UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF LOUISIANA

JO ANN BISHOP, ET AL	CIVIL ACTION NO. 07-2832
VERSUS	SECTION "N"
SHELL OIL CO., ET AL	JUDGE ENGLEHARDT
	MAGISTRATE: CHASEZ

Deposition of SHELDON H. RABINOVITZ, 14712 Botany Way, North Potomic, Maryland, 20878, taken in the offices of Sher Garner, 909 Poydras Street, 28th Floor, New Orleans, Louisiana 70112, on Tuesday, the 23rd day of June, 2009.

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THE VIDEOGRAPHER:

Depo-Vue, Inc.
Todd Meaux

REPORTED BY:

MONIQUE C. KRONLAGE, CCR, RPR
Certified Court Reporter
State of Louisiana

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S T I P U L A T I O N

It is stipulated and agreed by and between counsel for the parties hereto that the deposition of the aforementioned witness is hereby being taken for all purposes allowed under Article 1421, et seq., of the Louisiana Code of Civil Procedure, in accordance with law, pursuant to notice;

That the formalities of filing, reading, signing, sealing, and certification are specifically waived;

That all objections, save those as to the form of the question and the responsiveness of the answer, are hereby reserved until such time as this deposition, or any part thereof, may be used or sought to be used in evidence.

MONIQUE C. KRONLAGE, CCR, RPR Certified Court Reporter in and for the State of Louisiana, officiated in administering the oath to the witness.

SHELDON H. RABINOVITZ,
after having been first duly sworn by the above-mentioned Certified Court Reporter, was examined and testified as follows:
EXAMINATION BY MR. WILLIAMS:
Q. Good morning, would you please state your full name and address for the record?
A. Sheldon H. Rabinovitz, 14712 Botany Way, North Potomic, Maryland, 20878.
Q. And what would you like me refer to you as today?
A. Sheldon.
Q. Sheldon, okay. Fair enough. Sheldon, what did you -- did you receive a deposition notice in this case?
A. Yes.
Q. Did you bring that with you today?
A. No.
MR. WILLIAMS:
Chris, do you have one?
MR. CHOCHELES:
It was downstairs. I'll go get

it.

MR. WILLIAMS:

We can start with mine and we'll mark this as Exhibit 1.

(Whereupon, the document referred to was marked as Exhibit A for identification.)

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, if you flip the page on that document and tell me what -- I think it starts with No. 1. Okay. I'm sorry. Tell me what items did you bring with you here today for this deposition?

A. I did not bring my file. What I did was I brought a list of all the things that were sent me that were part of my file and there are copies here.

I also -- there's a copy of the bill that was sent to Sher Gardner in this case, representing the work I've done up to this point or that our company's done up until this point.

I brought the -- my college and graduate school transcripts, an official copy, I believe, and I brought a list of

prior depositions and testimony going back as much as I could remember.

I'm an employee of Sandler Occupational Medicine, I receive a salary and it's for just being an employee, so I have no way of knowing how, what clients it was generated from or anything like that.

That is essentially what I've brought. I did bring one, a chapter of the white book, which is an industrial hygiene book that talks about exposure via link.

Q. I think you brought a list of all documents relied on in this case?

A. Yes.

MR. WILLIAMS:

We'll call that Exhibit B.

EXAMINATION BY MR. WILLIAMS:

Q. Do you have that here right now?

MR. CHOCHELES:

Wait, no. He didn't say he brought a list of the documents relied on. He said -- this is the list of, according to them, of the documents that we sent to him.

MR. WILLIAMS:

Okay. We'll mark this list as Exhibit B.

(Whereupon, the document referred to was marked as Exhibit B for identification.)

EXAMINATION BY MR. WILLIAMS:

Q. What is this list, doctor?

A. This is what was sent to me by Sher Gardner in this case.

Q. And I notice the last entry is May 6, 2009. Have you updated what documents you have received since then?

A. Well, yesterday I reviewed Mr. Spencer's report in this case, and I also reviewed some Murphy Oil employee depositions.

Q. Did you provide a list of scientific or medical literature that you relied on in this case?

A. No.

Q. Do you know what studies you relied on?

A. For -- well, basically it's, I'm just -- this just involves industrial

hygiene principles, and so I don't have a specific reference other than, as I mentioned, I brought in one chapter that talks about exposure modeling that just has some principles.

But most of what I'm relying on is just the basic principles of industrial hygiene that I know utilized for over 35 years.

Q. What's the name of that chapter you said you brought in?

A. The book is the White Book, used to be by NIOSH. I think the AIHA is now publishing it. This is --

Q. Copy of it?

A. A copy of the tile page.

MR. WILLIAMS:

We can mark this as Exhibit C.

(Whereupon, the document referred to was marked as Exhibit C for identification.)

EXAMINATION BY MR. WILLIAMS:

Q. Anything else that you brought in the room here as the notice states?

A. I believe that's it.

MR. CHOCHELES:

Yeah, I mean, I think I had everything but the basics, ^ that must be down with the notice. But here are the e-mails and the letters that we sent to Sheldon, you know, attaching Rando's report, depositions, the -- our pleadings, discovery responses, the actual documents. I think the only thing missing is --

EXAMINATION BY MR. WILLIAMS:

Q. What about a list of the cases that you have testified in? These are the years from '88 on?

A. They're not all the cases. It's what I could remember.

Q. Seems to be quite an extensive listing. Do you know how many cases this involves, approximately?

A. I don't know the number. It's a fair number.

MR. WILLIAMS:

We'll mark this as Exhibit C. I'm sorry. We'll mark this as Exhibit D.

(Whereupon, the document referred to was marked as Exhibit D for

identification.)
EXAMINATION BY MR. WILLIAMS:
Q. Your bill, did we bring that upstairs? And this is the total amount that you have utilized to date or that you have billed to date?
A. Not through today, but through prior to preparing for this deposition.
MR. WILLIAMS:
We'll mark this Exhibit E.
(Whereupon, the document referred to was marked as Exhibit E for identification.)
EXAMINATION BY MR. WILLIAMS:
Q. What percentage of your income comes from litigation?
MR. CHOCHELES:
I just want to object. You can answer this and we'll give some leeway but as Gary confirmed with you last week, we're not going to, at trial, for either side other than Dr. Franks', as we brought up yesterday.
So I'm going to, pursuant to that agreement, just at some point but go

ahead.

MR. WILLIAMS:

I know what you're saying. We'll talk about it after.

EXAMINATION BY MR. WILLIAMS:

Q. What percentage of your income is derived from litigation?

A. Again, I'm a salaried employee so I just get my salary. I do different things, including litigation.

Q. What percentage of your work involves litigation?

A. That has been changing and as time has gone on I have done more in the way of litigation.

Q. Do you have a percentage that you could give me, 70, 80?

A. As of the immediate past, the last few months, probably more than 80 percent.

Q. How about the last four years?

A. You know, it was changing so four years ago it was less. It's just I'd be guessing.

Q. Do you do a lot of benzene

exposure work?

A. When you say benzene exposure work, you're talking about litigation?

Q. Litigation, yes, sir.

A. I've done some, not a lot.

Q. Have you done any cases involving blood malignancies?

A. Yes.

Q. Any multi myeloma benzene cases?

A. It's possible. I don't know. I don't remember.

Q. How about AML leukemia?

A. That, I've done some.

Q. Doctor, what degrees have you earned to date?

A. You're talking about college degrees?

Q. Anything above high school, yes, sir.

A. I have a bachelor's in chemistry, a master's, it's in industrial hygiene, it's called occupational environmental health. That was the name of the department in the College of Medicine At Wayne State University.

And then they have a program with the Department of Physiology and Pharmacology where I would officially be in the Department of Physiology and Pharmacology, but it was a unique program that was sort of geared in toxicology.

The program requirements were that of physiology and pharmacology but the research was sponsored by the Department of Occupational Environment Health, and that was toxicology.

Q. Do you know the major listed on your official transcripts for toxicology? I'm sorry, for your Ph.D.?

A. The Ph.D., it says physiology and pharmacology.

Q. Can I see those transcripts?

MR. CHOCHELES:

Yes. Actually, let me get -- because the C.V. is in the documents. I don't know if you have a copy but that's obviously something we need --

MR. WILLIAMS:

I have a copy.

MR. CHOCHELES:

That's fine.

MR. WILLIAMS:

Hold on one second.

EXAMINATION BY MR. WILLIAMS:

Q. You can use that as a reference. I'm going to attach a copy of your transcripts that I received from Wayne State University.

MR. WILLIAMS:

This is Exhibit F.

(Whereupon, the document referred to was marked as Exhibit F for identification.)

MS. LUKER:

Excuse me. Just for clarification, are the documents the same? Are the ones that the witness brought the same as the ones that you circulated previously?

MR. WILLIAMS:

I have no idea. They're in a different order. This is what I received with the cover letter from the university. He can look, I mean --

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, my question to you is: In looking at your transcripts that you have in front of you, does it state anywhere on those official transcripts that you have a degree in toxicology?

MR. CHOCHELES:

Objection.

THE WITNESS:

No.

EXAMINATION BY MR. WILLIAMS:

Q. Does it state on there in relation to your Ph.D. that you took a course in toxicology?

A. Does it say I took a course in toxicology?

Q. Yes.

A. Yes. It says I took a course.

Q. Could you point that out to me, please? In your Ph.D.?

A. No. It was in the master's program.

Q. So is it fair to say your official transcripts do not indicate that you have a Ph.D. in toxicology or that you took a course in toxicology?

MR. CHOCHELES:

Objection.

THE WITNESS:

Well, again, for example, pharmacology deals with toxicology.

EXAMINATION BY MR. WILLIAMS:

Q. Well, again, does your official transcript state that you have a course in your Ph.D. in toxicology?

MR. CHOCHELES:

Look through the documents.

MR. WILLIAMS:

Take your time.

MR. CHOCHELES:

Look through the documents and answer the question.

THE WITNESS:

Well --

MS. LUKER:

Hold on one second, please.

THE WITNESS:

There's my doctoral research was all toxicology.

EXAMINATION BY MR. WILLIAMS:

Q. Does it state that on your C.V.,

sir?

A. It just is stating that I did a dissertation.

Q. Doctor, if you look at the universities listing for areas of education -- let me rephrase that question. What year did you receive your Ph.D.?

A. 1972.

Q. Did Wayne State University offer a Ph.D. in toxicology in 1972?

A. I'm not aware of them offering an official degree that says toxicology.

Q. As a matter of fact, I'm going to show you their official program of areas. Do you see a degree in toxicology on that document?

A. I don't see one that just says toxicology.

Q. Okay.

MR. WILLIAMS:

We're going to mark this as G on the break but this is my only copy so I'd like to keep that. Remind me it's G.

(Whereupon, the document referred to was marked as Exhibit G for

identification.)
EXAMINATION BY MR. WILLIAMS:
Q. Doctor, what certifications do you hold?
A. Currently I'm a certified industrial hygienist.
Q. Doctor, do you have a board certification in toxicology?
A. No.
Q. Do you know what a DABT toxicologist is?
A. Yes.
Q. Have you ever sat for that exam?
A. No.
Q. Have you ever tried to?
A. No.
Q. What exposure pathways would a person that exposed to benzene in a refinery setting encounter?
A. Well, I mean, theoretically inhalation would be, in a refinery setting, the most common. Dermal absorption, ingestion would be a minor but could occur, and puncture wounds, something theoretically possible.

Q. Can benzene enter the human body through puncture wounds?
A. Yes.
Q. Can benzene enter the human body through regular skin exposure?
A. There can be dermal absorption through intact skin.
Q. Would cracked hands increase the dermal intake of benzene on an individual?
MS. LUKER:
Objection as to form.
THE WITNESS:
All other things being equal, if you're comparing intact skin to abraded damaged skin, there might be an increased absorption.
EXAMINATION BY MR. WILLIAMS:
Q. Can benzene cause blood malignancies and blood disorders?
MR. CHOCHELES:
Objection.
THE WITNESS:
With excessive exposure it has been shown to cause blood dysplasias.
EXAMINATION BY MR. WILLIAMS:

Q. Let me repeat my question. Can benzene cause blood disorders?
A. Yes.
MR. CHOCHELES:
Eric --
THE WITNESS:
With excessive exposure.
MR. CHOCHELES:
I did want to say that, I should have said this at the beginning. He is not -- we are not going to be offering him at trial to testify about whether benzene causes multiple myeloma. Just so you know.
MR. WILLIAMS:
Thank you.
MR. CHOCHELES:
Go ahead and ask your questions. But I'm just saying he's not -- he was in there but he's not going to testify about that. We have other experts to do that.
MS. LUKER:
Excuse me, I didn't want to talk over everyone but I did want to object to the form of that last question you asked.
EXAMINATION BY MR. WILLIAMS:

Q. And my question, let me rephrase it. Can excessive exposures to benzene cause blood malignancies?
A. Yes.
MS. LUKER:
Objection as to form.
EXAMINATION BY MR. WILLIAMS:
Q. Can excessive exposures to benzene cause blood disorders?
MR. CHOCHELES:
Objection.
THE WITNESS:
Yes.
EXAMINATION BY MR. WILLIAMS:
Q. Okay. Are there any peer reviewed studies that indicate that dermal calculations for benzene exposure can be done?
A. There are studies that suggest that there can be measurement of the uptake of benzene through skin contact.
Q. Are you familiar with an industrial hygienist, head of toxicology, I believe, by the name of Dennis Paustenbach?
A. Yes.

Q. Are you familiar with his study on dermal calculations?
A. I think I've read one study on it in the past. I have not reviewed it for this deposition. So I don't remember it explicitly.
Q. Dr. Rando relied on that study. Are you familiar with? Did you know that?
A. Yes, I know he relied on that.
Q. Do you have any problems with the methodology used in the Paustenbach study for dermal calculation?
A. Again, I did not review the Paustenbach article. I zeroed in more on how Dr. Rando attempted to utilize and determine benzene uptake from skin absorption.
Q. I guess my question is: Do you have a problem with Dr. Rando's dermal calculation?
A. Yes.
Q. Would it be fair to say, then, you have a problem with Dr. Paustenbach's study for assessing a dermal calculation?
MR. CHOCHELES:

Objection.

THE WITNESS:

Again, I did not read that study carefully for this deposition. So I don't know. But I did read Dr. Rando's report and felt that I had some problems with his assessment.

EXAMINATION BY MR. WILLIAMS:

Q. Did you read any of the other studies that Dr. Rando relied on in calculating a dermal calculation for benzene exposure?

A. No.

Q. So you can't tell us what any of the references that he relied on as it relates to dermal calculation are?

A. That's correct.

Q. Do federal agencies use dermal calculations for risk assessments?

A. I have not looked at all federal agency risk assessments so I'm not prepared to say whether they do or they don't.

Q. Do federal agencies such as the EPA use dermal calculations for benzene exposure?

A. Again, I haven't looked at all of their assessments regarding benzene so I'm not prepared to say.

Q. How about the National Cancer Institute, would you know if they use dermal calculations for benzene exposure?

A. Again, I don't know everything they've done regarding benzene.

Q. Do you know if any federal agency uses dermal calculations for benzene exposure?

A. Again, I haven't looked at all federal agencies, so I don't know.

Q. Have you looked at the -- whether any United States federal agency uses dermal calculations for benzene exposure at all?

MR. CHOCHELES:

Objection, asked and answered.

THE WITNESS:

When you say at all --

EXAMINATION BY MR. WILLIAMS:

Q. I'm sorry. For purposes of this case.

A. You know, I didn't review the

OSHA standard for benzene recently, but it wouldn't surprise me that they talk about or may say something about dermal contact.

Q. Do you know whether or not OSHA uses a dermal calculation for benzene exposure?

A. Now, when you say OSHA uses -- I mean, for what purposes?

Q. Regulatory purpose, risk assessment, any capacity?

A. They do not use a dermal assessment in determining if employees are exposed above the OSHA limit for benzene.

Q. Would dermal exposures increase an individual's total body burden for benzene?

A. You mean theoretically?

Q. Yes, sure.

A. It's possible.

Q. For instance, I'll give you a hypothetical situation. If an individual is exposed to one part per million a day as a pipefitter at a refinery for total weighted average, via inhalation, if he also sustained dermal exposure, would that

increase his total benzene exposure?

MR. CHOCHELES:

Objection.

THE WITNESS:

If he had significant contact regarding time, concentration, there could be some addition.

EXAMINATION BY MR. WILLIAMS:

Q. Are you familiar with the term called odor threshold?

A. Yes.

Q. Have you ever used that in any capacity in your profession?

A. Yes.

Q. Tell me what you've use it for.

A. It is one of a number of tools that an industrial hygienist can use in assessing exposure.

However, having said that, it can be a very -- it's certainly not a quantitative tool in any stretch of the imagination. There is a very, very wide range of sensitivities in the population. There's also olfactory fatigue.

So while it is something that is

used by industrial hygienists, it's certainly nothing that can be used to quantify exposure.

Q. Have you ever used the odor threshold to create an exposure assessment for any purpose?

A. I have used it. There are times when it can be of some use.

Q. Have you used it in a litigation setting?

A. It's possible.

Q. So you don't have a problem with the odor threshold if you've used it in litigation; is that fair to say?

MR. CHOCHELES:

Objection.

THE WITNESS:

Well, you have to look at the situation. Again, there is many weaknesses in using odor thresholds in assessing exposure. It has its place, but again, you have to know the limitations and what you can -- how you can use it.

EXAMINATION BY MR. WILLIAMS:

Q. What's the most recent year that

you've used odor threshold in litigation?

A. I don't remember.

Q. Like five years?

A. Again, I just don't remember.

Q. Have you used odor threshold in any other capacity?

A. I wouldn't be surprised I've used it in non-litigation settings, just in evaluating various situations.

But again, I recognize the limitations and what you can use it with. And used with other pieces of information it may have a place, but it has limited value.

Q. Have you used it to recreate an exposure assessment of an employee in the workplace?

A. You could never use, I think, odor threshold by itself. Again, I mentioned it has extreme -- a lot of limitations, but it is a piece of information and sometimes used with other pieces of information, can have a place in an evaluation.

Q. Doctor, where did you work

currently?
A. Physically located?
Q. The name of the company?
A. Sandler Occupational Medicine and Associates.
Q. What is your current title?
A. Current title is vice-president.
Q. How many cases do you think you have served as an expert where there's allegations of chemical exposure?
MR. CHOCHELES:
Objection.
THE WITNESS:
How many? Hundreds, hundreds and hundreds.
EXAMINATION BY MR. WILLIAMS:
Q. And how many of those cases do you think you found that the plaintiff was exposed to excessive amounts of, whether it be benzene or any chemical?
A. Well, when I've done work for plaintiffs.
Q. What percentage of your work have you done for plaintiffs?
A. It's a small percentage.

Q. Have you ever worked for a plaintiff in a benzene case?
A. No.
Q. Have you ever worked as a defense expert and found that the plaintiff was exposed to an excessive amount of a chemical?
A. Yes.
Q. What chemical was that?
A. Let's see, asbestos, I believe, silica. Those are the ones I remember.
Q. You're not a medical doctor; correct?
A. Correct.
Q. And you're not an epidemiologist?
A. While I'm not a trained epidemiologist, I have been involved in an epidemiology study. I'm familiar with principles of epidemiology and I believe I can utilize epidemiology, along with other information, in a assisting risk.
Q. Do your transcripts reflect that you have taken an epidemiology course in your Ph.D. curriculum?

A. I did not take one.
Q. You're not an occupational medicine expert; are you?
A. Well, if you're defining occupational medicine as one who has a medical degree, no, I don't.
Q. And I guess my question is: You're not going to be offering expert opinions in the field of epidemiology in this case?
A. My understanding is I'm not.
Q. You're not going to be offering opinions in the field of occupational medicine in this case?
MR. CHOCHELES:
Objection.
THE WITNESS:
Well, are you talking about opinions regarding whether his exposure to benzene increased his risk of getting multi myeloma?
EXAMINATION BY MR. WILLIAMS:
Q. Correct.
A. My understanding is I'm not.
Q. And you're not going to be

offering opinions in this case as a toxicologist; is that correct?

A. Again, that's my understanding, I'm not.

Q. Okay. Doctor --

MS. GALLOWAY:

Excuse me, Eric, this is Carol. Before you go on, the phone number for Glen. He's in a room so you're going to have to give him the room number as well, okay? Area code is (303) 371 --

THE VIDEOGRAPHER:

We're going off the record.

(Discussion off the record.)

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, is benzene a known human carcinogen?

A. Yes.

Q. Does epidemiological evidence exist that indicates that benzene is associated with multi myeloma?

MR. CHOCHELES:

Objection.

THE WITNESS:

You have to look at the

epidemiology studies and in some cohorts you see some multi myeloma in the claimed exposure population.

You also see it in the controlled populations and there are a number of different studies. And I believe the bulk of the studies, if you look at them, there's not enough --

MR. CHOCHELES:

Hold on. Let's go off the record.

THE VIDEOGRAPHER:

Off the record, 12:18.

(Brief recess taken.)

THE WITNESS:

Based on the information I've read there's not enough evidence to conclude that excessive exposure to benzene is known to cause an increased risk of multi myeloma.

EXAMINATION BY MR. WILLIAMS:

Q. Maybe you're not understanding my question. Is there epidemiological evidence that shows an association with benzene and multi myeloma?

MR. CHOCHELES:

Objection.

MS. LUKER:

Object to form.

THE WITNESS:

When you say an association, that is suggesting is exposure to benzene a factor in causing multi myeloma, and that is the question I answered.

EXAMINATION BY MR. WILLIAMS:

Q. So you don't think benzene can cause multi myeloma?

A. What I have said is that the data at this time is not sufficient to permit one to conclude that there is an association.

Q. Okay. Have you ever opined that an individual exposed to benzene, that such exposures caused him to contract a blood disorder?

A. While I can't remember specifically concluding that, the literature is clear that excessive exposure can cause harm to the blood system.

Q. So benzene can cause damage to

the blood and blood forming organs; is that your opinion?

A. Excessive exposure, yes.

Q. Is multi myeloma a blood disorder or a blood malignancy?

MR. CHOCHELES:

Objection.

THE WITNESS:

That's how I would classify it.

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, how many times have you worked for, as an expert for Murphy Oil?

A. I don't know the exact number of times, but I think it's under ten.

Q. How about Shell Oil?

A. You know, I may have worked in some cases, I think there may have been a hazard communication case involving MSDSes where Shell may have been -- had a product with an MSDS at issue.

I believe that may have been my only work with Shell. I can't be positive but that's all I can recall.

Q. And was it a benzene case?

A. I don't think it was a benzene

case.

Q. Have you ever worked for Tenneco as an expert?

A. Again, I've done some cases where there were multiple defendants insofar as MSDSes were concerned, and I don't remember all the chemical manufacturers that I might have been involved with.

Q. Could that be the same answer for Marathon Oil?

A. It would be. I don't really remember a Marathon Oil MSDS.

Q. How about Radiator Specialty, who makes Liquid Wrench?

MS. LUKER:

Objection to form.

EXAMINATION BY MR. WILLIAMS:

Q. Have you ever served as an expert for Radiator Specialty?

A. I don't think so.

Q. Have you ever been excluded as an expert witness?

A. I have never been excluded as an expert witness, although there have been

parts of testimony that I wasn't able to give.

Q. Are you saying you were limited in the testimony you were able to give?

A. For example, I did some testing of a product in the case that I was involved with. It wasn't the same product and the defendant couldn't show that the two products I tested were the same. So I couldn't talk about that testing.

Q. Have you ever been limited by a court in offering an opinion as to general causation?

A. Now, when you say general causation I'm not sure what you mean.

Q. Is the product capable of causing the disease at issue?

MR. CHOCHELES:

Objection.

THE WITNESS:

I don't think so.

EXAMINATION BY MR. WILLIAMS:

How many times do you think you were limited by a court?

A. I can think of two times where

it involved testing and the determination was made that my test that I was alluding to was not the same situation as what was involved in the case.

Q. What were the names of those two cases?

A. Oh, the first one, I don't know the name but the client was Westinghouse.

Q. Westinghouse, okay. What about the second one?

A. The second one, I also don't know the name but the client made mothballs.

Q. Mothballs. Interesting.

A. Naturally.

Q. Would these cases be on your C.V.? I mean, on the case list that you provided?

A. Should be, actually. I think so.

Q. What is the purpose of the eight-hour total weighted average of one part per million for benzene?

A. What is the purpose?

Q. Yes.

A. I guess you could say that it is a measure of exposure and it's also a -- what's involves both concentration and duration and that provides an estimate of dose, and that is related to risk.

Q. And if one exceeds exposures of the one part per million total weighted average, what risk would you expect to see?

A. Well, that certainly depends on the ultimate dose that occurs.

Q. Worst case scenario, what will you expect to see?

A. We're talking about benzene?

Q. Yes, sir.

A. Well, what you could have is acute exposures can cause central nervous system affects. High enough exposures can cause death and there's systemic affects and one of the systemic affects is blood disorders.

MS. LUKER:

Object to the responsiveness of the answer. And I'll make my objection continuing. I think Mr. Chocheles has already said this witness is not being

offered as a medical expert and to the extent that the questions elicit testimony that would fall into the area of medical testimony, I want to lodge an objection ongoing to the responsiveness of the answers.

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, can excessive exposures to benzene cause headaches?

MR. CHOCHELES:

Objection.

THE WITNESS:

That is a central nervous system affect.

EXAMINATION BY MR. WILLIAMS:

Q. Can excessive exposure to benzene cause dizziness?

MR. CHOCHELES:

Objection.

THE WITNESS:

I would say dizziness, yes.

EXAMINATION BY MR. WILLIAMS:

Q. Can excessive exposure to benzene cause lightheadedness?

MR. CHOCHELES:

Objection.

THE WITNESS:

Yes.

EXAMINATION BY MR. WILLIAMS:

Q. Can excessive exposure to benzene cause nausea?

MR. CHOCHELES:

Objection.

THE WITNESS:

Yes.

EXAMINATION BY MR. WILLIAMS:

Q. How does one get abnormal blood results from benzene exposure?

MR. CHOCHELES:

Objection.

THE WITNESS:

Well, generally the uptake of a sufficient amount of benzene, it's metabolized and some of the metabolites reach the blood forming organs and adversely affect the tissue.

EXAMINATION BY MR. WILLIAMS:

Q. Are you familiar with the ATSDR minimum risk levels for benzene?

MR. CHOCHELES:

Objection.

THE WITNESS:

No, I haven't looked at that document recently.

EXAMINATION BY MR. WILLIAMS:

Q. Do you know what the cutoffs are for benzene?

MR. CHOCHELES:

Objection.

THE WITNESS:

Again, I haven't looked at the document.

EXAMINATION BY MR. WILLIAMS:

Q. Do you know the purpose of the ATSDR minimum risk levels for benzene?

MR. CHOCHELES:

Objection.

THE WITNESS:

I know the, some of the goals of ATSDR. I have not specifically looked at the specific definition of how they -- of that particular content.

EXAMINATION BY MR. WILLIAMS:

Q. In your opinion, if one exceeded the ATSDR minimum risk level for benzene

for chronic exposure, could health affects follow?

MR. CHOCHELES:

Objection. And now, I would -- if you're going to ask him about the ATSDR, something in it, then show it to him. But he, you know, we're just spinning our wheels here. He hasn't looked at it.

MR. WILLIAMS:

I'm not spinning wheels, I'm asking if he knows what --

MR. FARNET:

I'd like to interject an objection just to the fact that the question is vague and when you use the term health affect it's a vague term, so that's my objection.

EXAMINATION BY MR. WILLIAMS:

Q. I'll repeat my question. The chronic exposure level for the ATSDR minimum risk level is 0.009 parts per million. If one was exposed in excess of that, would you expect to see abnormal blood results?

MR. CHOCHELES:

Objection. Show him that you're conflating circumstances here, I think. But you need to -- I mean, if you have that information then show it to him and he can offer an opinion on it. But, you know --

MR. WILLIAMS:

I don't have the document in front of me, doctor. Do you have --

THE WITNESS:

First of all, you're comparing apples and oranges. ATSDR deals with the public. You're talking about 24-hour exposure, you're talking about lifetime. It's a whole different ball game.

And so there, you'd have to look at their basis, the percentage of the population, whether it's dealing with healthy adults or the total population.

So that number is a totally different number than one would use for assessing risk of a worker.

EXAMINATION BY MR. WILLIAMS:

Q. I agree with you, doctor. My question is: Would you expect to see any blood, abnormal blood abnormalities by

exceeding the minimum risk level for the chronic exposure?

MR. CHOCHELES:

Objection.

MS. LUKER:

Objection as to form.

THE WITNESS:

I would have to look at how they arrived at that number, what they were doing. I'm not prepared to answer that right now.

EXAMINATION BY MR. WILLIAMS:

Q. Fair enough. Is it your opinion that Dr. Rando's dermal calculations were improper in this case?

A. Yes.

Q. What references did you rely on to form that opinion?

A. I did not rely on any specific reference other than my knowledge of industrial hygiene.

Q. Did you review the material safety data sheets for Murphy Oil in this case?

A. I reviewed some, yes.

Q. For the products that contained benzene?

A. I did see some, yes.

Q. Do you know the levels that crude oil, benzene crude oil contained for the Murphy Oil plant?

A. It varies but my understanding it's generally around two percent.

Q. What about gasoline?

A. My understanding, it's anywheres from one to two percent, somewhere in that neighborhood.

Q. Doctor, I'm going to show you a material safety data sheet for Murphy Oil. Can you tell me the benzene content level that is on that sheet?

A. What they're saying here is it's less than four percent.

Q. Or up to four percent?

A. That would be for -- my assumption is is that there could be some unusual situation. And, really, they just want to protect themselves.

But basically that is an upper limit that probably rarely happens.

Q. When you say they want to protect themselves, what did you mean by that?

A. Well, they want to be -- just in case there happen to be a situation where there was some batch that had an elevated, they wanted -- rather than list each particular batch, they just put the upper maximum, but that rarely occurs.

Q. Do you know if pipefitters in the '70s, in general, working at refineries, were exposed to benzene while performing pipefitter tasks?

MR. CHOCHELES:

Objection.

MR. FARNET:

Objection.

THE WITNESS:

When you say exposed to benzene, at all? Ever?

EXAMINATION BY MR. WILLIAMS:

Q. Yes.

A. You know, based on the data that I've reviewed at refineries, they often could work without being exposed to

measurable levels of benzene. But there probably may have been times there was some exposure.

Q. Can you tell me what type of exposure pathway a pipefitter would encounter to benzene?

A. Pathway?

Q. Yes, sir.

MR. CHOCHELES:

Objection.

MR. FARNET:

Objection to the question, vague.

THE WITNESS:

So you're talking about which route of entry?

MR. WILLIAMS:

Yes, sir.

THE WITNESS:

And you're talking about any situation at any time, the whole universe of whatever could happen?

MR. WILLIAMS:

Sure.

THE WITNESS:

Well, then that would be the same answer that I gave you when you first asked me what other pathways. If you want to consider the universe of anything that theoretically could happen, it would be the answer I gave you earlier.

EXAMINATION BY MR. WILLIAMS:

Q. Could you repeat that, because I can't remember?

A. Inhalation, ingestion, skin absorption through intact and abraded skin.

Q. Thank you. Would a pipefitter working in the '70s have the potential to be exposed to benzene through inhalation, ingestion and skin contact from crude oil?

A. Well, again, you're asking me the theoretical universe of anything that could happen to any place at any pipefitter under any circumstance, and theoretically I suppose that that's possible.

Q. What about gasoline?

A. Again, if we go through all the same qualifications, yes, that's possible.

Q. Naphtha, same thing?

A. You mean naphtha that contains

benzene?

Q. Yes, sir.

A. Small percentage.

Q. I believe it's up to five percent.

A. Yes, same answer.

Q. Did you perform any calculations for Mr. Bishop's dermal exposure while he was working at a pipefitter in this case?

A. No.

Q. You're not going to offer any opinions at trial as to a dermal calculation that you have calculated; is that correct?

MR. CHOCHELES:

Objection.

THE WITNESS:

I would not do a dermal calculation.

EXAMINATION BY MR. WILLIAMS:

Q. Let me ask you a question. Do you feel that you're qualified to do a dermal calculation?

A. I feel that it's not possible to do a dermal calculation based on the

information we know.

Q. Would it be possible for you to do a dermal calculation for benzene exposure under any set of circumstances?

MR. CHOCHELES:

Objection.

THE WITNESS:

One could attempt to do a dermal absorption study. One would have to look at what information is available and right now, determining the uptake rate even if you knew exact percentage of contaminated surface area, exact concentration, exact timing, it's still the science of the actual absorption under conditions is quite variable.

So I think your output would be a very wide range.

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, do you know what year Murphy Oil first put an industrial hygienist out at the Meraux facility?

A. When you say put.

Q. Hired.

A. I don't know the date.

Q. Do you know if there was a full-time industrial hygienist at the Meraux facility in 1977 or '78?

A. I don't believe there was.

Q. Do you know what year Murphy Oil started warning employees of the hazards of benzene exposure?

A. I don't know the specific year.

Q. Do you know what year Murphy Oil created material safety data sheets for the products at the Meraux facility that contained benzene?

A. I do know that they did generate material safety data sheets prior to when they were required to.

Q. Do you know which year?

A. I don't know the exact year when they first started.

Q. Do you know what year the government required companies to prepare material safety data sheets for their products?

A. Around 1985, 1986.

Q. And do you have any material safety data sheets that you relied on in

this case that predate 1985 or '86?
A. No.
Q. Do you have any material safety data sheets in this case that indicate 1985 or 1986?
A. You know, I looked at some MSDSes but I didn't look at the dates. I just wanted to get an understanding of those components that had some benzene from those that didn't.
Q. And I'm looking at the gasoline material safety data sheet and it -- on this piece of paper it says superceded issue 12/8/89, 1989. Did you see any material safety data sheets in this case that predate 1989?
A. Again, I didn't look at the dates, so I don't know.
Q. What year was it common knowledge in the oil industry that benzene could cause damage to the blood?
MR. CHOCHELES:
Objection.
THE WITNESS:
Well, I don't know specifically

about the oil industry, but industrial hygienists knew that excessive exposure to benzene could caused adverse affects and one of those adverse affects was changes to the blood forming system. And we've had limits for benzene that go way back.

EXAMINATION BY MR. WILLIAMS:

Q. How far back can you recall?

A. Well, I think 1940s, 1950s.

Q. So the standards for benzene go back to the '40s or '50s. And why were those standards put in place?

A. To protect employees from being exposed to excessive levels of benzene.

Q. What was the knowledge of the consequences if they exceeded those levels back in the '40s?

MR. CHOCHELES:

Objection.

THE WITNESS:

I believe that excessive exposure was known to cause systemic damage.

EXAMINATION BY MR. WILLIAMS:

Q. Any blood dysplasia?

A. I believe it was.
Q. Aplastic anemia?
A. I believe that that may have been one of them.
Q. Leukemia?
MR. CHOCHELES:
Objection.
THE WITNESS I don't think they understood that at that time.
EXAMINATION BY MR. WILLIAMS:
Q. Have you ever seen the American Petroleum Institute toxicological profile for benzene dated September of '89? 1948, I'm sorry.
A. I think I might have seen something like that, but I'm not sure.
Q. Do you know whether or not they, the American Petroleum Institute published that blood abnormalities can result from benzene exposure back in 1948?
A. I think they may have.
Q. Do you know if they put leukemia as a possible consequence of benzene exposure in 1948?
A. I don't remember.

Q. If Murphy did not create material safety data sheets until 1989, would that have been past the point when they were required?

A. Yes.

Q. Would that rise to the level of negligence in your mind?

MR. CHOCHELES:

Objection.

THE WITNESS:

I'm not sure what you mean by negligence.

EXAMINATION BY MR. WILLIAMS:

Q. Well, I mean if a company doesn't comply with the law in 1985 that requires you to publish material safety data sheets for your products and they wait four years, is that normal within the industry?

MR. CHOCHELES:

Objection. Objection. Speculation, misstating what was said.

THE WITNESS:

I mean, it was an OSHA requirement to generate MSDSes for toxic

products, so if they didn't do it, then that would be a violation of the standard.

EXAMINATION BY MR. WILLIAMS:

Q. That was my next question. So it would be a violation if they did not publish material safety data sheets in 1985?

A. Well, when the standard became effective, which might have been 1986.

Q. But it was prior to 1989?

A. Yes. That's my understanding.

Q. How did Murphy Oil warn employees at the Meraux facility in the '70s as it relates to benzene exposure?

A. Well, the -- I think they had some programs in place to -- they were basically working with closed systems and they had many process streams and piping, for example, that had no benzene whatsoever.

And so that I don't know exactly when or while they had MSDSes at a certain point. And they took samples and they found that employees were not exposed to significant levels of benzene.

Q. Can you tell me how many samples were taken in the '70s?
A. There were several samples taken in the '70s.
Q. How many, doctor?
A. I don't remember the exact number. A few.
Q. It's my recollection that there was one sample taken in 1977. Am I correct?
MR. CHOCHELES:
Objection.
THE WITNESS:
I thought it was more than one.
EXAMINATION BY MR. WILLIAMS:
Q. Several samples, I believe, from 1995, but I'm asking you in the '70s. Do you know for sure one way or the other how many samples there were from 1977?
MR. CHOCHELES:
Objection.
THE WITNESS:
My recollection, it was more than one.
EXAMINATION BY MR. WILLIAMS:

Q. Earlier you testified about units. Tell me what units contained benzene in the streams at the Meraux facility in the '70s?

A. There were crude oil.

Q. Okay.

A. And then there were separations and some of the lighter constituents would have some small concentration of benzene. And as you separated the lighter from the heavier, the heavier components tended not to have any benzene.

Q. Tell me what units had no, zero benzene in the streams at the Meraux facility from 1977 to '78?

MR. CHOCHELES:

Objection.

THE WITNESS:

You know, zero is an absolute and so when I say did not have benzene, I'm suggesting measurable levels or significant levels. But, you know, we're breathing benzene right now.

So to say zero is something that's almost -- that's difficult to say.

Essentially or from a toxicological standpoint, zero, the diesel unit, the sulfur unit, propane, butane. Again, the units that had water, compressed air.

EXAMINATION BY MR. WILLIAMS:

Q. Is it your testimony that diesel has -- does not have benzene in it?

MR. CHOCHELES:

Objection.

THE WITNESS:

It's a lower -- I said it's not zero.

EXAMINATION BY MR. WILLIAMS:

Q. Do you know whether Murphy reports benzene on the diesel material safety data sheet?

A. You know, I don't remember offhand.

Q. Do you know the average diesel benzene content of diesel?

A. You know, right now I don't remember it anymore.

Q. Tell me the units that would not, at the Meraux facility in '77, '78, that would not have had measurable amounts

of benzene in it?

MR. CHOCHELES:

Objection. Asked and answered.

MR. WILLIAMS:

I didn't say measurable, I'm clarifying what you said earlier.

THE WITNESS:

Say that again.

EXAMINATION BY MR. WILLIAMS:

Q. Tell me what units at the Murphy Oil refinery in Meraux, Louisiana did not have measurable amounts of benzene?

MR. CHOCHELES:

Objection.

THE WITNESS:

When you say measurable, today we have very sophisticated equipment that can almost measure molecules. So they may have had measurable levels but they were still extremely low. I think what we might call them trace levels.

And so unless you're talking, I mean, there could even be water or benzene in the water, but it's going to be extremely low and may not even be

measurable. I don't know.
EXAMINATION BY MR. WILLIAMS:
Q. When you say water, you're referring to waste water?
A. No. I'm referring to, say, steam systems, even drinking water.
Q. Do you know in 1977, '78, do you know what units at that plant in Meraux did not contain measurable amounts of benzene?
A. Well, I think probably the better term might be trace levels. And again, as I mentioned, diesel has very little benzene in it.
As you get to the heavier portions, the benzene has been separate out. And again, we talked about propane, butane, sulfur unit. There might have been some other organics that had enough treatment that the benzene would have been separated out. I can't name them all.
Q. Is it your opinion that propane does not contain benzene?
MR. CHOCHELES:
Objection to the form.
THE WITNESS:

Well, again, I'm not saying it's zero, but it's -- there are standards for propane where a certain amount of propane that you buy for your barbecue, there's a certain amount of benzene that the government allows to be in there because you can't get zero.

But it's a level that's so low that there's no consequence, no health consequence.

EXAMINATION BY MR. WILLIAMS:

Q. Is it your opinion that butane does not contain any level of benzene?

A. Same answer as for propane.

Q. What about in 1977, would there have been higher levels of benzene in propane or butane?

A. I believe that those chemicals, the vapor pressure is so different, they're gases, that there would have been good separation. So yes, I would believe it would be the same trace levels.

Q. When you say trace, is that the content level, does that rise above .1 parts per million?

A. No.
Q. Earlier actually in your report --
A. You're saying .1 percent.
Q. .1 percent, thank you. In your report I believe you state Dr. Rando assumes that Mr. Bishop worked at Murphy Oil for a period of nine years.
Is that still your opinion today?
A. That he was wrong in assuming he worked at Murphy for nine years?
Q. No, sir. That he assumed that he worked there for nine years?
A. I remember seeing a table he had for Murphy and it showed benzene exposures for nine-year period or something.
Q. Have you read his deposition?
A. I did look at his deposition.
Q. Have you looked at the exposure chart that identifies the amount of time he assigned to each facility?
A. I think there was something in a deposition of .1 or something like that. I don't remember.

MR. CHOCHELES:

I mean, if that wasn't attached, we don't have any attachments.

EXAMINATION BY MR. WILLIAMS:

Q. I guess my question to you is, doctor, is it still your opinion that Dr. Rando assumed that Mr. Bishop worked at the Murphy Oil refinery for nine years?

A. Again, all I know is that I saw that he had the assessment there.

Q. I want you to look at that chart and take your time. We need to change tapes.

MR. CHOCHELES:

Off the record.

THE VIDEOGRAPHER:

We're going off the record at 12:48.

(Brief recess taken.)

MS. LUKER:

Just so the record is clear, we had a discussion off the record, we agreed to the one for all objection rule so that any objection by one does not have to be repeated by other counsel.

MR. WILLIAMS:

I think that's what we have been doing in the other cases.

MS. LUKER:

I just wanted to make sure. Either that or we can keep making them all each time like little --

MR. WILLIAMS:

You can make them so that I know which ones you got a problem with. Because I don't want you to come back and say every question I object to the deposition.

MS. LUKER:

I think the one for all is a neater record unless there's some issue with that.

MR. WILLIAMS:

If he makes it, you're saying -- I got you.

MS. LUKER:

Yeah.

EXAMINATION BY MR. WILLIAMS:

Q. Doctor, I want to show you the attachment to Dr. Rando's report where we talked before the break and I want you to

tell me if it's still your opinion that Dr. Rando stated that Mr. Bishop worked at the Murphy facility for nine years.

A. In looking at this, I only see Murphy Oil in '77 and '78.

Q. Out of fairness to you I looked at it and I thought the same thing you did. I just want make sure you agree with me now that that is not what the report says?

A. Well, the report showed an exposure at Murphy for more than '77 through -- and '78.

Q. Actually that was his factor, but I'm not going to argue with you about it. His exposure chart, do you agree with me it shows him at the Murphy Oil refiner from '77 to '78?

A. Yes.

MR. WILLIAMS:

I want to attach this as the next exhibit, I'm not sure.

MR. CHOCHELES:

I.

(Whereupon, the document referred to was marked as Exhibit I for

identification.)
EXAMINATION BY MR. WILLIAMS:
Q. Are you offering opinions as to Mr. Bishop's exposures at the Tenneco facility?
A. No.
Q. Are you offering opinions as to Mr. Bishop's benzene exposure at the Marathon facility?
A. No.
Q. Are you offering opinions as to Mr. Bishop's exposure at the Shell facilities?
A. No.
Q. Are you offering any opinions in this case as to Mr. Bishop's benzene exposure against as to Liquid Wrench may by Radiator Specialty?
MR. CHOCHELES:
Objection.
THE WITNESS:
In my evaluation at Murphy Oil, I would be saying something about Liquid Wrench.
Q. But not at the other three

facilities; is that fair to say?
A. I did not dwell on the other three facilities, so no.
Q. Your report did not include an opinion as to Liquid Wrench exposure at the other three facilities; is that fair to say?
A. I think that's true. I did not attempt to conclude what his exposure was to benzene at the other facilities.
Q. Is it fair to say your opinions are going to be confined to any benzene exposures at the Murphy Oil facility from '77 to '78?
A. That is what I was asked to look at.
Q. Was Mr. Bishop exposed to benzene at Murphy Oil from the periods of 1977 to '78?
MR. CHOCHELES:
Objection.
THE WITNESS:
Based on my review of the materials, I did not see any evidence that he was exposed to any benzene at Murphy

Oil.
EXAMINATION BY MR. WILLIAMS:
Q. Doctor, I'm going to -- do you have a copy of your report handy?
Maybe I misunderstood. Did you calculate any type of exposure from Mr. Bishop at the Murphy Oil facility from '77 to '78?
A. What I did was I did calculate based on an assumption if he was exposed. But I didn't see evidence of exposure.
Q. Tell me what your calculations yielded?
A. The calculation, let's see.
Q. Tell me what page you're on, too.
A. It is -- is this it? No. So it starts on page 6.
Q. Yes, sir.
A. And so what was your question?
Q. What level of exposure did you calculate for Mr. Bishop while he was at the Murphy Oil facility from '77 to '78?
MR. CHOCHELES:
Objection.

THE WITNESS:

Making an assumption that there was some exposure. Again, I didn't see evidence that he was exposed. But making an assumption that there was some exposure, I calculated that he would have been exposed to 0.006 PPN years.

EXAMINATION BY MR. WILLIAMS:

Q. Break that down for the jury here, explain what that means, that number?

A. What that means is it's a method of determining total dose. Dose is concentration, the actual exposure concentration times duration. And you would have to break up the duration for each different exposure concentration.

So essentially what this means is you look at what his exposure would be in a year at an eight-hour time-weighted average. And you would determine an eight-hour time-weighted average for a year and multiply that by the total number of years.

And obviously if it's not the same from unit to unit you would have to

change that and put in the incremental time period. But that's what it means.

Q. Does 0.006 indicate your estimate of what he was exposed to on a daily basis or -- that's what I'm trying to break down for the jury.

MR. CHOCHELES:

Objection.

THE WITNESS:

It is, again, making an assumption of an exposure and then multiplying it times duration. So this .006 does not represent any concentration at any given time.

EXAMINATION BY MR. WILLIAMS:

Q. Would your calculation indicate whether or not he had the potential to be exposed to more than one part per million at the Murphy Oil refinery from '77 to '78?

A. Again, there was no evidence that I saw that he may have ever been exposed to benzene. But what I did just for the purposes of calculation was to take an exposure number that was obtained from air sampling at the facility. The highest

air sample, in fact, found on a pipefitter, and assumed he was exposed to that during the time period he was at Murphy, I believe while he was working on the turnaround.

So it was based on him being exposed to .12 PPM on a daily basis for I think three weeks. And that's how I determined that dose.

Q. When you say a daily basis do you mean the total weighted average or per hour?

A. I believe it was based on -- you know, and I don't remember now if I did it as an eight-hour time-weighted average or I assumed that he worked longer than eight hours.

Q. Let me ask you another question, doctor.

A. Okay.

Q. If a pipefitter was exposed to .12 parts per million benzene and he worked 14 hours a day, would that exceed the one part per million time-weighted average for benzene exposure?

A. If he was exposed to .12 and he

worked 14 hours a day?

Q. Yes, sir.

A. No. That would not exceed the current OSHA benzene limit.

Q. In the 14-hour day it would not exceed the one part per million?

A. That's correct.

Q. What would it be?

A. If it was 16 hours it would be double so it would be .24.

Q. Okay. Doctor, the samples that you relied on, what years were they from?

A. The .12 part per million, I believe was taken in 1995.

Q. What data did you rely on from 1977? What was the result of that test?

A. I don't remember the actual number, but it was extremely low, well below one part per million, if any. May have even have been non-detect.

Q. Do you know if that was a pipefitter sampling?

A. That was taken of an employee who was repairing a pump which actually would probably represent a situation if

there was any potential for exposure, a greater potential than would be experienced by a pipefitter.

Q. Are you familiar with the Spears study Dr. Rando relied on?

A. Yes.

Q. Is that a peer reviewed study?

A. Yes.

Q. Were there about 4,000 samples that were taken from that study?

MR. CHOCHELES:

Objection.

THE WITNESS:

You know, I don't remember the specific number. I do know it was a large number of samples.

EXAMINATION BY MR. WILLIAMS:

Q. Do you think that is more representative of exposures for pipefitters and maintenance workers than one sample from 1977?

A. Okay. You can't just take a study that looked at exposures in a refinery and all of a sudden come to a conclusion that because 4,000 samples were

taken that that automatically is a reliable indicator of what pipefitters are exposed to on daily basis.

You have to look at the basis of why the samples were taken at a given facility, who they were taken, what were the conditions, what was the goal of the survey, what were the actual results.

There's many factors you would have to look at and then attempt to determine if those numbers could be transferred to a different facility.

Q. Did you rely on any peer reviewed studies that contradict the numbers in the Spears study that Dr. Rando relied on?

MR. CHOCHELES:

Objection.

THE WITNESS:

When you say contradict, I'm not saying that those samples or that the numbers weren't obtained. I'm just saying you don't know how they were obtained, you didn't even provide the specific exposure numbers.

So I'm not saying that report is -- that it's an inaccurate or full of errors. I'm just saying that the way it's written, you can't use that data in an attempt to predict what pipefitters are exposed at at a different facility.

Q. Do you have a study that says that that -- the Spears study is not representative of what pipefitters encountered in the '70s and '80s?

MR. CHOCHELES:

Objection.

THE WITNESS:

All I can tell you is they didn't provide enough information in that study to permit one to use that data.

For example, you don't know what the sampling strategy is. Maybe in some of those surveys they were only looking at situations where they were pouring benzene out of a pipe. I don't know. We don't know what the survey strategy was so we don't know how to use that data.

EXAMINATION BY MR. WILLIAMS:

Q. And again, do you have any

studies that you relied on in this case that contradict the levels shown in that study?

MR. CHOCHELES:

Objection.

THE WITNESS:

I'm not saying those numbers are wrong. I'm just saying you can't use them to predict exposures at Murphy Oil.

EXAMINATION BY MR. WILLIAMS:

Q. Did you rely on any peer reviewed studies to determine what type of levels of benzene exposures one would encounter at Murphy Oil in the '70s?

A. I have actual exposure data that was taken at Murphy Oil.

Q. In the '90s; right?

A. Well, and the '70s.

Q. One sample from the '70s?

MR. CHOCHELES:

Objection.

THE WITNESS:

Well, I am using that one sample of a machinist at the '70s.

EXAMINATION BY MR. WILLIAMS:

Q. Okay. And again, did you rely on any peer reviewed studies to come up with your exposure assessment for Mr. Bishop?

A. Well, again, I am using the principles of evaluation. I couldn't come up with an actual number. In fact, from the information, I don't know that he was exposed to any benzene. He may very well have not been exposed to any benzene at Murphy Oil if you look at the information that is provided.

Q. Did you rely on any peer reviewed studies to determine levels of exposure that a pipefitter would encounter in '77 and '78?

MR. CHOCHELES:

Objection.

THE WITNESS:

You mean at any facility at any time with any fluid?

EXAMINATION BY MR. WILLIAMS:

Q. In this case, yeah.

A. Well, now you're saying in this case. Are you saying a study that would

talk about what a pipefitter at Murphy would have been exposed to?

Q. What a pipefitter in general would have been supposed to.

MR. CHOCHELES:

Objection.

MS. LUKER:

Objection as to form.

THE WITNESS:

I wasn't interested in what a pipefitter in general was exposed to. I was interested in what Mr. Bishop may have been exposed to at Murphy.

EXAMINATION BY MR. WILLIAMS:

Q. You just answered my question. Thank you, Doctor. I believe you indicated in your report that Mr. Bishop spent approximately nine to ten months working at Murphy performing new construction.

Is that correct?

A. Well --

MR. CHOCHELES:

Objection.

THE WITNESS:

He may have. That would be a

maximum. He may not have been there the whole nine months.

Q. Let me ask you a question. The reports that you give, are these your opinions by a standard more probable than not?

A. Based on my review of the information provided, these are the opinions I came to. I'm not sure what you mean by -- yeah, I'm sure that's over 50 percent.

Q. Yeah. I'm asking you what --

A. Yeah, that's, those are my opinions that I've come to.

Q. You still stand by the opinions that are in this report?

A. Yes.

Q. Let me ask you this: What level of benzene would one encounter if he poured benzene on his arm?

MR. CHOCHELES:

Objection.

THE WITNESS:

What, at airborne levels?

EXAMINATION BY MR. WILLIAMS:

Q. No. Dermal. We're talking dermal first.

A. Well, what percentage of the body surface area was contacted? What, we're talking about pure benzene being poured?

Q. Let me give you a better question. If I poured gasoline on my hand that contained up to four percent benzene, what level of benzene exposure would I encounter?

MR. CHOCHELES:

Objection.

THE WITNESS:

Up to four percent, that means it could be a tenth of a percent which would certainly be a different answer than if it was four percent.

EXAMINATION BY MR. WILLIAMS:

Q. Let's use four percent.

A. Okay. So use four percent. What percentage surface area was contacted, for how long, what was the temperature, what was the movement? There are a number of factors and then even in that situation

there is question about what the actual absorption would be.

So it's difficult to determine an accurate amount of absorption.

Q. Would it be above one part per million?

MR. CHOCHELES:

Objection.

THE WITNESS:

You didn't tell me a time, you didn't tell me a surface area.

Q. My hand. The palm of my hand. If I poured gasoline on my hand could there -- for 10 minutes, would I encounter more than one part per million?

A. That would require calculations and a range of error, and I can't just give you a number.

Q. You don't know?

A. I don't know without doing the calculations and then looking at the errors associated with each part and coming up with an error analysis.

Q. If one was inhaling fumes from a tank or a pipe that had gasoline running

through it or stored in it, would they encounter benzene exposures in excess of one part per million?

MR. CHOCHELES:

Objection.

THE WITNESS:

Okay. What they're doing is there's a tank of gasoline and what are they doing again?

EXAMINATION BY MR. WILLIAMS:

Q. Inhaling the fumes from the gasoline.

A. Are they sticking their nose in the tank?

Q. No. They're standing next to it and smelling the fumes from the gasoline. Would they encounter exposures in excess of one part per million?

MR. CHOCHELES:

Objection.

THE WITNESS:

I took an air sample while I was working at Ford of the guy on the assembly line who was filling every car with gasoline. And it was done in anticipation

of the benzene standard, the emergency benzene standard in the late '70s. I don't remember the exact number but I remember concluding that that was not a problem.

EXAMINATION BY MR. WILLIAMS:

Q. Was that when the standard was ten part per million or one part per million?

A. We were doing it in anticipation of the standard going to one part per million. So I know that it was less than one part per million.

Q. And again, what level would you expect to see if someone was inhaling the fumes from benzene or gasoline?

MR. CHOCHELES:

Objection.

THE WITNESS:

Again, as you're suggesting this hypothetical it sounds like might have been a similar situation to someone in an indoor environment continuously filling cars with gasoline, which at that time did not have any recirculation devices or vapor absorption devices.

So all the excess vapor would come right back out of the fuelling nozzle right to where the guy was filling the cars and I know his result was less than one part per million.

EXAMINATION BY MR. WILLIAMS:

Q. Do you know if any studies indicate that individuals exposed to gasoline vapors are exposed to greater than one part per million benzene?

A. You mean is it possible under any condition that someone could do something where they could be exposed above one part per million from doing something with gasoline?

Q. That's a question. I'm asking are there any peer reviewed studies that indicate that?

A. I don't know.

Q. And you didn't need to look at that information to offer an opinion in this case?

A. Mr. Bishop was not sticking his head in cans of gasoline.

Q. I don't think any of the studies

we're talking about have someone sticking their head in a can of gasoline.

Was Mr. Bishop exposed to Liquid Wrench at the Murphy Oil facility?

MR. CHOCHELES:

Objection.

THE WITNESS:

Liquid Wrench it would not surprise me that -- let's see. Depending on how he used it, how much he used, let's see, there are some, a number of solvents. Some of the solvents that Liquid Wrench might have, sufficient odor sensitivity. That he might have smelled some odor at some time from using Liquid Wrench.

MS. LUKER:

Objection to the responsiveness of the question. Of the answer to the question.

EXAMINATION BY MR. WILLIAMS:

Q. Is it possible that when he was using Liquid Wrench that he was exposed to levels -- we're talking about Murphy Oil from '77 to '78 -- in excess of one part per million?

MR. CHOCHELES:

Objection.

THE WITNESS:

Well, for the most part I believe when he was there he was working in new construction where there wouldn't have been any need for Liquid Wrench.

And when he was working on the turnaround it might have been after a time period when Liquid Wrench didn't have significant amounts of benzene in it.

So you want me to talk about a hypothetical situation?

EXAMINATION BY MR. WILLIAMS:

Q. I'm asking you is it possible that Mr. Bishop, when he was using Liquid Wrench at the Murphy Oil facility, is it possible he was exposed to levels in excess of one part per million?

MS. LUKER:

Objection to the form of the question.

THE WITNESS:

Based on my understanding, I don't know that he even used Liquid Wrench.

But even if he did, in the open, the way one normally uses Liquid Wrench, I would not expect that to happen.

EXAMINATION BY MR. WILLIAMS:

Q. Have you seen any testimony from fact witnesses in this case from any of the defendants?

A. Fact witnesses from -- you mean at Murphy Oil?

Q. Yes.

A. I have read some depositions.

MR. CHOCHELES:

Wait, wait. State the, ask the question again.

EXAMINATION BY MR. WILLIAMS:

Q. Have you seen any sworn testimony from any fact witnesses in this case as it relates to Murphy Oil?

A. Concerning this case?

Q. Yes, sir. This case only.

A. I don't think so.

MS. LUKER:

You're limiting -- excuse me. I just want to make sure I understand your question was as to any witness employed by

Murphy, not as to any witness who testified in this case?

MR. WILLIAMS:

My question was for any witnesses that have offered testimony in this case for any of the defendants as related to Mr. Bishop's exposures from 1977 to 1978.

THE WITNESS:

You had said just Murphy Oil employees.

MR. WILLIAMS:

No, sir. I'm talking about any person that offered any sworn testimony for the Murphy Oil -- exposures from '77 to '78 at the Murphy Oil facility.

THE WITNESS:

And you're not limiting it to Murphy Oil employees? Are you talking about Mr. Fuchson,^ for example?

MR. WILLIAMS:

No. I'm talking about a witness on behalf of one of these defendants.

THE WITNESS:

No, I don't think so.

EXAMINATION BY MR. WILLIAMS:

Q. Would Mr. Bishop have had the potential for benzene exposures when he was changing a valve at the Murphy Oil facility?

MR. CHOCHELES:

Objection.

THE WITNESS:

When you say potential, what does that mean?

EXAMINATION BY MR. WILLIAMS:

Q. Dermal benzene exposures.

A. Well, I need to know more information.

Q. Changing a pipe with gasoline running through it?

A. So it's now gasoline running through it. He wouldn't change a pipe, a valve with gasoline running through it.

Q. Why not?

A. Because they have a policy, a program in place that before you open a system, they remove the components, the fluids in the system.

Q. Direct me to the document that

you referred to that shows that in 1977 or '78 they had that policy in place.

A. You know, I think even Mr. Fuchson said something about the company would blind and block off the process flow.

But there is a Murphy document that talks about getting permission before you work on a pipeline and that the system has to be properly blanked off and the fluid removed.

Q. Would fumes still come out of a pipe?

A. Would fumes still come -- there is some potential at some time there might be some residual fumes.

Q. Would those fumes have the potential to contain benzene?

MR. CHOCHELES:

Objection.

THE WITNESS:

Well, it depends on what process we're talking about.

EXAMINATION BY MR. WILLIAMS:

Q. Gasoline?

A. If it were gasoline and there is a potential that there could be some fume left and when opening it up, there could be some, I believe, minor benzene emission which would come out which then would be quickly diluted in the outdoor air.

Q. Would that be the same answer for crude oil at the Murphy Oil refinery?

A. As we're talking about the same percentage, yeah.

Q. Doctor, I'd like to attach your C.V. as the next exhibit. Do you have a copy handy? We'll attach my copy.

Doctor, I'm going to turn to page 6 of your C.V. You state under education that you have a Ph.D. in physiology and pharmacology 1972 from Wayne State University College of Medicine, Detroit, Michigan. And you have major -- as your major you have toxicology?

A. Yes.

Q. Do you see that page?

A. I do.

Q. Does your official transcripts reflect that your major was toxicology?

A. No.
Q. Thank you.
MR. WILLIAMS:
I don't think I have any others, nothing right now. We'd like to mark this as the next exhibit.
(Whereupon, the document referred to was marked as Exhibit J for identification.)
MR. CHOCHELES:
We want take a quick break.
THE VIDEOGRAPHER:
We're going off the record at 1:23.
(Brief recess taken.)
THE VIDEOGRAPHER:
We're back on the record at 1:28.
EXAMINATION BY MR. CHOCHELES:
Q. Sheldon, what did you do your dissertation on in your Ph.D. program at Wayne State?
A. It was a toxicological animal exposure study where I was measuring the toxicological affects that would occur with

the uptake of different forms of mercury.

Q. How many credit hours was your dissertation?

A. 40 or 45, something like that.

Q. What percentage of your doctoral degree did that 40 hours compose?

A. It was over a third.

Q. Why did you say on your C.V. that you have a major in toxicology?

A. It was because this was a special program where the Department of Occupational Environmental Health, where I took my formal toxicology course and where the department did toxicological research, animal exposures studies, which I was involved with several of them.

And they had a combined program with the Department of Physiology and Pharmacology, and the Department of Pharmacology and Physiology offered courses in the normal function of the body, including pharmacology which talked about the adverse affects or the toxicological affects.

And so it was a combined program

which was designed to produce a toxicologist.

Q. In fact, how many -- do you recall how many people in your doctoral program, how many people were there in your doctoral program?

A. I believe that there were about ten or 12 people who graduated in this program before they stopped it.

Q. And of those ten to 12 how many, to your best estimate, went on to become toxicologists?

A. I believe all of them call themselves toxicologists but a number of them were exclusively toxicologists.

MR. CHOCHELES:

That's all the questions I have.

MS. LUKER:

I have no questions.

EXAMINATION BY MR. WILLIAMS:

Q. Just a couple follow-up questions. Doctor, earlier we marked as Exhibit F your transcripts. Can you circle on here where the 45 hours in toxicology, where it says that?

A. It's research dissertation. It's the dissertation.

Q. But can you circle on your official transcripts where it says that you did a dissertation in toxicology?

MR. CHOCHELES:

Objection.

THE WITNESS:

I just said it just says dissertation. They don't say what the dissertation is in.

EXAMINATION BY MR. WILLIAMS:

Q. Let me ask you this question, doctor. You said you did a study in your dissertation on rats, I believe, with mercury?

A. The rats kept biting me so I switched to gerbils.

Q. Gerbils, okay. Gerbils and mercury. Would you consider that to be a field in environmental toxicology?

A. No. This was -- I mean, the money for sponsoring this actually came from the Chlorine Institute because there was a question on what the exposure limits

should be for mercury.

And this research helped identify the toxicology of mercury and assisted in setting exposure limits.

Q. Would that be in the field of environmental toxicology?

A. Again, I just said this was used in industrial hygiene and in industrial toxicology to assist in setting the work -- health, healthful worker exposure limits.

Q. In your dissertation, did it have anything to do with humans?

A. No. Well, obviously in toxicology exposure studies are done on animals and you have to extrapolate to man and that poses difficulties.

It would be nicer to expose human beings but it's hard to find subjects.

Q. I think it's illegal also; wouldn't you say?

A. It may be illegal, too.

Q. Do you have any other documentation that shows that you did your dissertation in that?

A. I have the dissertation itself.

MR. WILLIAMS:

I don't have any further questions at this time.

MR. CHOCHELES:

Would you like the dissertation?

MR. WILLIAMS:

He can keep it.

(Whereupon the deposition is concluded).

REPORTER'S CERTIFICATE

I, MONIQUE C. KRONLAGE, Certified Court Reporter, State of Louisiana, do hereby certify that the above-mentioned witness, after having been first duly sworn by me to testify to the truth, did testify as hereinabove set forth;

That the testimony was reported by me in shorthand and transcribed under my personal direction and supervision, and is a true and correct transcript, to the best of my ability and understanding;

That I am not of counsel, not related to counsel or the parties hereto, and not in any way interested in the outcome of this matter.

MONIQUE C. KRONLAGE, CCR, RPR
Certified Court Reporter
State of Louisiana