyl, I could answer that question. That term defines a term. I am an organic chemist and I understand what those terms mean. I can't seem to allot a time when somebody told me about them in that context.

Q (By Mr. Bradley) Do you recall if you first learned about them through a discussion with someone or through reading or through some other source?

A It would have been through discussion in the laboratory.

Q In 1973, what work did you do relative to askarels?

A I began involvement in a project to find replacement materials for PCBs.

Q Why were you looking for replacement materials for PCBs?

A We were looking to replace a material that was used whose use was becoming more and more restricted voluntarily at that time by the manufacturer making it less available; therefore more expensive, and also looking to find materials that would be more environmentally compatible.

Q What do you mean by finding materials that are more environmentally compatible?

A There was a growing body of literature suggesting that the polychlorinated biphenyls at that time were ubiquitous in the environment and were possibly linked to environmental contamination and environmental problems. We were interested in finding materials to fill their function and be more environmentally compatible.

Q When you say that they are ubiquitous in the environment, what do you mean?

A I mean that they were being found in a variety of locations in the environment and in areas in which one would not have expected to find them based on historical use.

Q Where would they be finding them where you wouldn't expect to find them?

MR. FEATHERSTONE: Objection; hearsay.

Q (By Mr. Bradley) Go ahead and answer.

MR. KIERNAN: If you know. Object to the form of the question.

Q (By Mr. Bradley) Dr. Fessler, the way depositions work, I ask you questions and attorneys can make objections and unless you're instructed not to answer, you are still required to answer. Go ahead and answer the question.

A Would you repeat the question at this point? I am sorry.

MR. BRADLEY: Could you read it back, please?

(The last question was read by the court reporter)

MR. KIERNAN: Same objection.

A In rural areas, areas away from industrial development and civilization.

Q (By Mr. Bradley) That was true in 1973?

A Yes.

Q Why would you not expect to find PCBs in 1973 in those areas?

A There was no historical exposure of those areas to PCBs. There is no reason to expect them to be there in the sense that they had been used or would

have expected them to be used there.

Q What did the fact that they were ubiquitous in the environment mean to you as a chemist?

A Only that they were there and that they would presumably have some stability that would allow them to remain in the environment.

Q Did that have any importance in your mind as a General Electric employee?

A Not necessarily of itself, no.

Q Were there other things then that you learned that gave it some significance to you?

A There was a growing literature, largely the popular press, that was suggesting that this material was responsible for a variety of problems.

Q You mentioned that PCBs were in 1973 -- don't let me put words in your mouth, and I am not going to hold you to my summary, all right -- but you mentioned something about there being an environmental contaminant. What do you mean when you say there is an environmental contaminant relative to 1973?

MR. KIERNAN: Objection; asked and answered.

A I believe that they are -- they were -- What I mean by that is that they were present in the

environment, they are anthropogenic materials and have no reason to be there except for the fact they were being used in industry or in commerce.

Q (By Mr. Bradley) You also mentioned that in 1973, PCBs were considered an environmental problem. What did you mean when you said environmental problem?

A I meant that there was growing pressure from political and popular communities, popular press and so forth. They were making a case that these were causing a variety of problems in the environment, many of which have not been borne out.

Q In 1973, what variety of problems was it alleged that PCBs was causing?

A The one I remember was the argument that they were responsible for thinning of bird shell eggs -- bird eggshells.

Q Do you remember anything else?

A No, I do not.

Q In 1973, what notices in the press do you recall reading that discussed the variety of problems that you have mentioned?

A I can't remember that.

Q Do you recall attending any conferences or seminars in 1973 where PCBs were discussed?

A No, I do not.

Q Do you recall anyone within General Electric holding in-house meetings or in-house conferences on the topic of PCBs in 1973?

A I recall technical meetings on projects dealing with PCBs.

Q Were you present at the technical meetings?

A Yes.

Q What was the subject of those meetings in 1973?

A I couldn't remember -- I couldn't answer that in detail at this point. I don't know.

Q I am not interested then in the detail, just generally would suffice.

A It would be the subject of the technical requirements for replacement materials.

Q Was there any discussion in 1973 in-house in General Electric about the possibility that PCBs could cause some harm to the environment or to human beings?

A Not that I recall.

Q If there had been such meetings, where would you have -- within the structure of General Electric, where would you have imagined those to have occurred?

A I don't know. I don't know.

Q In 1973, was there someone assigned within General Electric to assess the potential of PCBs to cause harm to the environment or to human beings?

A I don't know.

Q If there had been such a person, would you have known about them?

A Not necessarily.

Q If you were going to find out today whether there was such a person, how would you go about it?

MR. KIERNAN: You understand, Mr. Bradley, that Dr. Fessler is a chemist and is not offered as an expert in that area or is a corporate witness with knowledge in that area and that you are asking him questions that are pretty far afield from what he dealt with at the time.

Notwithstanding that objection, if you can answer it, answer his question.

A I guess I would start by getting in touch with the corporate environmental group and asking them if they have any information on that.

Q (By Mr. Bradley) Was there a group in 1973 within General Electric that was called the corporate environmental group?

A Not that I am aware. I don't believe so, no.

Q Was there an environmental group of people that were concerned with environmental issues within General Electric in 1973?

MR. KIERNAN: Again, the same objection. This is not the witness to be directing those questions to, but if you can answer --

MR. BRADLEY: You identified him as a witness. You haven't given us any indication what he is going to testify to, and I am going into this as part of my discovery deposition. I understand that there may be things that he doesn't know. That's one of the limitations in proceeding the way we have, and I don't expect him to say anything other than what he knows.

(Off the record discussion)

MR. BRADLEY: Would you read the last question?

(The last question was read by the court reporter)

A There was a group in Schenectady with real estate -- RECO we call them, R-E-C-O, I don't remember

what the acronym stands for anymore, but they did have some people who were beginning to get involved in the environmental concerns.

Q (By Mr. Bradley) do you recall who those people were?

A The person I remember is Ed Simons.

Q Do you know whether Ed Simons is still a General Electric employee?

A I do not know.

Q Is it Dr. Simons?

A I don't know.

Q Do you know how long RECO; R-E-C-O, stayed in existence?

A No, I don't.

Q Have you testified in any other lawsuits?

A No, I have not.

Q Do you know a gentleman named Fred Garrison?

A No, I do not.

Q Les Fickel?

A No.

Q Emmett O'Gara?

A No.

Q Steve Hamilton?

A Yes.

Q Who is Mr. Hamilton?

A At the present time, he is part of the corporate environmental programs in Fairfield. I am not sure I know what his position is.

Q In the administrative structure of General Electric, is he one of your superiors?

A No, he is not.

Q Are you his superior?

A No, I am not.

Q Do you know a gentleman named Duke Marsdon?

A No.

Q James Nelson?

A Yes.

Q Who is Mr. Nelson?

A He is now retired, but I think I met him perhaps once or twice many years ago, and I honestly now do not remember what his position was.

Q During the time that you have been employed with General Electric, have you had any professional working -- let me try to rephrase that.

Have you directly worked with Mr. Nelson?

A No.

Q Where was he in the administrative structure of General Electric in 1973?

A I don't know.

Q When did you first learn there was such a person?

A I can't remember.

Q Do you know a gentleman named Thomas Rouse?

A Yes.

Q Who is he?

A He is manager of dielectric projects for General Electric Company in Pittsfield, Massachusetts.

Q In the administrative structure of GE, is he your superior?

A No, he is not.

Q Are you his superior?

A Yes, I am.

Q What kind of work does he do?

A He is a project manager. Most of his focus in project management over the last half dozen years or so has been in PCB related projects.

Q How long has he had that job title?

A Ten years.

Q Were you always his superior during those ten years?

A No, I was not.

Q What kind of work has he done over the past ten years relative to PCBs?

A He has managed a number of projects, several of them funded by EPRI or conducted with General Electric Company. He developed methods for field

monitoring -- He supervised programs for methods for field monitoring of PCBs. He has worked on projects relating to studying PCB degradation. He has worked on projects related to analytical method development of PCBs. He has worked on projects related to the biodegradation studies of PCBs in the environment.

Q Do you know whether Mr. -- is it Mr. Rouse or Dr. Rouse?

A Dr. Rouse.

Q Do you know whether Dr. Rouse did any work relative to PCBs prior to the past ten years?

A I don't think so, but I can't remember the dates that accurately at this time. I don't think so.

Q At some point in General Electric's -- just a moment.

What do you know about the biodegradation studies on PCBs done by Dr. Rouse?

A I know the work that he is doing at the present time, and he has been doing for the past year.

Q What work is that?

A It's a study of biodegradation of PCBs in Woods Pond watershed.

Q Has Dr. Rouse published --

A Not on that subject at this point.

Q Has he published on any subject involving PCBs?

A He has published EPRI reports on the work done for the EPRI program, yes.

Q EPRI is what?

A Electric Power Research Institute.

Q They are located where?

A Palo Alto, California.

Q What is General Electric Company's relationship with EPRI?

A It is a contractor.

Q EPRI is a contractor?

A GE is a contractor is our relationship.

Q What is EPRI?

A It is a research organization, research funding organization supported by member utilities.

Q Other than General Electric, who are the other member utilities that you know of?

A General Electric is not a member utility. General Electric is not a utility.

Q Are the utilities then who are EPRI members public power supply utilities or some other type of utility?

A I believe they are public power utilities, yes.

Q Does General Electric have any of its employees sitting on the board of directors of EPRI?

A I do not know.

Q Do you know whether GE has ever had members sit on the board of directors of EPRI?

A I don't know.

Q You were involved in a change-out of PCBs to some other material; is that correct?

A I was involved in developing alternative liquids in PCBs for transformers, yes.

Q That began when?

A 1974.

Q What kind of work did you do to develop alternatives?

A We screened a number of potential candidates for just general physical properties and expected performance. We entered into and did some testing work in the laboratory to determine properties and characteristics of the materials. We conducted a large amount of the effort in terms of trying to reach a good definition of flammability in order to classify these materials for their performance relative to PCBs. We then continued developing those materials, the selected material and providing the data needed for transformer design and manufacturing.

Q How long did you work on that?

A Approximately five years.

Q At the end of five years, had General Electric come up with a substitute material for PCBs?

A We had.

Q What was the material?

A Silicone for one group of applications, it was the polydimethylsiloxane.

Q Would you spell that, please?

A P-O-L-Y-D-I-M-E-T-H-Y-L-S-I-L-O-X-A-N-E.

Q Is that known by an acronym?

A Silicone.

Q Do you know when silicone came into existence?

A In 1947, '46 as a commercial product.

Q Do you know why silicone was not tested prior to 1973 for its -- for the properties that led it to be substituted by General Electric for its PCBs?

MR. KIERNAN: Objection.

A It was evaluated prior to that. The properties were not acceptable under the definitions of askarels and it was considerably more expensive than the askarels that were available and we did not -- it was not material that had flammability characteristics that would have been required for replacing PCBs in askarels.

MR. BRADLEY: I am sorry. Would you

read that answer back for me, please?

(The last answer was read by the court reporter)

Q (By Mr. Bradley) When was silicone evaluated prior to 1973?

A I don't know the time.

Q Where are the evaluations?

A I don't know where they are.

Q Where were they when you first learned about -- Well, where were they in 1973?

A They were in files in the laboratory -- in the transformer laboratory.

Q Would you expect them to still be there?

A I would think so, yes.

Q What did you mean when you said they weren't acceptable under the definition of askarels?

A Askarel is defined as a non-flammable liquid whose arc formed gases are predominant. Any non-flammable and silicones do not meet either of those criteria.

Q You weren't required by any law or otherwise to use only askarels; were you, in 1973?

MR. KIERNAN: Objection; arguing with

the witness, Mr. Bradley.

A We were not required -- I don't understand what the question is, I really don't.

Q (By Mr. Bradley) Were you required in 1973 or any other time to only use askarels in your transformers?

A No.

Q Other than the fact that it didn't fit an askarel definition or the flammability requirements of askarels, is there any other reason that you did not use silicone in your transformer products prior to 1973?

MR. KIERNAN: Objection. Dr. Fessler is not offered here as an expert on transformer components or products. He is a chemist who was involved, as I think he has testified repeatedly, in the search for replacements for askarel fluids.

MR. BRADLEY: Dr. Fessler wasn't offered here at all. He was subpoenaed and I am conducting the deposition on areas that I am interested in.

Q (By Mr. Bradley) Go ahead and answer the question.

MR. KIERNAN: Could you repeat the question, please?

(The last question was read by the court reporter)

MR. KIERNAN: Same objection. I don't believe any of that has been established in the record, and I think the question is far afield of anything that Dr. Fessler has said.

Q (By Mr. Bradley) Go ahead and answer it if you are able, Doctor?

A It was not used because it was markedly more expensive than the alternatives and would have markedly increased the cost of transformers which utilities did not want to pay for and there wasn't -- at that point was no mark, there was no point in putting in the development work needed to redesign transformers for its use.

Q What was the difference in cost between silicone and askarels prior to 1973?

A Five to one, five times the cost to go to silicone.

Q What kind of changes were necessary in the construction of transformers if one had used silicone as opposed to askarel?

A Well, --

MR. FEATHERSTONE: I would object to the

absence of foundation for this witness to talk about transformer design.

MR. KIERNAN: Same objection as before.

MR. BRADLEY: He just got through testifying that the transformer would have needed to be changed. He raised it and if he can answer it, let him answer it.

A As an alternative to askarel, it would need to meet the flammability requirements of askarel in the first place and then it would have to require -- it would require an electrical redesign and a redesign of the cooling system in order to provide the function that askarel provides based on its physical properties.

Q (By Mr. Bradley) Have you been involved in any joint research projects with Monsanto or with Westinghouse?

A No, I have not.

Q Would you describe the difference -- I am assuming you are saying there is a difference between a furan and PCB and if I am right, would you describe the difference?

MR. FEATHERSTONE: Object to the form.

Q (By Mr. Bradley) Describe any difference between a furan and a PCB.

A A furan has no chlorine atoms in it, and it is a five-member oxygen containing ring where it's doubly unsaturated.

Q What is the difference between a PCB and a polychlorinated dibenzofuran?

A Polychlorinated dibenzofuran is an oxygen heterocyclic material that has been chlorinated.

Q What is the difference between a furan and a polychlorinated dibenzofuran?

A Furan is the parent oxygen heterocyclic which, if you put two -- fuse two benzene rings to it and chlorinate it, you get polychlorinated dibenzofurans.

Q Are those known by an acronym, PCDF?

A Yes.

Q Do PCBs contain PCDFs?

A They have been reported to contain PCDFs, yes.

Q Did you do any studies in your work at General Electric to determine whether PCBs contained PCDFs?

A I did not.

Q Do you know whether anyone within General Electric examined its PCB material to determine whether it contained PCDFs?

MR. KIERNAN: Objection to the use of the words, "its PCB material."

Q (By Mr. Bradley) Fine. Go ahead and answer if you can.

A I do not know that anyone did that in GE.

Q Are PCDFs toxic?

A Yes.

Q What does toxic mean?

A In this case it means that it produces adverse effects in the animal or organism in which -- which is exposed to it.

Q Do you know whether science has determined there is any safe level of exposure to PCDFs?

A I don't know.

Q Are PCDFs one of the most toxic materials known to mankind?

MR. FEATHERSTONE: Objection; lack of foundation.

MR. KIERNAN: Objection.

MR. FEATHERSTONE: Also to form.

A No, they are not.

Q (By Mr. Bradley) Do you know what is more toxic?

MR. FEATHERSTONE: Same objection.

MR. KIERNAN: Objection to form, lack of foundation.

A A number of naturally occurring materials, tetrodetoxin and botulism toxin.

Q (By Mr. Bradley) I actually hadn't finished my question. My question is whether you know whether PCDFs are more toxic than PCBs?

A Yes.

Q On what magnitude?

MR. FEATHERSTONE: I would object to the lack of foundation to talk about that.

A I don't know the details of that.

Q (By Mr. Bradley) When did you first learn that PCBs were reported by some folks to contain PCDFs?

A I believe it was at the PCB conference in 1975 which is the subject of that exhibit.

Q Do you know whether at that time General Electric sent out a warning to its customers advising them that PCBs may contain PCDFs?

A I do not know.

Q Do you know whether General Electric at any point received any warnings from PCBs -- excuse me -- from Monsanto that PCBs may contain PCDFs?

A I do not know.

Q Do you know what a chlorinated biphenyl is?

A Would you say that more clearly?

Q Do you know what a chlorinated biphenyl is?

A Biphenyl?

Q Biphenyl.

A Yes.

Q Is that the same as a chlorinated diphenyl?

A Yes.

Q Are they both chlorinated hydrocarbons?

A Yes.

Q Did anyone at General Electric at any point in time indicate to you that if there is a sufficient concentration of chlorinated hydrocarbons to cause a skin condition or rash, there may be sufficient concentration to cause systemic poisoning in the few people who are hypersensitive to the actions of these hydrocarbons?

MR. KIERNAN: Objection; lack of foundation. Mr. Bradley, obviously reading from a computer screen here, is there some document or source that you want to point the witness to?

MR. BRADLEY: I am asking him the question, and I am really quite satisfied with the way I am doing it.

A I am going to have you repeat that question. I don't remember the way it started.

Q (By Mr. Bradley) I will repeat it. I don't need to have it read.

Did anyone at General Electric ever tell you

that if there is a sufficient concentration of hydrocarbons to cause a skin condition or rash on a human being, there may be sufficient concentration to cause systemic poisoning in the few people who are hypersensitive to the actions of these hydrocarbons?

MR. KIERNAN: Same objection.

A I don't recall that anybody ever told me that.

Q (By Mr. Bradley) Anybody within General Electric ever tell you that hydrocarbons could cause skin rashes?

A Hydrocarbons? No.

Q Anyone within General Electric ever tell you that PCBs could cause skin rashes?

A I believe, yes. I believe so.

Q Anyone within General Electric ever tell you that if the PCBs caused skin rashes, that it could be an indication of a systemic poisoning?

A No.

Q Did Monsanto advise General Electric, again, to the best that you know, about the potential health hazards or environmental hazards caused by exposure to PCBs?

MR. KIERNAN: Objection; lack of foundation.

A I don't recall. I don't know.

Q (By Mr. Bradley) Did you personally ever see any warnings from Monsanto regarding the potential health effects or environmental effects from exposure to PCBs?

A I have seen MSDS sheets from Monsanto, yes.

Q Other than MSDS sheets, did you see any warnings?

A No, not that I know of.

Q Did you get PCBs from Monsanto to work with in the laboratory?

A Indirectly, yes.

Q Do you know whether General Electric purchased all of its PCBs from Monsanto?

A I don't know.

Q Did anyone within General Electric tell you that before March 18th, 1970 Monsanto had indicated that they had not officially notified any of its customers about the known effects of chlorinated hydrocarbons nor do their labels carry that information?

MR. FEATHERSTONE: Objection to the form of the question; absence of foundation, totally misstates the record, and it's vague as to who its customers are.

Q (By Mr. Bradley) You can answer the question.

A I don't know. I don't know anything about it.

Q You were a customer of -- by you, I mean General Electric -- General Electric was a customer of Monsanto; was it not?

A Yes.

Q Still is?

A I don't know.

Q Were you ever in a General Electric plant that assembled transformers that contained PCBs?

A Yes.

Q Tell me what you saw?

MR. FEATHERSTONE: Object to the form.

MR. KIERNAN: Object to the form.

MR. FEATHERSTONE: Object to the absence of a foundation. We don't know where, when.

MR. BRADLEY: I will get to it.

Q (By Mr. Bradley) Go ahead and answer the question.

MR. KIERNAN: Mr. Bradley, can you make the question a little more specific?

A I am afraid that it calls for me to describe a plant, a transformer -- that's very open.

Q (By Mr. Bradley) That's exactly what I am looking for. To accommodate Mr. Featherstone, when was it that you first visited the inside of a General Electric plant that manufactured transformers that

contained PCBs?

A I do not recall the date. I don't know.

Q Do you recall whether it was before 1973?

A It was not before 1973.

Q Do you recall whether it was before 1975?

A Yes. It would have been before 1975.

Q Which plant was it that you first visited?

A Pittsfield.

Q Which building number did you visit?

A I don't recall. I don't know.

Q Did you see workers working with PCB material?

A I saw transformers being assembled. I don't recall that at that time I had seen a filling operation.

Q Did you see any workers that had PCBs on their skin?

A I don't know.

Q Did you see any workers that had PCB material on their clothing?

A Again, I don't know.

MR. KIERNAN: Objection.

Q (By Mr. Bradley) Did you see any workers that appeared to have saturated clothing?

A I don't recall.

MR. KIERNAN: Mr. Bradley, could you clarify the question? What do you mean by

saturated clothing?

MR. BRADLEY: No. I will ask it my way.

MR. KIERNAN: I didn't think so.

Q (By Mr. Bradley) Describe the process, if you know it, by which a transformer is filled with PCB material?

A I am not a manufacturing engineer. I was not involved in those operations other than a passing through observer. I don't know the details of that.

Q When you were in the Pittsfield plant, did you see any transformers being filled with PCBs?

A As answered before, I don't believe that I saw the filling operation.

Q When you were in the Pittsfield plant, did you observe any workers with parts of their bodies inside transformers?

A I don't recall.

Q When you were in the -- Let me ask it this way. Were you in any other plants, other than the Pittsfield plant, where transformers were assembled that contained PCBs?

A Yes.

Q What period of time would that have been?

A In the seventies, 1975.

Q Which plants would those have been?

A It would have been Rome, Georgia.

Q Any other plants?

A No.

Q When you were in the plant in Rome, Georgia, did you observe any workers filling transformers with PCBs?

A No, I did not.

Q Did you observe any workers assembling transformers?

A Yes.

Q Did you observe any workers cleaning the insides of transformers?

A No.

Q Did you observe any workers working on the inside of transformers?

A No, I did not.

Q What was your reason for being there?

A Technical project review in the conference room at the plant.

Q What is a technical project review?

A A discussion of the technical progress made in a project.

Q Which technical project were you there to review?

A PCB replacement project.

Q Do you know whether the transformers assembled by General Electric between 1973 and 1975 had manhole covers on the top?

MR. KIERNAN: Objection; again, lack of foundation.

A Yes, I believe they do. I believe they did.

Q (By Mr. Bradley) When you were in any of the plants, the Rome, Georgia plant or the Pittsfield plant, did you observe any testers working with the transformers?

A Not that I recall.

Q Do you know what a tester is?

A I think I do.

Q What is a tester?

A I would interpret someone who tests transformers.

Q Do you know whether General Electric between 1973 and 1975 had testers within its transformer plants?

A Yes, they did.

Q Do you know whether as part of their testing they would reach in and change lines with PCBs up to their elbows and under their arms?

A I do not know.

Q What's pyranol?

A General Electric trademark.

Q For what?

A For a non-flammable dielectric liquid.

Q For PCBs?

A For a non-flammable dielectric liquid which contains PCBs.

Q What else does it contain?

A Chlorobenzenes.

Q What are those?

A Chlorinated benzenes; benzenes that have been chlorinated.

Q Roughly what percentage of chlorinated benzenes is contained in pyranol?

A Fifty percent.

Q Are chlorinated benzenes carcinogenic?

A Not that I know of.

Q Did it come to General Electric -- Let me rephrase the question.

Did pyranol come to you 50 percent chlorinated benzene, or did you add that to a PCB product?

MR. KIERNAN: Objection; lack of foundation. When you say "you," Mr. Bradley, could you be specific when you are referring to Dr. Fessler or General Electric?

MR. BRADLEY: I would be happy to.

Q (By Mr. Bradley) For purposes of the deposition,

you can assume that "you" refers to General Electric unless I instruct you otherwise.

MR. KIERNAN: I will object to that. That's not been the way the deposition has worked so far.

MR. BRADLEY: Fine. Your objection is noted.

A The answer is yes. It was done both ways.

Q (By Mr. Bradley) When was it that Monsanto first delivered to General Electric a material that contained 50 percent chlorinated benzene and 50 percent PCBs?

A I don't know.

Q Do you know whether the majority of the material, PCB material you received from Monsanto, was in the 50/50 split?

MR. FEATHERSTONE: Objection. There is no way this witness can answer that question. Lack of foundation, calls for speculation.

A I don't know.

Q (By Mr. Bradley) Who would know the answer to that within General Electric presently?

A I don't know.

Q Since you have such a lack of foundation, how is it that you know that Monsanto sent material to

General Electric that contained 50 percent chlorinated benzene and 50 percent PCB material?

A It is my recollection that that was done in some cases, and I don't know the reasons for it. I don't know the logistics of shipping and so forth but that was done occasionally.

Q Do you know whether, when it came to General Electric in a 50/50 split whether it came to you from Monsanto labeled, "Pyranol"?

A I don't know. I don't know.

Q Do you know whether General Electric ever received any shipments from Monsanto that had a 50/50 split that was called anything other than askarel?

MR. KIERNAN: Objection; lack of foundation. I think you are assuming something that hasn't been stated so far. All of this is very far afield from Dr. Fessler's area of work and expertise at General Electric.

A I don't know.

Q (By Mr. Bradley) Do you know whether PCBs get absorbed through the skin?

MR. KIERNAN: Objection; this goes beyond the witness' area of expertise.

A I don't know.

Q (By Mr. Bradley) Dr. Fessler, do you know that I didn't subpoena you here to testify as a witness; I subpoenaed you here to find out what you know, you understand that?

MR. KIERNAN: Objection. Mr. Bradley, you didn't subpoena him. We produced him voluntarily.

Q (By Mr. Bradley) I noticed you for your deposition, all right. I didn't identify you as having any particular expertise in any area, all right?

A Okay.

Q Do you know whether PCBs get absorbed through the skin?

MR. KIERNAN: Same objection.

A Specifically? No. In general chemistry, probably.

Q (By Mr. Bradley) Did anyone within General Electric ever tell you that PCBs get absorbed through the skin?

A Not that I recall.

Q Anyone from Monsanto ever tell you personally that PCBs get absorbed through the skin?

A No.

Q If Monsanto had told General Electric that PCBs get absorbed through the skin, who would you expect

that communication to have gone to in the 1970's?

MR. KIERNAN: Objection; calls for speculation.

MR. BRADLEY: Isn't that the purpose of a discovery deposition?

MR. KIERNAN: No, speculation is not the purpose.

A In the laboratory, I would imagine Ed Raab.

Q (By Mr. Bradley) Is that Dr. Raab?

A No.

Q Do you know if Mr. Raab is still a GE employee?

A He is retired and dead.

Q Is there anyone living that you would expect to know that information?

MR. KIERNAN: Same objection.

A I don't know.

MR. FEATHERSTONE: Was that R-A-A-B?

THE WITNESS: Yes.

MR. FEATHERSTONE: Pronounced Raab?

THE WITNESS: Yes.

Q (By Mr. Bradley) Have you personally worked with any electrical utility companies?

A Employed by?

Q Confer with, counsel to?

A No.

Q Have you ever had any contact with Nevada Power Company?

A No.

Q Have you ever had any contact with the public utility in Pittsfield?

A No, I have not.

Q Any contact with the public utility in Hartford, Connecticut?

A No, I have -- New England Power. I have had a meeting at one time with, I believe it's New England Power, which I think is Hartford.

Q At that meeting, were PCBs discussed?

A I believe we discussed the silicone as a replacement for askarel transformers.

Q When was that discussion?

A I don't know.

Q Was it in the 1970's?

A More than likely in the early 1980's.

Q As a chemist, do you know what synergism means?

A Yes, I do.

Q Is there syn -- First of all, what is synergism?

A It's a phenomenon which multiple stresses or physical effects can work together so as to enhance the consequence of any of the stresses.

Q Is it possible for a fish swimming in water

contaminated with PCBs to have higher levels of PCBs than you would find in the water?

MR. KIERNAN: Objection; lack of foundation.

A I am not a biologist.

MR. KIERNAN: Beyond this witness' area of expertise.

Q (By Mr. Bradley) You don't know the answer to that?

A The answer -- If you were to say is it possible, I would have to answer yes, it's possible.

Q Going back to synergism, is there synergism between different forms of PCBs?

MR. KIERNAN: Again, same objection. You are going way beyond this witness' area of expertise. He is not a toxicologist.

A I don't know what you mean by different forms of PCBs.

Q (By Mr. Bradley) Are there different forms of PCBs?

A Not to my knowledge.

Q Congeners?

A Congeners I understand, but those are all PCBs.

Q Is there synergism between the different congeners?

MR. KIERNAN: Objection; vague,

confusing. I couldn't understand the question, Mr. Bradley.

MR. FEATHERSTONE: I would object for the lack of foundation.

Q (By Mr. Bradley) Doctor, did you understand the question? If you did, go ahead and answer it.

A I don't know what you mean by synergism in that application, no.

Q Have you personally had any communications with anyone employed by the Environmental Protection Agency regarding PCBs?

A Yes.

Q With whom have you spoken?

A I have spoken with regional engineer -- water quality engineer in region one, assistant regional counsel in region one regarding PCB requirements in our Clean Water Act permit.

Q Anyone else within EPA?

A No.

Q Do you know what NIOSH is?

A Yes.

Q What is it?

A National Institute of Occupational Safety and Health.

Q Have you had any discussions with them regarding

PCBs?

A No, I have not.

Q Were you asked to assist in preparing a response to any discovery requests submitted by Nevada Power Company in this lawsuit?

A No.

Q Do you know whether the EPA takes the position that -- Let me ask this question.

As a General Electric chemist and now as a manager, do you keep apprised of EPA rules and regulations regarding PCBs?

A I try to.

Q Do you know whether the U.S. Environmental Protection Agency considers PCBs to be a probable human carcinogen?

A I don't believe they do.

Q Do you believe that PCBs are a probable human carcinogen?

MR. FEATHERSTONE: Object to the form.

MR. KIERNAN: Again, you are going beyond this witness' area of expertise.

A No, I do not.

Q (By Mr. Bradley) Do you know anyone within General Electric who has indicated that they believe that PCBs are a probable human carcinogen?

A No, I don't. Can I interrupt to get a glass of water?

Q Yes, certainly.

(Pause)

Q Do you know whether General Electric ever sent any warnings to utility companies purchasing General Electric transformers or capacitors containing PCBs about any potential health or environmental consequences of exposure to the PCBs?

MR. KIERNAN: Objection; lack of foundation, far afield of areas this witness dealt with at General Electric.

A I don't know.

Q (By Mr. Bradley) Do you know whether Monsanto ever requested that GE warn its customers about the potential environmental or health effects from exposure to PCBs?

MR. KIERNAN: Same objection.

A I don't know.

Q (By Mr. Bradley) In working a transfer from pyranol to silicone, did you work with Monsanto Company?

A No, we did not.

Q Back in the early seventies, is it true that transformers were generally either filled with PCBs

or with regular mineral oil?

A Not General Electric transformers. They were filled with pyranol which contained PCBs and mineral oil.

Q They were filled with both mineral oil and the PCBs?

A Some transformers were filled with mineral oil, and some transformers were filled with pyranol.

Q Do you know in the transformers that were filled with the mineral oil whether that mineral oil contained any PCBs?

A I don't know specifically. I know that there was occasionally contaminated mineral oil.

Q How do you know that?

A We regularly screened oil from the high-powered, large-powered transformers for possible PCB contamination because it affected the dielectric strength of the oil.

Q When did you begin those regular tests?

MR. KIERNAN: You are asking Dr. Fessler when he began?

Q (By Mr. Bradley) When did General Electric begin those regular tests?

A I don't know. It predated my arrival in Pittsfield.

Q How is it that you know about those regular tests?

A Some tests of that type were going on after my arrival in Pittsfield.

Q How did you learn about those tests? Did somebody describe them for you? Did you read about them? How did you learn about it?

A In getting acquainted with the work going on in the laboratory, I learned of the types of work being done, and that was one of the tests being done in the analytical group.

Q Were there reports written about those tests?

A I don't know.

Q Did you personally see any reports regarding the testing that was done for PCB contamination of mineral oil?

A I don't think so.

Q If there had been test reports, where would you expect them to be presently?

A Records of the materials laboratory.

Q You began your work in Pittsfield in 1972?

A Yes.

Q And the testing of mineral oil for PCBs took place before you went to Pittsfield; is that correct?

A Yes.

Q Do you have any knowledge at all how long that

testing had been going on?

A No, I don't.

Q Not a year, 10 years or 20, just nothing?

A It would be speculation.

Q Go ahead and speculate.

MR. KIERNAN: I don't want the witness to speculate. It's not the purpose of this deposition.

Q (By Mr. Bradley) Go ahead and speculate.

MR. FEATHERSTONE: I will object to the form.

Q (By Mr. Bradley) Go ahead, give us your best estimate.

MR. KIERNAN: If you know, Dr. Fessler. He is -- Obviously, you have told him you don't know. If you have any idea, give him your best understanding.

MR. FEATHERSTONE: Which is it? Is it a speculation, estimate or an understanding we are asking for? I have an objection to two of the three on the form of the question, and I have an objection to the third.

Q (By Mr. Bradley) Let me ask the question here. Give us your best estimate, if you have one, how long the testing had been going on prior to 1972?

A Five to ten years.

Q Describe in as much detail as you are able what the testing involved, what kind of machinery was used?

A X-ray fluorescent spectroscopy.

Q How does that work?

MR. KIERNAN: Are you asking him the testing that was going on while he was at Pittsfield?

Q (By Mr. Bradley) The question now goes to before you arrived. If you know.

A When an x-ray photon collides with an atom, it promotes an electron from the inner shell to an outer shell and when that electron relaxes back into the inner shell that it came from, it emits a photon of x-ray energy that is detected by an electron multiplier.

Q How would that tell you whether mineral oil was contaminated with PCBs?

A Each element has a unique set of lines, strongest being the K-alpha lines. Each element has a set of lines and so those lines tend to be characteristic of the elements and their intensity is proportional to the concentration.

Q Are there actual physical results once the tests are completed, a graph, a piece of paper that says

--

A A number.

Q Is the number generated by a machine?

A It's generated by an x-ray fluorescent spectrometer.

Q What was the reason they were testing the mineral oil?

MR. KIERNAN: At what time? Again, if you know. The witness testified that he came to Pittsfield in 1972. What period of time are you asking?

Q (By Mr. Bradley) Prior to 1972, if you know, what was the reason they were doing the testing?

A Because the presence of pyranol in transformer oil reduced its impulse breakdown strength.

Q What is impulse breakdown strength?

A It is the electrical breakdown of insulation that occurs when an impulse electrical wave, a sharp rise spike wave is applied to insulation.

Q Was there ever a time when there were other reasons for the testing?

A Not that I am aware of.

Q How did the PCBs get in the mineral oil?

MR. KIERNAN: Again, it's far outside this witness' area of knowledge. Calls for

speculation.

Q (By Mr. Bradley) Go ahead and answer.

A I don't know the method, the path by which they got in the mineral oil. I wasn't there.

Q Were you involved at all personally in the testing after you got there at Pittsfield?

A No, I was not.

Q Did you talk with any of the folks either doing the testing or responsible for the testing after you got to Pittsfield?

A Yes.

Q Did they tell you how the PCBs got into the mineral oil?

A Our conversations were primarily on the subject of analytical methodology. No.

Q Who were those people?

A Bob Hirst.

Q Is he still alive?

A I think he is.

Q Is he still at General Electric?

A He is retired.

Q Who else?

A He is the only one that I am aware of.

Q What did he do?

A He was an analytical chemist.

Q What were his job responsibilities at the time you spoke to him about the testing?

A X-ray spectroscopy.

Q Did he indicate to you how long he has operated an x-ray spectrographer or whatever it's called?

A Not that I recall, no.

Q Did he indicate to you what an acceptable level of PCBs was in the mineral oil before they considered it contaminated?

MR. FEATHERSTONE: Well, I object to the form of the question.

MR. KIERNAN: Object to the form of the question.

MR. FEATHERSTONE: He talked about some kind of breakdown strength -- impulse breakdown strength.

MR. BRADLEY: Would you read the question back?

(The last question was read by the court reporter)

MR. KIERNAN: Same objection.

Q (By Mr. Bradley) I will ask you a different question. You don't have to worry about answering

that one.

Did he indicate to you how much PCBs had to be present before it impeded with the impulse or -- either impeded with the impulse breakdown or caused the impulse breakdown?

MR. KIERNAN: Do you understand his question, Dr. Fessler?

A I believe so. I don't recall what the limit for use was. I don't.

Q (By Mr. Bradley) Did General Electric -- Were you done with your answer?

A I was going to say I believe that it was non-detected in the method is what they were looking for.

Q Did General Electric ever tell you, anyone within General Electric ever tell you that -- Well, I am sorry. Let me start all over again.

Did anyone within General Electric ever tell you that there were indemnity agreements existing between Monsanto and General Electric regarding PCBs?

A No.

Q Do you know where Mr. Hirst lives, the gentleman who operated the machine that we have been talking about? I think you indicated --

A Mr. Hirst.

Q Hirst. Do you know where he resides presently?

A No, I do not.

Q Do you know how to spell his last name?

A H-I-R-S-T.

Q His first name?

A Robert.

Q Middle initial?

A G, I believe.

Q Do you know anything about Dr. Hirst or Mr. Hirst's education?

A Only that it is Dr. Hirst.

Q Looking now at what's been marked for Identification as Deposition Exhibit 2 which is the trip report that you prepared, Mr. Featherstone handed you a copy of that, you have it there.

MR. FEATHERSTONE: I handed him the exhibit, Mr. Bradley.

MR. BRADLEY: Yes.

Q (By Mr. Bradley) You have the exhibit in front of you?

A Yes, I do.

Q The first sentence says, "Since the environmental problems of polychlorinated biphenyls (PCB) were first raised in the late 1960's," and goes on, my

question to you is, what environmental problems were first raised in the late sixties?

A To the best of my recollection, the fact that they were present in a large number of locations; therefore, they were ubiquitous in the environment, that they were suspected of being related to some effects such as the eggshell effect, that they were suspected of being rather stable in the environment and long lasting.

Q Did PCBs degrade in use?

MR. FEATHERSTONE: Object to the form; vague.

A I guess I don't understand what you mean by degrade in that case.

Q (By Mr. Bradley) Turn to page 2 of your report then. In the middle of it where it begins, "It is tempting," do you see that?

A Yes.

Q If you come down one, two, three, four lines, see the sentence there, that begins with the word "There"?

A Yes. It says, "There is no evidence that -- "

Q "There is no evidence that PCDFs are not products of PCB degradation in use, in the environment, or in animal metabolism." Would you explain that

sentence that you wrote?

A At the time, it was intended to address the questions of whether or not the oxidation that could occur in some applications of PCBs might not result in formation of PCDFs and whether or not that type of oxidation could occur either in the environment or in organisms.

Q When you use the phrase, "PCB degradation in use," what did you mean?

A I meant, as I just said, oxidation in various types of applications under whatever conditions. It was intended to be a speculative question.

Q Looking at page 3, the first full sentence, "It is clear that oxidation of PCBs can lead to the formation of PCDFs and that PCDFs are highly toxic." You wrote that in 1975; isn't that true?

A Yes.

Q Is that statement still true?

A That the oxidation can lead? Yes.

Q And that PCDFs are highly toxic?

A Yes.

Q How does oxidation come about?

A In this case, exposure to oxygen environment in the presence of appropriate catalysts or temperature.

Q Would you put that in terms that lawyers could

understand?

MR. KIERNAN: Are you asking him to explain it so that you can understand it, Mr. Bradley?

Q (By Mr. Bradley) Go ahead and answer my question.

A Partial oxidation in a flame, for example, in attempts to destroy PCBs, exposure of liquids to a high temperature to oxygen environments for long periods of time, most hydrocarbons if they have a hydrocarbon bond available, they are subject to oxidation.

Q Would oxidation occur if fire was used to try and destroy PCBs?

A Yes.

Q When did you first learn the information that's contained in that sentence?

A I think at this conference.

Q When did you first become knowledgeable about furans?

MR. KIERNAN: Objection; lacking foundation.

A At first -- I first learned about -- Do you mean furans?

Q (By Mr. Bradley) I mean polychlorinated benzofurans.

A I first learned about the properties and characteristics of them presumably around the time of this conference in this period of time.

Q And presumably you learned it from the conference?

A I believe so.

Q When you wrote at the very end of your report, "Unfortunately, when all is said and done, more is said than done," what did you mean?

A I was referring at that point to the fact that the conference presumably was called to provide direction, to define a direction in which to go in replacing PCBs in their applications and after several days of talking about them, it didn't seem there was anymore direction than there had been to begin with.

MR. BRADLEY: Can we take a short break here?

(Recess from 2:50 to 2:55 p.m.)

Q (By Mr. Bradley) Just a few more questions. Do you know roughly when General Electric purchased the x-ray fluorescent spectrometer that you have discussed here today?

A No, I don't.

Q Do you know whether they still have one?

A I know we do not in Pittsfield.

Q Do you know why you do not have one?

A We do not find it very useful anymore.

Q I have nothing further.

MR. KIERNAN: Mr. Featherstone represents Monsanto.

MR. FEATHERSTONE: I was about to say I represent Monsanto. Let me ask a couple of questions here.

CROSS EXAMINATION BY MR. FEATHERSTONE

Q (By Mr. Featherstone) I want to talk about the chlorinated dibenzofurans. Did any of your work or has any of your work at General Electric involved laboratory testing to determine the conditions under which dibenzofurans might be formed from the oxidation of PCBs?

A There was a project which was managed by Tom Rouse. I believe it was an EPRI funded project which addressed the issue of PCDF formation in arc decomposition of askarels or PCB-containing materials, and I believe also of thermal degradation in their formation.

Q That was Dr. Rouse who was involved in that project?

A That was Dr. Rouse who was involved.

Q That was not your project?

A That was not my project.

Q Am I correct that Dr. Rouse would have issued a report of the results of that project?

A Yes. I believe it was issued through EPRI.

Q In responding to Mr. Bradley's questions regarding the formation of chlorinated dibenzofurans, you talked about a process called oxidation. I believe you said at that time that oxidation involved high temperatures in the presence of oxygen; is that correct?

A In this case, yes.

Q In this case, did Dr. Rouse's laboratory experiments deal with a process called oxidation?

A Yes, they did.

Q And I take it one aspect then of Dr. Rouse's laboratory experiments would determine the temperature and the amount of oxygen needed to oxidize to chlorinated dibenzofurans; is that correct?

MR. BRADLEY: Object to the form of the question as leading.

Q (By Mr. Featherstone) I want to ask you about Exhibit 2, Dr. Fessler. You identified Exhibit 2 as your trip report to the 1975 National Conference on PCBs; is that correct?

A That's correct.

Q Am I correct that Exhibit 2 is designed to set forth information that you learned at that conference?

A That's correct.

Q I believe you said to Mr. Bradley that your first knowledge about chlorinated dibenzofurans in fact occurred at this conference?

A Yes. As far as I recall, yes.

Q Am I correct then that the statements that you make in Exhibit 2 regarding chlorinated dibenzofurans are basically reporting the statements made at or during the conference in 1975?

A That is correct.

Q Is it the case with this trip report, Exhibit 2, that you wrote down statements made without having any particular knowledge of whether those statements were in fact correct?

MR. BRADLEY: Objection; leading.

A That is correct.

Q (By Mr. Featherstone) The final area I would like

to ask you about, Dr. Fessler, concerns my client, Monsanto. Let me ask you firstly, I believe you testified that your first knowledge about PCBs came in 1972 shortly after you transferred to Pittsfield; is that correct?

A Yes.

Q Up to the time you transferred to Pittsfield in 1972, had you had any personal contact with Monsanto?

A No, I had not.

Q Are you aware from your work experience at General Electric that General Electric's dealings with Monsanto concerning PCBs go back to the 1930s?

A Yes, I was aware of that.

Q You were asked various questions about Mr. Bradley regarding your knowledge of communications between Monsanto and General Electric relating to PCBs. Have you ever gone back and attempted to reconstruct all the communications that took place since the 1930s?

A No, I have not.

Q Have you ever gone back to try and look at the documents relating to discussions or communications from Monsanto to GE or vice-versa?

MR. BRADLEY: Objection to the form of

the question. It's leading.

A No.

Q (By Mr. Featherstone) Have you ever gone back and talked to employees of General Electric about their conversations with Monsanto concerning PCBs?

A No, I have not.

Q In the testimony you gave us earlier regarding your work history at General Electric, I take it you did not have any responsibility for the relationship between General Electric and Monsanto regarding PCBs; is that correct?

A That is correct.

Q For instance, you were never involved in the purchasing function?

A No, I was not.

Q You have never been involved in developing specifications for pyranol?

A No, I have not.

Q You were very careful in response to Mr. Bradley's questions to say that it was pyranol that GE put in its transformers?

A That's correct.

Q You were careful in saying that, using the term pyranol rather than PCBs; is that correct?

A That's correct.

Q Is that because PCB are one chemical in the pyranol mixture?

A Yes.

Q There are other documents that have been produced in this case that show the specifications for pyranol and specifically you were not involved in developing any of those specifications for any of those formulations of pyranol; is that correct?

A I was involved in the testing of several of the last specifications that were written as we changed ratios of PCB to TCB.

Q TCB is?

A Trichlorobenzene.

Q Which was mixed with PCBs in the pyranol?

A Yes.

Q When you say you were involved in the testing regarding those formulations, what time period are you talking about?

A Middle seventies.

Q Was your testing then done to develop laboratory results to provide to those people whose job it was to formulate pyranol?

A That's correct.

Q And at that point in time, was General Electric looking to increase or decrease the amount of or

the percentage of PCBs in the transformer?

MR. BRADLEY: Objection to the form of the question, and it calls for speculation and there is no foundation. I have a problem with the form of the question; it's leading. One last objection, as counsel has so well informed us, this witness was not brought here today to give testimony on that area.

A The testing was conducted because one of the ingredients of the chlorobenzene was no longer available and the capacity was being changed to trichlorobenzene from a mixture of tri and tetra. It has nothing to do with the change in its nature or ratio of PCBs.

Q (By Mr. Featherstone) I understand. I asked you previously whether you attempted to educate yourself regarding the scope and nature of the contacts between G.E. and Monsanto prior to 1972. Since 1972 and your first involvement with PCBs, have you had any direct contacts with Monsanto?

A Only a contact when Monsanto was offering a potential replacement material which I believe was an ester, and we did some testing and evaluation of it as part of our replacement program.

Q Did your contact then relate to that substitute

fluid?

A It related to the substitute fluid specifically, yes.

Q Did you at any time in the history of your employment with General Electric have any contact with Monsanto relating to PCBs specifically?

A I have had contact relating to analytical protocol or procedure for PCB, yes.

Q When you say analytical protocol or procedure, you are talking about the ability to analyze for the presence of PCBs?

A That's correct.

Q Have you had any contact with Monsanto regarding possible environmental effects of PCBs?

A No, I have not.

Q Have you ever had any contact with Monsanto for the purpose of acquiring any information regarding the toxicology of PCBs?

A No, I have not.

Q Have you ever had any contact with Monsanto regarding -- for the purpose of obtaining information regarding possible human health consequences of exposure to PCB?

A No, I have not.

Q Am I correct that those were matters that were

beyond your employment history at General Electric?

A Yes, they are.

MR. BRADLEY: Object to the form of the question. It's not clear what is meant by beyond the term of his employment or whatever the phrase was.

Q (By Mr. Featherstone) I would like to ask you finally about the mixing of chlorobenzene and PCBs. I believe you testified that to your knowledge the mixing of those chemicals could be done either at Monsanto or General Electric?

A To the best of my knowledge, yes.

Q Has your job function ever included any responsibility at all for arranging for the mixing of chlorobenzene and PCBs at Monsanto?

A No, it has not.

Q Or at General Electric?

A No, it has not.

Q Have you at any time ever attempted to determine whether and when Monsanto may have mixed chlorobenzene and PCBs?

A No, I have not.

Q Do you have any basis at all for telling us what percentage of shipments from Monsanto may have included a mixture of PCBs and chlorobenzenes?

A I would have no way of knowing.

Q I take it any information you might have on that subject would be pure speculation?

MR. BRADLEY: Objection; leading.

A Or something I recall that I have heard, yes.

Q (By Mr. Featherstone) Hearsay?

A Hearsay. No direct knowledge of that.

Q No further questions. Thank you.

MR. McCREA: No questions.

CROSS EXAMINATION BY MR. KIERNAN

Q (By Mr. Kiernan) Dr. Fessler, I have one question. You described your work with replacement materials for pyranol in 1974?

A Yes.

Q Were there activities at General Electric prior to 1974 in terms of searching for replacement materials for pyranol?

MR. BRADLEY: Objection; foundation. Object to the form of the question.

A Yes, there were.

Q (By Mr. Kiernan) Nothing further.

MR. BRADLEY: Just a moment.

(Pause)

REDIRECT EXAMINATION BY MR. BRADLEY

Q (By Mr. Bradley) Dr. Fessler, you described a process, and I wasn't clear on it and I want to be clear, whereby there was a switch-over from bichlorobenzene to tetrachlorobenzene or something like that. What change took place?

A I believe you are referring to the change from using a blend of trichloro -- tetrachlorobenzene to using strictly trichlorobenzene and that change occurred because Hooker Chemical, who was the vendor for the chlorobenzene blends, was discontinuing the production of tetrachlorobenzene.

Q Were you told why they were discontinuing the production of tetrachlorobenzene?

A I do not know.

Q Do you know whether bichlorobenzene was considered to be toxic?

A Bichlorobenzene?

Q Yes. Am I getting it wrong here?

MR. KIERNAN: You are getting it wrong.

MR. BRADLEY: Would you read back the answer to my first question?

MR. FEATHERSTONE: It's trichlorobenzene

and tetrachlorobenzene.

(The requested answer was read by the court reporter)

Q (By Mr. Bradley) Hooker Chemical stopped the production of chlorobenzene; is that correct? What did Hooker Chemical stop production of?

A Tetrachlorobenzene.

Q Is tetrachlorobenzene considered to be a toxic substance?

MR. FEATHERSTONE: Object to the form and also the absence of foundation. Personal knowledge of this witness.

A It's a relative term. I would not think it would be considered an acutely toxic material.

Q That's all.

MR. KIERNAN: You have the right to read the transcript. I ask that you do that. If you send a copy of that to me, I will forward a copy to Dr. Fessler.

MR. BRADLEY: Thank you very much.

Before we begin Mr. Nelson's deposition, I have one final exhibit that was telefaxed to me explaining the circumstances under which

Mr. Hamilton did not appear today, and I ask this be marked and we will have it marked as Plaintiff's 3 for the Fessler deposition.

(Plaintiff's Deposition Exhibit 3: Marked for Identification)

(Deposition concluded at 3:22 p.m.)

I, LEE ANN BIANCUCCI, R.P.R., duly commissioned and qualified in and for the State of Connecticut, do hereby certify that pursuant to Notice and the Federal Rules of Civil Procedure there came before me on the 25th day of January, 1992, the following-named person to wit: William Fessler, who was by me duly sworn to testify to the truth and nothing but the truth; that he was thereupon carefully examined upon his oath and his examination reduced to writing under my supervision; that this deposition is a true record of the testimony given by the witness.

I further certify that I am neither attorney nor counsel for nor related to nor employed by any of the parties to the action in which this deposition is taken and further that I am not a relative or employee of any attorney or counsel employed by the parties hereto, or financially interested in this action.

IN WITNESS THEREOF, I have hereunto set my hand and affixed my seal this day of , 1993.

UNITED STATES DISTRICT COURT

DISTRICT OF CONNECTICUT

I, William Fessler, do hereby certify that the foregoing testimony given by me on January 25, 1993, is true and accurate to the best of my knowledge and belief.

_____ _____

Date William Fessler

At _____ in said County of _____, this _____ day of _____, 1993, personally appeared William Fessler, and he made oath to the truth of the foregoing answers by him subscribed.

Before me, _____, Notary Public.

My Commission Expires: _____.

CORRECTION SHEET

I, _____, do hereby certify that the following corrections and additions are true and accurate to the best of my knowledge and belief.

CORRECTION	PAGE	LINE	REASON

_____ _____
DATE William Fessler

At _____ in said County of _____, this _____ day of _____, 1993, personally appeared _____, and he made oath to the truth of the foregoing corrections by him subscribed.

Before me, _____, Notary Public.

My Commission Expires: _____

BRADLEY & MERRELL
JONES, JONES, CLOSE & BROWN, CHARTERED
Seventh Floor — Bank of America Plaza
300 South Fourth Street
Las Vegas, Nevada 89101-6026
(702) 385-4202

MESSAGE FROM PANAFAX UF-250: (702) 384-0479

DATE: January 25, 1993

TO: Ralph A. Bradley FAX #: 203-549-1537

PHONE #:

FROM: R. Straub

CLIENT/MATTER: Nevaca Power v. Monsanto

CLIENT/MATTER NO.: 11927.2

DOCUMENT(S) DESCRIPTION:

Correspondence with defense counsel re scheduling

NUMBER OF PAGES (including cover page): #11

MESSAGE: This material is confidential and is subject to Attorney-Client privilege.

IF YOU EXPERIENCE PROBLEMS WITH THIS TRANSMISSION, please call (702) 385-4202 and ask for Audra Cotton, Ext. 257

PLAINTIFF'S
EXHIBIT NO. 4
FOR IDENTIFICATION
1-25-93
DATE: RPTR: LAB

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STEVEN B. KENNEY
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January 14, 1993

BY FACSIMILE

Ralph A. Bradley, Esq.
Bradley & Merrell
c/o Jones, Jones, Close & Brown
300 South Fourth Street
Seventh Floor
Las Vegas, NV 89101-6026

Re: GE/Nevada Power Litigation

Dear Ralph:

Here is the information we have gathered thus far on the persons asterisked on Roberta Straub's list:

1. John Aldworth (no subpoena necessary)
   Highway 682
   Halifax, VA 24558

2. David Bainbridge (dropped from list)

3. Roger Barna
   WH Power Products, Inc.
   Thornhill Industrial Park
   512 Keystone Drive
   Warrendale, PA 15086

4. Daniel Berg
   160 Pawling Avenue, Apt. B
   Troy, NY 12180

5. Dr. Edward Burger
   8401 Colesville Road, Ste 500
   Silver Spring, MD 20910

6. Dr. Robert B. Daroff
   Department of Neurology
   University Hospitals of Cleveland
   2074 Abington Road
   Cleveland, OH 44106

7. Thomas D. Downs, Ph.D.
University of Texas
Health Science Center
School of Public Health
1200 Hermann Pressler, Room B503
Houston, TX 77030

8. Robert Dyer
RT 3, Box 222A
Franklin, IN 46131
(No street address available)

9. Jordan Fink, M.D.
Professor of Medicine and Immunology
Medical College of Wisconsin
8700 W. Wisconsin Avenue
Milwaukee, WI 53226

10. G. C. Gainer
1507 Cleveland Road East, Apt. 423
Huron, OH 44839

11. Dr. Phillip Guzelian
Professor of Medicine
University of Colorado School of Health Sciences
Room 723
BRB Building, Box 146
4200 East 9th Avenue
Denver, CO 80262

12. Stephen B. Hamilton, Jr. (no subpoena necessary)
General Electric Company
3135 Easton Turnpike, WIB
Fairfield, CT 06431

13. Seymour W. Herwald
(Protective Order will be sought based on medical condition.)

14. Dave Keiser (no subpoena necessary)
16905 Timber Lake Drive, S.W.
Ft. Myers, FL 33908

15. Dr. Emmet Kelly (no subpoena necessary)

16. John D. R. Kelly
R.D. 3
Box 232
Export, PA 15632
(No street address available)

17. Renate Kimbrough, M.D. (subpoenaed previously)

18. Arthur Koenig (no subpoena necessary)
2589 Eastgate Lane
Bloomington, IN 47409

19. Richard Mahoney
(No subpoena necessary. Will appear if court so orders, subject to the right of appeal or further challenge.)

20. Dr. Lyon Mandelcorn (no subpoena necessary)
Westinghouse Science & Technology Center
1310 Beulah Road
Pittsburgh, PA 15235

21. Robert McCain (no subpoena necessary)
30975 Westridge Drive
Buena Vista, CO 81211

22. Gene Miller
1203 Westview
East Lansing, MI 48823

23. Dr. Robert Morgan
Environmental Health Strategies, Inc.
One Lagoon Drive, Ste 143
Redwood City, CA 94065

24. John Morykon
1929 Rosemay Lane
Chesapeake, VA 23321

25. Everett Murch (subpoenaed previously)

26. Charles Murray (no subpoena necessary)
2521 Fernwick Drive
South Boston, VA 24592

27. William Papageorge (no subpoena necessary)

28. Henry Pearce (no subpoena necessary)
P. O. Box 25
Stoneboro, PA 16153
(Street address not available)

29. Manuel Reyna (no subpoena necessary)

30. Maria Ross, R.N. (no subpoena necessary)

31. Robert Sawyer
237 Sheffield Drive
Bloomington, IN 47408

32. Dr. Sandra Scarr
University of Virginia
Department of Psychology
Gilmer 316
Charlottesville, VA 22901

33. Raymond Suskind, M.D. (subpoenaed previously)
Dept. of Environmental Health
School of Occupational Medicine
Mail Zone 0056
University of Cincinnati
Kettering Institute
Cincinnati, OH 45221

34. Edward Walsh
ABB Power T&D Company, Inc.
Centennial Campus
1021 Main Campus Drive
Raleigh, NC 27606

35. Karen Webb, M.D., M.Ph.
HealthLine Corporate Health Services
1415 Olive, Third Floor
St. Louis, MO 63103

36. Ms. Whalen (previously noticed)

37. James Wright
143 Bayshore Drive
Hemphill, TX 75948

38. Paul Wright (previously noticed)

In addition, subpoenas are not required for Fred Garrison, Duke Marsden, Les Fickel, William Pessler, James Nelson and Wayne Conway. As I indicated, we will have to discuss location on a case-by-case basis. We are willing to have Garrison, Marsden and Fickel appear in Los Angeles, but we are having some difficulty confirming their availability on January 22, 1993. We are also willing to bring Pessler and Nelson to Hartford on the 25th, but we have a question about Hamilton in light of your 30(b)(6) notice to GE for February 11, 1993.

With respect to your 30(b)(6) notices about sales representatives, it is the intention of GE and Westinghouse to provide you the names of those individuals in writing (to the extent they have not already done so), which should make those depositions unnecessary. Monsanto has no sales personnel who dealt with Nevada Power. We should discuss this once you review the written lists.

You should also note that Jeff Palermo is an expert, not a fact witness, and he will not be in a position to testify as to his opinions on January 27, 1993. As his testimony is likely to depend in part on documents that have yet to be produced, I suggest you pick a date near the end of March for his deposition. Finally, I am informed that E. V. Somers is deceased, which presumably will make his deposition unnecessary.

In the hope of simplifying these scheduling matters, you should for now regard me as the designated contact point for all defendants with respect to the deposition scheduling.

Very truly yours,

Steven R. Kuney

Steven R. Kuney

cc: Arvin Maskin, Esq.
Bruce A. Featherstone, Esq.
John L. Thorndal, Esq.
J. Bruce Alverson, Esq.

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Fax (702) 384-0479

January 14, 1993

VIA FASCIMILE

Steven R. Kuney
Williams & Connolly
725 Twelfth Street, N.W.
Washington, D. C. 20005

Re: Nevada Power Company v. Monsanto Company, et al.
USDC, District of Nevada Case CV-S-89-555-LDG (LRL)

Dear Mr. Kuney:

As Mr. Bradley's legal assistant, I have been asked to respond to your letter of today's date regarding the deposition schedule recently prepared and filed by this office. Your letter needs the following clarification:

1) Please advise immediately where you would like us to schedule the deposition of Manuel Reyna on January 27, 1993. If we do not hear from you by noon on Tuesday, January 19, 1993, we will assume his deposition should be scheduled for Las Vegas, Nevada.

2) You have indicated that a protective order, based on a medical condition, will be sought for Seymour W. Herwald, whose deposition is currently scheduled for January 28, 1993. Since this individual has been listed as a potential defendant witness, we are entitled to his deposition. Please advise immediately if you intend to remove this name from your list of witnesses.

3) At your request, we will cancel the January 27, 1993, date for the deposition of Jeffrey Palermo, and will reschedule at a later date. Please confirm that you will produce this witness without the necessity of service of a subpoena.

4) With regard to your question about Stephen

P:\USERS\MCC\CORR\KUNEY

Hamilton's deposition, please advise if you intend to produce Mr. Hamilton in response to our 30 (b) (6) notice to General Electric for the person(s) most knowledgeable regarding dates of acquisition of knowledge of actual hazards of PCBs, currently scheduled for February 11, 1993. If this is your intention, we will cancel the deposition of Mr. Hamilton currently scheduled to go forward on January 25, 1993, and will take his deposition on February 11, 1993.

As some of these matters require immediate attention, we would appreciate hearing from you by noon on Tuesday, January 19, 1993.

Sincerely,

BRADLEY & MERRELL

Holly C. Dewar

Holly C. Dewar
Legal Assistant

/hcd

P:\USERS\HCD\COR\KLM*

MEMORANDUM

TO : Ralph Bradley

FROM : Holly Dewar

DATE : January 25, 1993

RE : Deposition Schedule

To my knowledge, this office never received a response from Steven Kuney to our faxed letter of January 14, 1993, regarding changes to the deposition schedule.

P:\USERS\HDD\COR\MEMO.2

Trip Report: National Conference on Polychlorinated Biphenyls

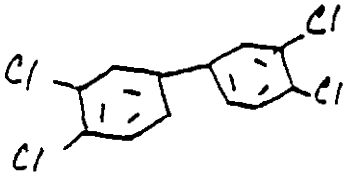
Since the enviornmental problems of polychlorinated biphenyls (PCB) were first raised in the late 1960's, a good deal of data has been accumulated but few conclusions reached in regard to the true magnitude of the PCB problems. The complexity of this problem is illustrated by the major questions which are still unresolved after years of research by many highly qualified scientists. The magnitude and symptoms of PCB intoxication are still uncertain. The mode of entry and transport of PCB's in the environment has not been resolved. The value (especially short-term) of point source controls is not clear. The real importance of PCB's in the safety of the present applications is hard to define. This results in the dilemma of PCB control - how does one choose between an uncertain environmental health hazard and an uncertain safety hazard?

The EPA and other agencies, unable to resolve these questions, sponsored the National Conference on Polychlorinated biphenyls apparently hoping to freely exchange the latest information on PCB's and encourage a greater public awareness of this complex problem.

The conference was held in the Pick-Congress Hotel, Chicago, Ill. on Nov. 19-21, 1975. It was attended by 400-700 people from the U.S. and several other countries. The conference was divided into eight topical sessions. These covered Health effects and Human exposure; Use, sources and Identification; environmental fate and occurrence; ecological effects and exposure; economics and substitutes; approaches to control; a summary session and a general session. The General Session was an open meeting at which anyone who wished could speak. The speakers at this session were mainly representatives of various interested citizens groups, unions, and affected industries (fisheries and paper makers). There were some speeches by scientists whose papers had not been included in the other sessions. Most of these speakers urged a solution to the problems as they saw them, but were not looking necessarily for assignment of guilt or punishment of offenders. Most seemed aware of the hard choices involved. Some of the fisheries spokesmen took the approach that while PCB's may be vital to the electrical industry they were detrimental to the fishing industry.

The most intriguing data presented in the session on Health Effects and Human Exposure dealt with the activity of polychlorinated dibenzofurans (PCDF). Dr. Kuratsone presented data which clearly showed unusually high levels of PCDF in the tissues of Yusho victims. Yusho refers to the poisoning by PCB contaminated rice oil which occurred in Japan in 1968. 2,3,7,8-Tetrachlorodibenzofuran has been found in the blood of Yusho victims. Penta and hexachlorodibenzofuran have also been found. In a later paper, Dr. John P. Moore discussed preliminary results of the toxicity of 2,3,7,8-tetrachlorodibenzofuran. PCDF appears to be several orders of magnitude more toxic than PCB's. More significantly, the symptoms of PCDF intoxication mimic the symptoms of Yusho. Since PCDF's were found in tissue from Yusho victims the evidence strongly suggests that PCDF's not PCB's were the causative agents in Yusho.

There is some evidence that PCDF's can be found in fresh, commercial PCB's. Non-domestic PCB's such as Kanechlor appear to have higher levels of PCDF's than do the domestic PCB's - Aroclor. Kuratsone reported 17ppm PCDF in fresh Kanechlor. It is suspected that the aged Kanechlor involved in Yusho may have contained as much as 1000 ppm PCDF's, suggesting that PCB isomers may react under some service condition to produce PCDF's.



tetrachlorobiphenyl
(PCB)

tetrachlorodibenzofuran
(PCDF)

Dr. James R. Allen described his work on Reproductive Dysfunction in monkeys which had been fed low levels of PCB's. The most interesting aspect of this was the close similarity of the pathology observed in these monkeys to the symptoms of Yusho and PCDF intoxication. Allen claimed, during the question period, that he did not yet have the results of the analysis for PCDF's in his PCB samples. Again, however, there is the suspicion that PCDF's may be the causative agents.

It is tempting to point to PCDF's as the real culprit and claim that PCB's are not at fault. While this hypothesis is an excellent basis for further research into PCB toxicity, it could be very dangerous as a public position. There is no evidence that PCDF's are not products of PCB degradation in use, in the environment or in animal metabolism. One can claim that all PCB's which have been used in toxicological studies were contaminated to some extent with PCDF's and these PCDF's were the cause of the pathology observed. -On the other hand, it is possible that at least some PCB isomers can be metabolized to PCDF's. Dr. Marco Biocca's paper on Biological responses in chicken and mice showed that 3,4,5,3',4',5'-hexachlorobiphenyl mimics the toxicity of PCDF. This isomer was one of the most toxic PCB isomers in Biocca's study. This toxicity may be intrinsic or it may be due to metabolic conversion. 3,4,5,3',4',5'-Hexachlorobiphenyl has all four ortho positions (2,2',6,6') unsubstituted by Cl. It is just these positions which must be oxidized to form the dibenzofuran. All the other PCB isomers in Biocca's study had at least 2 of these positions substituted by chlorine. Dr. James D. McKinney concludes "The rates of metabolism are considered of lesser importance than the potentially highly toxic nature of some of the intermediary and terminal metabolites such as chlorinated dibenzofurans."

Dr. Robert W. Risebrough reported that Aroclors (except MCS1016) contained 0.8 to 2.0 ppm PCDF. However, he did not find PCDF's in ducks fed the contaminated PCB's. He suggested that the PCDF's were preferentially eliminated. If so, why are PCDF's still found in Yusho victims? There may

be species specific physiology which explain this dichotomy but there is at the present time no answer supported by evidence.

It is clear that oxidation of PCB's can lead to the formation of PCDF's and that PCDF's are highly toxic. Before explaining the toxicity of PCB's on the basis of PCDF contamination, however, several questions must be answered.

1. Are PCDF's an inevitable and inseparable by-product of PCB synthesis?

2. Are PCDF's produced in transformers under normal operation? - when the transformer fails?

3. Can PCDF's be formed by UV initiated oxidation of PCB's exposed to air at room temperature?

4. Are PCDF's formed by metabolic oxidation of PCB's?

Dr. Renate Kimbrough discussed the pathological findings associated with chronic experimental exposure of PCB in rats. She found that the hepatic micropathology was extensive after 300 days feeding with 50mg/kg/day of Aroclor 1254. Dr. J.C. Calandra also reported the results of chronic feeding studies of PCB's in rats. He reported that the primary pathology was the observation of neoplastic lesions in the liver. (Note: neoplastic means new and abnormal tissue, it does not mean cancer). Calandra reported that no hepatocellular carcinogenicity was observed. All lesions except one were observed in females.

In the session on uses, sources and identification Dr. Robert L. Durfee presented data on production and use of PCB's in the USA. Domestic production is 40×10^6 lb/yr, of which 7×10^6 lb/yr are exported. The remaining 33×10^6 lb/yr are sold to transformer manufacturers, 12×10^6 lb/yr; and capacitor manufacturers 21×10^6 lb/yr. The USA imports 0.5×10^6 lb/yr of decachlorobiphenyl which is used in investment casting wax.

Mr. Thomas E. Kopp reported that the EPA criteria for water quality which is now circulating for comments, set a goal of 0.001 µg/l (1 ppt) of PCB's in fresh water and marine aquatic environment. He also reported that there have been 23 PCB spills from transformers since 1972. Four of these from railroad transformer leaks.

Dr. Stephen Safe gave an overview of PCB analysis. He pointed to PCB metabolic products notably hydroxylated and methoxylated PCB's as new pollutants.

Mr. Stanton Kleinert discussed sources of PCB's in Wisconsin. His conclusion that fallout from air may be the primary source of PCB's in Wisconsin waterways raised two questions. First, how do the PCB's get into the air? Second, what is the value of point source control?

Dr. Charles Jelinik reported the levels of PCB's in the U.S. food supply. Since 1972 the levels in food have been decreasing except for fish where the levels have remained unchanged. Today freshwater fish are the only significant dietary source of PCB's. The average dietary exposure is 10ug/day. The problem however is more serious for people whose diet contains significantly more than the average content of fish. This also represents a serious threat to the commercial fishing industry.

Fish and birds appear more sensitive to PCB intoxication than most mammals and some species of fish eating mannals (mink) are also highly sensitive. Biomagnification indices in fish range from 10^4 to 10^5.

PCB's do indeed appear to be ubiquitous. There is a suspicion that some deep water sediments are reservoirs of PCB's and will continue to leak to the surrounding areas for years to come. Dredging is not always advisable since often this succeeds only in dispersing the PCB's into the water.

The session on economics and substitutes contained no new information. Dr. Dean Branson, Dow Chemical, described their 4-year program with McGraw-Edison to develop butylated-monochlorodiphenyl oxide (XF 4169L) for capacitors. He compared only flash points to reach the conclusion that this liquid has a low risk of explosion and fire and implies that the liquid temperature must exceed the flash point to have a fire hazard. There is some concern about biodegradation of this material.

Mr. Richard Montgomery, Dow-Corning, described their 5-year program to develop silicone fluids for transformer use. Basically the presentation was the same one given by Mr. Montgomery at Pittsfield and Rome. Some points should be mentioned. He announced that Dow Corning has the capacity to handle the global transformer market. In the future Dow Corning will specify silicone filled transformers for their own use. He urged an evolutionary introduction of silicones over the next 3-5 years in order to gain experience in the risk of fire and explosion. He claimed that PCB filled transformers in service could be changed to silicone without problems. However, he cautioned against this on an allout basis due to the environmental hazards of shipping and handling the PCB's.

Mr. David Wood of Monsanto described MCS-1238 and MCS-1588 liquids for capacitor use. He mentioned the transformer candidates but gave no details. He did state the need for standards of flammability in this area. While Mr. Montgomery's appeal was directed to the consumer, Mr. Wood's appeal was to the manufacturers.

Mr. Bruno Rey-Coquais, Prodelec, claimed that a non-flammable dielectric liquid was absolutely necessary. He proposed the use of alkylated dichlorobiphenyl (an alkyl PCB).

Dr. E.J. Inchalik, Exxon, described di-isononyl phthalate for use in capacitors.

In the session on approaches to control three messages came through quite clearly. One, there will be some control of PCB's, if not by the pure waters act, then by the toxic substances control act (S.776) which is likely to be passed. The EPA still has no clear direction and is still trying to reach a decision. The EPA would like to see the problem disappear. That is, they would be delighted if the states took action or if the public utilities took the initiative and brought pressure on the manufacturers. To this end EPA speakers repeatedly encouraged the concerned parties to put pressure on their state legislators and on their public utilities to end the use of PCB's.

The Hon. Nathaniel Reed, Ass't. Sec. DOI, was probably the most eloquent and outspoken opponent of PCB usage. A couple of quotes will illustrate. "We must step back from industrial efficiency in order to step forward to environmental improvement." "We should cease to quibble over scientific niceties and respond to the wildlife needs before it is too late."

The overall tenor of the conference was good. I had expected a good deal of criticism directed at industry. This did not happen in general. Most of the critical commentary was directed at the EPA for doing nothing. As one speaker put it "the EPA should be congratulated for holding a conference at which they could not win." Overall however the conference could be characterized as a rational attempt to share the latest data and insignt on the effects of PCB's. Unfortunately when all is said and done, more is said than done.

W.A. Fessler

NEVADA POWER COMPANY

FAX TRANSMITTAL

TO: Ralph Bradley

COMPANY:

FAX #: 203-549-1537

PHONE #:

FROM: Richard Hendley

DEPARTMENT: Legal

FAX #: (702) 367-5629

PHONE #: 367-5626

NO. OF PAGES (including this page) 3

INSTRUCTIONS:

DATE: 1/25/93 TIME: 9:50 am

If you have any problems with this transmittal please call:

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PENGAD-Bayonne, N. J. PLAINTIFF'S DEPOSITION EXHIBIT 3 Id 1/25/93 LAB

NEVADA POWER COMPANY

INTEROFFICE MEMORANDUM

Date January 25, 1993

Memo to Ralph Bradley

From Richard L. Hinckley

Re The Hartford depositions scheduled for January 25, 1993

On January 22, 1993 I spoke with David Kiernan concerning the scheduling of the depositions that had been noticed during the week of January 25th. We spoke about the arrangements for the Friday depositions. I also confirmed that there were no changes to the depositions scheduled for Hartford. He indicated there were no changes. I thereafter drafted a very brief memo to you showing that as of 4:45 p.m. on Friday there had been no indication made by the defendants that Hamilton would not be present as scheduled.

I indicated that we plan only to video tape the Hamilton deposition and inquired as to whether the defendants would have any objection to having a local videographer to video tape the Hamilton deposition. David replied that there would be counsel present on Monday in Hartford and he had objection to using a local videographer.

On January 25, 1993 at 6:30 a.m. Pacific Standard Time I received a phone call from Ralph Bradley indicating he was in Hartford and that no one had shown up for the Hamilton deposition scheduled for 8:30 a.m. He asked if I knew why. I indicated I had no idea and that I was surprised. I called David's office in Washington and obtained his hotel number from his secretary. I called David and talked to him at the hotel room in Hartford and asked if we had crossed wires, that we would be ready to begin at 8:30 this morning. I indicated that Hamilton would be presented as a 30(b)(6) witness at 1:00 today and that the other two deponents scheduled for today would be available as scheduled.

I called Ralph and informed him of my conversation with David. At 8:00 a.m. Pacific Standard Time I called Ralph and he had since talked to David who apparently told him that Hamilton would be present on another day. David said nothing to me in my earlier conversation about presenting Hamilton on another day.

/dw

NEVADA POWER COMPANY

1/22/93; 4:45 P.M.

RICHARD L. HINCKLEY
Vice President
Secretary and
Chief Counsel

To: Ralph

Re: Depos during the week of January 25

Hartford depo's as shown on schedule with the exception that you have January 26th available also. Only the HAMILTON depo will be videotaped, and Williams & Connolly has agreed to the use of a local videographer.

Jacksonville Depo as shown for GAINES

Ft. Meyers Depo for KEISER will be moved to Jan 28, and will be conducted at the Holiday Inn-Airport; the defendants will arrange for the room for the deposition.

You are scheduled to be in St. Louis on Jan. 29 for Monsanto depo's.