IN THE CIRCUIT COURT OF JACKSON COUNTY, MISSOURI
AT INDEPENDENCE

JUSTIN DETEL,	)	
	)	
Plaintiff,	)	
	)	
-vs-	)	Case No. 04 CV 207637
	)	Division 16
BP CORPORATION NORTH AMERICA INC., et al.,	)	
	)	
	)	
Defendants.	)	

THE DEPOSITION OF DAVID PYATT, PhD, produced, sworn and examined on the part of the Defendants, pursuant to Notice to Take Deposition Duces Tecum, on Thursday, the 21st of September, 2006, at the offices of 2115 Thirteenth Street, in the City of Boulder, and State of Colorado, before me,

BARBARA A. GRIFFITH, CSR, CCR No. 206
of
JOHN M. BOWEN & ASSOCIATES

a Certified Court Reporter, the character of the Notary having been waived in a certain cause now pending in the Circuit Court of Jackson County, Missouri, wherein JUSTIN DETEL is Plaintiff and BP CORPORATION NORTH AMERICA INC., et al., are Defendants.

APPEARANCES:

For Plaintiff:

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I N D E X

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E X H I B I T I N D E X

(Exhibits attached.)

DAVID PYATT, PhD,

a witness, being first duly sworn, testified upon his oath as follows:

EXAMINATION

BY MR. WALTERS:

Q. Would you state your name, please?

A. David Pyatt.

Q. And you have been identified as an expert for BP in the case of Justin Detel, is that your understanding?

A. Yes.

Q. Have you brought with you today, over here against the wall, all the file materials that you've relied on in this case?

A. That's the bulk of them.

Q. All right. Is there anything else specifically, and I'm not talking about sort of --

A. General library?

Q. Correct. Is there anything else that you didn't bring with you, that you think is relevant to your opinions here today?

MS. McELDOWNEY: Object to the form.

A. I'm not sure that it's relevant to my opinions, but it is relevant to my opinions of Dr. Landolph's deposition, where he referred to a Norseth case, or a Norseth publication, that I tracked down, and it as a

rubber worker study. And I have 20, 25 other rubber worker studies that are in a binder, and I have not brought that today.

Q. (BY MR. WALTERS) Okay.

MS. McELDOWNEY: And I'm sorry, for the record, Lon, if you want, we can produce those to you separately, if you want a copy of those.

And one other thing. Despite the fact that your notice didn't require Dr. Pyatt to bring any documents or files, he did bring with him today those documents that he has reviewed and/or relied upon for purposes of the work in the Detel case.

What we did not bring were the seven volumes of medical records. We didn't think you'd need to see those. But those are documents that he has reviewed. Along with some other -- fact witness depositions and some site documents that you otherwise would have had copies of or were otherwise produced by your experts.

MR. WALTERS: Okay.

Q. (BY MR. WALTERS) Now, tell me more about the Norseth study, you say, that you went and tracked down.

A. What would you like to know about it.

Q. What is it? What made you go look for it, I guess.

A. I didn't recognize it when Dr. Landolph mentioned it

in his deposition. I had seen it, but I -- I didn't recognize it right away. So I wanted to see what it was that he was referring to.

Q. All right. Now, you have also reviewed the medical records of Justin Detel, is that correct?

A. Yes.

Q. Have you -- what depositions in this case have you reviewed --

A. You know, I'm going to -- I have a list of things. So I don't leave any off, if you don't mind, I'm going to get that.

Q. Sure.

A. And you can certainly have it.

Q. Why don't we go ahead and mark that as Exhibit 1.

A. Okay.

(Whereupon, Pyatt Exhibit No. 1 was marked for identification.)

Q. (BY MR. WALTERS) Is Exhibit 1, here, a complete list of the things that you've reviewed in formulating your opinions in this case?

A. Yes.

Q. What were you asked to do in this case?

A. I was asked to evaluate the literature, based on my understanding and experience, and render an opinion as to whether I believed Justin Detel's non-Hodgkin's

lymphoma could have resulted from his proximity to the refinery in Sugar Creek.

I was also asked to review the depositions and reports of plaintiff experts, particularly Dr. Landolph and Dr. Dahlgren.

Q. And have you done all of those things and are ready to give your opinions in this case?

A. Yes.

Q. Now, you said that you were asked to evaluate the literature to see whether or not Justin's non-Hodgkin's lymphoma resulted from benzene exposure, is that a correct assessment?

MS. McELDOWNEY: Object to the form. That's not what he said.

A. Not -- not just benzene exposure. I mean, that seemed to be the primary allegation, as I understood it, so I did focus on benzene. But I also evaluated the literature associating workers with exposure to organic solvents as a general class, refinery worker studies, petroleum exposures, any -- any literature that I could find that I felt was relevant to any potential exposures that someone could have.

Q. (BY MR. WALTERS) Did you consider exposure to gasoline?

A. Yes.

Q. Did you consider exposure to oil products?
A. Yes.
Q. And is your opinion regarding whether or not there is an association between any of those chemicals and NHL, confined to what you found in the medical literature?
MS. McELDOWNEY: Object to the form.
A. I -- I'm not quite sure I follow your question.
Q. (BY MR. WALTERS) Sure. You're not a medical doctor, correct?
A. I'm not.
Q. And you understand that what we're going to be doing next month, is a trial to decide whether or not, to a reasonable degree of medical probability, chemicals caused Justin's illness. Is that your basic understanding?
A. I think that's fair.
Q. And so since you're not a medical doctor, you can't render any opinions based on a reasonable degree of medical certainty, true?
A. I -- I don't know what "reasonable degree of medical certainty" means.
But I would argue that a physician, anyone in the medical profession, would rely on the same scientific evidence that a toxicologist would, to

understand the association or potential association between exposure and disease.

Q. Medical doctors also have their training and experience to answer that question, too, don't they?

MS. McELDOWNEY: Object to the form.

A. I don't know what training or experience a medical doctor could have that would override the scientific evidence in existence.

Q. (BY MR. WALTERS) Okay. Well, what if a doctor had treated bunches of kids that lived close to a refinery that all had leukemia, do you think that would be training and experience that would be relevant to answering the question?

MS. McELDOWNEY: Object to the form.

A. I think it would give the physician an increased experience in treating childhood leukemia. But I do not think that would give the physician any insight as to the etiology of those children's disease.

Q. (BY MR. WALTERS) Do you think you, as a PhD, are more qualified to answer the question of reasonable degree of medical probability, than a doctor?

MS. McELDOWNEY: Object to the form.

If you can answer.

A. I'm not able to answer that because I don't know what "reasonable degree of medical probability" means.

But I will, again, state that it doesn't make any difference to me whether it's a physician, a surgeon, a hematologist, a toxicologist, an epidemiologist. The scientific data is what we should all be using to base an opinion of causation on.

Q. (BY MR. WALTERS) And that's it, just the medical literature, that's all that anyone should use in forming opinions on reasonable degree of medical probability?

MS. McELDOWNEY: Object to the form.

A. As I opposed to what?

Q. (BY MR. WALTERS) As opposed to their training, their experience, their understanding of biology.

A. Well, I think all of the training and experience and understanding of biology is going to go into their interpretation of the scientific data.

But in the absence of scientific data, I don't believe any of those are going to suffice for a basis to render an opinion on causation.

Q. Do you think there has to be reported scientific data for anyone to base an opinion about reasonable degree of medical probability?

A. Absolutely.

MS. McELDOWNEY: Object to the form.

Q. (BY MR. WALTERS) So what happens if a doctor does a study, and doesn't ever write anything up and get it published, do you think he ought to be able to rely on that data, or is it nonscientific, in your mind?

MS. McELDOWNEY: Object to the form.

A. I -- I would have to look at the specific report that you're referring to, to know whether I would consider it nonscientific.

Q. (BY MR. WALTERS) Well, do you think a doctor can -- do you think it's appropriate for a doctor to use his experience, as a reasonable scientific method for determining causation?

MS. McELDOWNEY: Object to the form.

A. In the absence of scientific data, no.

Q. (BY MR. WALTERS) So if I understand you correctly, you cannot render any opinions on whether or not, for example, a chemical causes a certain illness, unless someone has submitted a paper for peer-review publication?

MS. McELDOWNEY: Object to the form. That's not what he said.

A. You're going to have to reword -- or re-ask that question.

Q. (BY MR. WALTERS) Sure.

MR. WALTERS: Could you read it back,

please, Barb.

(Whereupon, the following portion of the record was read by the reporter:

"Question: So if I understand you correctly, you cannot render any opinions on whether or not, for example, a chemical causes a certain illness, unless someone has submitted a paper for peer-review publication?")

MS. McELDOWNEY: Same objection.

A. Unless a chemical causes a certain illness? I would fall back on the same answer that I've given you before, that in the absence of scientific data, it's going to be impossible to link those two.

Q. (BY MR. WALTERS) All right.

A. Now, whether or not it has to be peer-reviewed publication. But in the absence of any scientific data, someone saying, "I've seen this association, and therefore it's true," in my mind, is not scientifically valid.

Q. Do you know whether or not that's the standard for determining reasonable degree of medical probability?

MS. McELDOWNEY: Object to the form.

A. In my view, reasonable degree of medical probability is a legal term, and I do not know what your criteria is for that distinction.

Q. (BY MR. WALTERS) Now, this isn't the first illness from Sugar Creek that you've been asked to render an opinion on, correct?
A. That is incorrect.
Q. Well, were you aware that you were identified in a case that was set for trial last July by BP, the Bond case? Does that sound familiar?
A. No.
Q. Do you recall being consulted on whether or not benzene from the refinery in Sugar Creek caused a lady's acute myelogenous leukemia?
A. No.
Q. Do you know why BP would identify you as an expert in that case?
A. I'm trying to remember if I ever spoke with anyone about it. And I cannot remember ever talking to anyone about that case.
Q. You are of the opinion that benzene can cause acute myelogenous leukemia, correct?
MS. McELDOWNEY: Object to the form.
A. I am of the opinion that, under certain exposure conditions, and at high enough concentrations and exposures, benzene has been linked to the development of AML, yes.
Q. (BY MR. WALTERS) And there was a time in the

evolution of medical science where that wasn't even considered to be true, correct?

MS. McELDOWNEY: Object to the form.

A. I'm not sure how to answer that question.

Q. (BY MR. WALTERS) Now, you have given depositions on at least two prior occasions, is that correct?

A. Yes.

Q. Any more than two?

A. One more.

Q. All right. You gave testimony for Chevron in a case, correct?

A. I will remember it better if you mention the plaintiff and the disease.

Q. Wilkinson?

A. Yes.

Q. All right. And that was an individual who had non-Hodgkin's lymphoma, correct?

A. Yes.

Q. And the allegation was that benzene was the cause.

A. Yes.

Q. And you testified for Chevron in that case, true?

A. Correct.

Q. And then the other case was Radiator Specialty case? Do you recall that case?

A. Again, if you could mention the plaintiff.

Q. Stubbs, I think.
A. Well, that was really the same deposition. So at that point, they were combined.
Q. Okay. And then the Chevron case was Remboldt.
A. I actually was -- was representing US Oil in that case. I think there were many defendants. But, yes, I did provide deposition testimony in the Remboldt case.
Q. And that also was a case alleging that non-Hodgkin's lymphoma was caused by benzene, correct?
A. And/or petroleum products, organic solvents, yes.
Q. And what other case have you given deposition testimony on?
A. It was Barker vs. Keenan Transportation.
Q. Who were the lawyers on that case?
MS. McELDOWNEY: Lawyers for?
MR. WALTERS: Anyone.
MS. McELDOWNEY: Which party?
Q. (BY MR. WALTERS) How about Keenan Transportation?
A. Mr. Robert Gifford.
Q. Steptoe & Johnson?
A. Correct.
Q. And you were testifying for the defendant in that case?
A. Yes.

Q. What was the illness in that case?
A. AML.
Q. Was the allegation that benzene had caused AML?
A. The allegation was that gasoline exposure had caused that gentleman's AML.
Q. There's benzene in gasoline, correct?
MS. McELDOWNEY: Object to the form.
A. There are varying degrees of benzene in gasoline, yes.
Q. (BY MR. WALTERS) And was your testimony in that case on behalf of the defendant, that the AML was not caused by the exposure?
MS. McELDOWNEY: Object to the form.
A. My testimony in that case was that the scientific literature evaluating health effects of gasoline does not support an increased risk of AML.
Q. (BY MR. WALTERS) All right. Did you also include benzene in that analysis and testimony?
A. Well, it was not a benzene case. It was a gasoline case. And I think it's incorrect to assume that the benzene in gasoline is necessarily going to act the same way that pure benzene in the air will act.
Q. So it didn't matter to you that there was, in fact, benzene in gasoline. You concluded that he wasn't exposed to benzene?

MS. McELDOWNEY: Object to the form.

A. Well, I -- I would object to the characterization that it didn't matter to me. And I would refer back to my previous answer, that I evaluated all of the scientific evidence that I could, would have associated or looked at the health effects associated with gasoline exposure, and in my view, those were not supportive of an increased risk of AML in those workers.

Q. (BY MR. WALTERS) All right. So you looked very specifically at gasoline, as opposed to looking at the body of literature on benzene and AML?

A. Well, in this particular case, since there were epidemiological studies conducted on gasoline, I felt that was the most appropriate.

Q. Did you make any analysis to determine whether or not the plaintiff in that case, having been exposed to gasoline, had also been exposed to benzene?

A. Are you talking about a quantitative analysis?

Q. Quantitative, qualitative, any type of analysis.

A. Well, I think, by definition, that individual was exposed to benzene from his exposure to gasoline.

But I would argue that the epidemiological literature supports that either those people exposed to gasoline do not have a sufficient dose of benzene,

or there are complications in the toxicity of benzene due to the complex nature of gasoline, that it does not increase one's risk of developing AML.

Q. So you did consider in that case, that the plaintiff had, in fact, been exposed to some benzene in the gasoline.

A. Well, it -- I don't know how to answer that, other than the way I just did.

Q. Well, I'm trying to figure out how it is that -- that you're of the belief that benzene can cause AML, yet you're still testifying for defendants, against plaintiffs with AML, who have been exposed to benzene.

MS. McELDOWNEY: Object to the form.

A. Well, that's a grossly oversimplification of anyone's opinion on benzene and AML. Even if benzene can cause AML, it's going to be a dose dependent phenomenon, dose relationship, and there are going to be levels of benzene below which you're not going to see an increased risk of AML.

So just because benzene causes AML, doesn't mean that every AML is caused by benzene. That they pump gas in their car, and they are exposed to low levels. I don't believe that.

Q. That's this idea of a threshold, correct?

A. Well, you can argue a threshold, or not. But even if you don't agree there's a threshold, you're going to have doses below which you're not going to see increased risk.

Q. You believe, do you not, that this idea of there being a threshold for exposure to benzene, causing an illness, is a hotly contested issue.

MS. McELDOWNEY: Object.

A. I'm not sure I would characterize it as being a hotly contested issue, but I would characterize it as being debated in the scientific community.

Q. (BY MR. WALTERS) Well, didn't you write in your paper that the issue, I was using your terms, is hotly contested?

A. Not -- if that's my book chapter, then I would need to look at it. But, yes, if you're saying that's what I put in there.

Q. "Both sides of the threshold argument have staunch supporters, and currently the issue is hotly contested." That's what you wrote.

A. (Nodding head affirmatively.)

Q. Do you still stand by that statement, that the idea of there being a threshold is hotly contested?

MS. McELDOWNEY: If you want to look at the paper, you can.

A. Yeah, do you mind if I --
Q. (BY MR. WALTERS) Sure. Do you have an extra copy of it?
A. I don't. I didn't bring it.
But considering you just read from my chapter, yes, I would agree that that's what I wrote.
Q. The idea of a threshold is also related to the concept of whether or not there is individual susceptibility, would you agree with that?
MS. McELDOWNEY: I'm sorry. Can you read that question back?
(Whereupon, the following portion of the record was read by the reporter:
"Question: The idea of a threshold is also related to the concept of whether or not there is individual susceptibility, would you agree with that?")
MS. McELDOWNEY: Object to the form.
A. I'm not -- I don't understand your question.
Q. (BY MR. WALTERS) Sure. Do you know what a -- do you know what "individual susceptibility" means, in the context of whether or not a chemical causes an illness?
A. Yes.
Q. And does it mean that there may be some individuals

who are more susceptible to a given toxin, than others?

A. I think in a general sense, yes, that's what it means.

Q. All right. And that's a recognized scientific and medical principle, that some persons may be more susceptible to toxins than others.

A. I think it depends on the toxin and the illness, but, yes, I think that is becoming more and more accepted.

Q. And for example, adults versus children, there may be differences in susceptibility.

MS. McELDOWNEY: Object to the form. Susceptibility to any given toxin?

Q. (BY MR. WALTERS) In general, to toxins.

A. I believe there could be differences, age-related differences, in response to chemical exposure. I don't believe it's clear what direction those differences are going to go.

Q. Do you think children are more susceptible to toxins, in general, than adults?

A. That -- you have to be a lot more specific about what toxicant you're referring to, and what end point.

Q. Just in general. I'm talking --

A. I can't answer that in general.

Q. So as you sit here today, you do not know, under any

circumstances, whether children are more susceptible than adults to toxins?

A. That's not --

MS. McELDOWNEY: Object to the form. That's not what he said.

A. That's not what I said.

Q. (BY MR. WALTERS) All right. Well, do you believe, under any circumstances, a child can be more susceptible to a toxin than an adult?

MS. McELDOWNEY: Object to the form.

A. I think I understand what you're asking. And, yes, there are examples where children are more susceptible to toxins than adults. There are examples where children are less susceptible to toxins than adults. And there are plenty of examples where there doesn't appear to be any age-related effect. That's why I was hedging on your earlier question.

Q. (BY MR. WALTERS) The idea of individual susceptibility is an explanation for why all smokers don't get lung cancer, correct?

MS. McELDOWNEY: Object to the form.

A. I don't know enough about the pathology of cigarette smoking to be able to -- to get into that very deeply. But I would say, as a general matter, almost

as a matter of definition, you have a large population smoking. A few of those individuals get lung cancer. By definition, then, those individuals are going to be the ones that are most susceptible.

Q. (BY MR. WALTERS) Have you ever reviewed any of the epidemiological studies on cigarette smoking and lung cancer?

A. Only in a very, very general way, perhaps in a textbook.

Q. Would it surprise you that there are some epidemiological studies that did not find an association between lung cancer and smoking?

MS. McELDOWNEY: Object to the form.

A. I don't know whether that would surprise me or not, until I have reviewed that body of literature.

Q. (BY MR. WALTERS) If there were, in fact, multiple studies that did not find an association, in your mind, would that rule out cigarette smoking causing lung cancer?

MS. McELDOWNEY: Object to the form.

A. I'm not prepared to answer these questions on lung cancer and cigarette smoking, in that it's not terribly relevant to why I'm here, A; and B, I have not reviewed that literature.

Q. (BY MR. WALTERS) Well, just absent any review, just

as a general principle. You told me earlier that you rely on medical literature. If there's negative literature, in other words, studies that don't find an association, and there's studies that do find an association, is it your belief that if there are studies that don't find an association, then you can rule out cause and effect?

MS. McELDOWNEY: Object to the form.

A. No, I would not say that. I would say you have to look at the overall weight of the literature, you have to evaluate the strengths and weaknesses of the studies, look for internal, external consistencies, all the other parameters, and then evaluate the overall weight of the scientific data.

Q. (BY MR. WALTERS) Do you think bias plays a role in epidemiological studies?

MS. McELDOWNEY: Object to the form.

A. I'm not an epidemiologist, but I have certainly seen that as a criticism, as well as a potential problem with studies.

Q. (BY MR. WALTERS) Potential problem with studies. If an industry that has an interest in how the outcome comes out, if they are involved in that study, would you give that study less credence than if there was an independent person or group involved with the

study?

MS. McELDOWNEY: Object to the form.

A. I would not, in any circumstances, evaluate the credibility of a scientific study, based on where the money came from to do the study, without looking at the science and looking at the methodologies and looking at the study, itself.

Q. (BY MR. WALTERS) Now, you mentioned earlier that you were asked to evaluate the literature on NHL, and to also review the depositions, primarily of Dr. Landolph and Dr. Dahlgren, correct?

A. Yes.

Q. And you've reviewed, I think from Exhibit 1, other depositions, correct? Dr. Roberts' deposition?

A. Uh-huh.

Q. Pediatric hematologist, correct?

A. Yes.

Q. Any other depositions that you've reviewed?

A. There were two other. One was a -- well, they might both have been hematologists. Dr. Geier and Dr. Sirridge.

Q. Have you reviewed Dr. Emami's deposition?

A. I have not.

Q. And do you know that Dr. Emami was Justin's treating physician as a pediatric patient?

A. I recall seeing that in the medical records.
Q. And Dr. Sirridge is now Justin's adult treating hematologist. Are you aware of that?
A. I gathered that from his deposition.
Q. All right. And if both of Justin's treating physicians believed that his illness, non-Hodgkin's lymphoma, was caused by benzene from the refinery, you would disagree with both of them.
A. Yes.
Q. Now, I want to ask you some questions about your paper and about benzene, in general.

It's been recognized, has it not, for many years, perhaps more than 100 years, the potential human toxicity from exposure to benzene, true?
A. Yes.
Q. Sentence one of your paper, right? Correct?
A. That's -- yes.
Q. All right. So since it's been known for 100 years, would you expect companies who produce products that have benzene, to have been aware, as well?

MS. McELDOWNEY: Object to the form.

If you can answer.
A. That's not my area of expertise. And all I can tell you is what has been published in the scientific literature, and when I think those studies came out.

Who -- who read them, and what they did with that information, I do not know.

Q. (BY MR. WALTERS) Clearly, if anyone in the industry had wanted to go look, there would be literature observing the human toxicity of exposure to benzene for more than 100 years, true?

A. There have been studies for -- since -- I think, the first one was 1897. There have been studies in the published literature on the toxicity associated with benzene.

Q. And I know from reading your paper and your depositions, that you're very familiar with the possible pathways of exposure to benzene. Would that be a fair assessment?

A. (No response.)

Q. For example, there can be dermal exposure to benzene, right?

A. Dermal absorption of benzene is possible under certain exposure conditions.

Q. There can be oral exposure to benzene, probably drinking it, for example?

A. I wouldn't disagree with that.

Q. And there can also be inhalation exposure to benzene, true?

A. Inhalation exposure is, by far and away, the most

important and predominant pathway.
Q. And you write in your paper that it's the most common and clearly the most important, true?
A. You know, I don't remember every single word that I wrote in this. So if we're going to play that game, perhaps you could just refer me to the sentence, and then I can read the sentence.
Q. Page 533.
A. It sounds like what I just said, so I think we're okay on this one.
Q. Okay. And is it your understanding that -- with inhalation being the most important, what did you mean by that? Why do you think it's the most important?
A. Based on calculations, looking at internal dose, and in animal studies, et cetera, it just seems to be the predominant pathway. Dermal absorption of benzene, while it can occur, is considered to be a relatively minor pathway, particularly in occupational environments.
Q. Have you reviewed any reports, estimating the exposure, the inhalation exposure of Justin Detel in this case?
A. The only information I have read concerning quantitating or attempting to quantitate, would be

Stephen Petty's report.
Q. Okay. You read his report?
A. And I did not find it very reliable or enlightening.
Q. All right. Well, you're not an industrial hygienist, are you?
A. That's correct.
Q. And you're not a chemical engineer?
A. I am not.
Q. So whether or not, from a chemical engineering perspective, it was enlightening and helpful, you wouldn't know, true?
MS. McELDOWNEY: Object to the form.
A. I guess I would agree with that.
Q. (BY MR. WALTERS) And whether or not it's enlightening and helpful, from an industrial hygiene perspective, you're not an industrial hygienist and wouldn't be able to comment on that, true?
A. Yes, that's correct.
Q. So your point is, as a toxicologist, it wasn't enlightening and helpful to you?
A. As a toxicologist, this notion of trying to extrapolate from odors and smells, back to a quantitative exposure of gasoline or benzene, is extremely difficult to do, impossible perhaps, and very, very uncertain. So that's why I said it was

not reliable.

Q. Is it not true that, pound for pound, kids take in more air per breath than adults?

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

Q. What about transplacental exposure, is that a recognized exposure pathway for toxins?

A. You've got to be more specific with "toxins."

Q. If mom's breathing a toxin or ingesting a toxin, can that cross the placenta?

A. No, you have to be more specific about the toxin.

Q. I'm speaking in general. You tell me if you are aware of a toxin that can do that.

A. That can cross the placenta?

Q. Sure.

A. Sure. There's examples of maternal smoking, and they find cotinine levels in utero. So the metabolite of nicotine can cross the placenta.

There are studies in animals, however, that suggest benzene and/or its metabolites do not cross the placental barrier very well.

Q. All right. They can cross the placenta, though, correct?

A. I'm not sure to what extent, but they do not cross it very readily.

Q. Well, I'm not asking very readily." They can cross

the placenta?

MS. McELDOWNEY: Object to the form.

A. We would have to get out those studies and look and see if it's an absolute. My guess is it's not an absolute, but they do not cross it very readily.

Q. (BY MR. WALTERS) Are you aware in this case that Mrs. Detel was exposed to benzene during the pregnancy with Justin?

MS. McELDOWNEY: Object to the form. Is he aware that that's being alleged, or is he aware that that's a fact?

Q. (BY MR. WALTERS) Are you aware that that's a fact?

A. I am not aware that that's a fact. However, I would say, in the United States, that every woman who is pregnant is going to be exposed to some level of benzene because there is benzene in our background environment.

Q. All right. Well, do you think, based on Mr. Petty's estimate of Justin Detel's exposure, that he was exposed a little bit more than background?

MS. McELDOWNEY: Object to the form.

A. Well --

MS. McELDOWNEY: If you can answer that.

A. I just thought that I gave you my opinion on the reliability of Mr. Petty's exposure assessments. And

even if those numbers are correct, which I would seriously doubt, but even if you accepted those numbers as being the absolute truth, there is still no scientific evidence that supports benzene exposure at those levels, to the development of non-Hodgkin's lymphoma.

MR. WALTERS: All right. Well, I didn't ask you anything about that, so I'm going to move to strike.

Could you re-read my question again, please, Barb.

(Whereupon, the following portion of the record was read by the reporter:

"Question: Well, do you think, based on Mr. Petty's estimate of Justin Detel's exposure, that he was exposed a little bit more than background?")

MS. McELDOWNEY: Object to the form.

Q. (BY MR. WALTERS) Let me rephrase the question for you. If we assume Mr. Petty's estimate is reasonably reliable, Justin Detel's exposure was more than background, true?

MS. McELDOWNEY: Object to the form.

A. I'm not able to make that assessment because I do not consider it to be reliable. So in my view, I have not seen believable exposure estimates for Justin

Detel.

Q. (BY MR. WALTERS) All right. Well, I'm going to ask you, for purposes of my question, to assume that that exposure estimate is reasonably reliable, all right? Do you understand me at this point? I know you disagree with that. But assume with me that that exposure estimate is reasonably reliable. That's more than background, true?

MS. McELDOWNEY: Object to the form.

A. Well --

MS. McELDOWNEY: Do you just -- I'm sorry, Lon, do you want him to just assume that that's correct?

MR. WALTERS: That's exactly what I said.

MS. McELDOWNEY: No, you said "reasonably reliable," is where we're having some issues. Just have him assume that's correct.

Q. (BY MR. WALTERS) Let's assume it's correct.

A. All right. How about this: An individual that is exposed to 20, 21 ppm-years of benzene, that is higher than background exposure.

Q. Now, the reason -- well, let me get back to some of the things that you said in your paper. The reason that benzene is potentially harmful to humans is because it gets trapped in the bone marrow, true?

A. There is data to support that, yes.
Q. And your words were, and I'm looking on Page 533, "The bone marrow acts as a trap for benzene." Do you still stand by that statement?
A. That is documented in the scientific literature.
Q. This concept that benzene -- or that bone marrow can act as a trap for benzene.
A. Yes. This is not David Pyatt's research or David Pyatt's opinion. This is what is in the scientific literature.
Q. And you go on to state that, "Bone marrow is arguably the most important target organ," true?
MS. McELDOWNEY: Object to the form.
Q. (BY MR. WALTERS) Do you still agree that bone marrow is arguably the most important target organ of benzene toxicity?
A. Yes.
Q. And is that not true, because it is in the bone marrow where stem cells develop?
A. I'm not following -- it's true because we have observed, throughout our investigations of benzene toxicology, that it is a bone marrow toxicant.
Q. And bone marrow is where stem cells are formed, true?
A. That depends on your definition of a stem cell.
Q. All right. Well, where stem cells are formed in the

bone marrow?

A. Hematopoesis occurs in the bone marrow, so you're going to have hematopoietic progenitor cells and hematopoietic stem cells.

There are other stem cells that are not in the bone marrow. There are hepatic stem cells that are in the liver. So it depends on your definition of stem cell.

Q. I'm going to show you what I'm going to mark as Exhibit 2.

(Whereupon, Pyatt Exhibit No. 2 was marked for identification.)

Q. (BY MR. WALTERS) And ask you if this diagram fairly and accurately shows a cell lineage from a stem cell that's formed in the bone marrow?

A. And what is this cone-shaped device supposed to be?

Q. Well, are you aware that stem cells that form in the bone marrow, differentiate?

A. Yes.

Q. Okay. Well, does that illustration demonstrate the differentiation of a stem cell?

A. I still don't know what this cone-shaped device is. And are you -- is this an extenuation of the bone marrow, or is this diagram supposed to be illustrating that lymphoid progenitor cells are

differentiating in the bone marrow to mature lymphocytes?

Q. Let me see if I can explain it to you. Stem cell originates out of the bone marrow, correct? We can agree on that?

A. Yes.

Q. A stem cell differentiates into different cells, correct? Just in laymen's terms.

A. Yes.

Q. So this part of the illustration demonstrates that these -- this original stem cell differentiates, true?

A. If that's what that illustrates.

Q. All right. And out of this original stem cell, what differentiates, is cells that go to both the myeloid line and the lymphoid line, correct?

A. Depending on your definition of stem cell, yes.

Q. All right. Well, I'm talking now about a stem cell that's formed in the bone marrow.

A. Well, that is not a single thing. The stem cell that forms in the bone marrow, as you're putting it, is a very heterogeneic population. Some of them have the differential capacity to go lymphoid and myeloid, many do not. So it's going to depend on what your definition is of this stem cell.

Q. Well, I'm talking about a stem cell that forms in the bone marrow.
A. I am, too.
Q. Just in general, some stem cells that form in the bone marrow differentiate into lymphoid cells and myeloid cells.
MS. McELDOWNEY: Objection.
A. If all of this is suppose to be taking place in the bone marrow, then this is not accurate.
Q. (BY MR. WALTERS) All right. Where do you think this takes place, then?
A. Well, I know where it takes place. The B-cell lymphopoesis starts in the bone marrow, and at some point in their process it moves out of the bone marrow and goes into the peripheral lymphoid system.
The T-cell differentiation does not occur in the bone marrow at all.
Q. I didn't say that. The stem cell originates in the bone marrow.
A. But I asked you, does this whole sheet represent what occurs in the bone marrow, and you said, yes.
Q. Okay. Well, forget that. It occurs from a stem cell that originated in the bone marrow, true?
A. (No response.)
Q. Regardless of where it occurs in the body, it came

out of a stem cell out of the bone marrow.

A. Yes, yes.

Q. And that's the same --

A. It's this thing here that I'm not crazy about (indicating). And I don't know what this is.

MS. McELDOWNEY: And for the record, Dr. Pyatt is indicating the cone-shaped figure on the diagram.

A. Which doesn't have any biological relevance that I've ever seen.

Q. (BY MR. WALTERS) Well, if it's to demonstrate the differentiation, that would be an accurate illustration, wouldn't it? The stem cell differentiates?

MS. McELDOWNEY: Object to the form.

A. Well, that doesn't look like differentiation. And this is not conventional, the way hematopoietic -- this concept is -- there are hundreds of diagrams that illustrate this basic concept, where earlier stem cells differentiate and start moving down various lineages. And they are drawn with lines and growth factors and illustrations of the various steps in that process.

I don't know what this is. This would not indicate to me that this is differentiation. So I

would take issue with the way it's drawn.

But conceptually, it's right.

Q. (BY MR. WALTERS) And that's all I'm trying to get at. Conceptually, a stem cell that forms in the bone marrow, at some point it differentiates, some cells go to the lymphoid line, some cells go the myeloid line.

A. That's correct.

Q. And this bone marrow that you say acts as a trap for benzene, is where this stem cell originates, true?

MS. McELDOWNEY: Object to the form.

A. I think in the most general terms, that's correct.

Q. (BY MR. WALTERS) Now, moving on through your paper here, I want to see if you still agree with some of the statements you made. I'm looking at Page 535 under "Chronic." "There's a difference between chronic exposure to benzene and acute exposure to benzene," correct?

A. Are you asking me, or are we looking at specific words in my book chapter again?

Q. No, I'm asking you.

A. Okay. Well, maybe you could differentiate the two, and then I could recognize when we're playing the game of whether I said a thing in the paper, or whether you're asking me a straight question.

Q. Do you think we're playing a game here?
A. Well, perhaps that wasn't the best word, but I can't tell whether I'm supposed to be looking for a specific section in a paragraph, or answering a question.
Q. All right. Well, you'll always be answering a question, so that's going to be a given.

Do you know the difference between acute and chronic?

A. Yes.
Q. And acute -- you discuss in your paper, the differences between acute and chronic, correct?
A. Yes.
Q. All right. Chronic exposure refers to long-term exposure to benzene, right?
A. I'm --

MS. McELDOWNEY: Are you asking if that's what he believes, or if that's what wrote in his paper, or both?

MR. WALTERS: Would you read it again, please, Barb.

(Whereupon, the following portion of the record was read by the reporter:

"Question: Chronic exposure refers to long-term exposure to benzene, right?")

A. The EPA has definitions for what chronic exposure is. But, yes, that's what I was referring to in this paper.

Q. (BY MR. WALTERS) Okay. And you state, I want to ask you if you still believe this, that, "Toxicity associated with chronic long-term exposure to benzene is primarily limited to the hematopoietic or immune system."

A. Yes.

Q. You wrote that. Do you still believe that?

A. Yes.

Q. And how is it related to the immune system?

A. It is related to the immune system in a variety of studies in occupational workers exposed to benzene. There have been reports of lymphocytopenias, which are suppressions of the mature lymphocytes observed in the peripheral circulation.

Q. All right. How is it related to the hematopoietic system?

A. How --

MS. McELDOWNEY: Object to the form.

A. How is lymphocytopenia related to the hematopoietic system?

Q. (BY MR. WALTERS) No. Let me rephrase. How is the toxicity that you referred to here as chronic,

long-term exposure to benzene, how does it affect the hematopoietic system?

A. Well, depending on the exposure circumstances and the duration and extent of exposure, as I described in this chapter.

Q. Now, in reading either your paper or your deposition testimony, you're aware, are you not, that there are multiple leukemias or lymphomas that originate out of the lymphoid cell line?

A. Yes.

Q. For example, there's CLL, true?

A. Yes.

Q. You're familiar with that illness.

A. I am.

Q. You're familiar with ALL?

A. Yes.

Q. And, of course, you're familiar with NHL.

A. (Nodding head affirmatively.)

Q. True?

A. Yes.

Q. And those would all be illnesses that originate out of the lymphoid lineage, true?

A. That's correct.

Q. And as I understand it, you believe that when one is looking at cause and effect, those illnesses are

essentially semantics on whether or not there's any difference?

MS. McELDOWNEY: Object to the form.

A. I don't understand your question.

Q. (BY MR. WALTERS) Let me rephrase.

When one is looking to determine whether or not a toxin caused a particular illness, whether it's ALL, NHL or CLL, one can look at the literature for any three of those illnesses.

MS. McELDOWNEY: Object to the form.

A. There are literature that are describing each of those diseases. And, yes, that is the scientific literature that one would evaluate if one was trying to decide if a chemical could cause those diseases. I would not consider that a semantical distinction. I think that distinction is critical.

Q. (BY MR. WALTERS) Okay. Well, do you recall testifying in the Wilkinson case that, whether we call it NHL or CLL, it's all semantical, it really doesn't matter, based on the literature?

MS. McELDOWNEY: Object to the form.

Q. (BY MR. WALTERS) Do you recall --

A. I would have to look at the context that I said that.

Q. All right.

A. And I think my discussion at that point was whether

benzene was related to those diseases.

Q. So when one is looking at whether or not benzene is associated with NHL, do you believe that you can look at CLL's literature, you can look at ALL's literature, it really doesn't matter, based on the literature?

MS. McELDOWNEY: Object to the form.

A. You're going to have to ask that question again.

MR. WALTERS: Could you read that back.

(Whereupon, the following portion of the record was read by the reporter:

"Question: So when one is looking at whether or not benzene is associated with NHL, do you believe that you can look at CLL's literature, you can look at ALL's literature, it really doesn't matter, based on the literature?")

MS. McELDOWNEY: Same objection.

A. No, I don't believe that at all.

Q. (BY MR. WALTERS) Well, do you recall giving that testimony in the Wilkinson case?

A. Well, I think you're taking it out of context. And I would have to see what question was posed, and my response.

Q. Now, you, in your paper, and I'm going to start with CLL, you wrote a section on CLL, correct?

A. Yes.
Q. And that was in 2004 that this paper was published?
A. That's when it came out, yes.
Q. What was the purpose of this paper, by the way?
A. The editor of this book called me and asked me if I would write a review paper on benzene.
Q. And so essentially, what you did was go out and look at the published studies, epidemiological studies, on various illnesses and benzene?
A. Yeah, I think that's fair.
Q. And you also wrote a section on non-Hodgkin's lymphoma, correct?
A. Yes.
Q. And looking at Page 242 of your paper, looking at "Other Hematopoietic Malignancies, do" you see that section?
A. Uh-huh. Yes.
Q. Third sentence, you state, "A variety of other hematopoietic malignancies have been published in sporadic case reports and studies, with the authors attributing benzene as an etiologic factor." Did you write that?
A. Yes.
Q. So you know -- and then you cite to Table 3 where those illnesses are listed. What other authors have

attributed benzene as a factor, true?
A. There are studies out there that -- yes, that's true.
Q. There are studies out there where authors have attributed CLL to benzene, true?
A. I think I would say there are studies out there where authors have suggested that it was possible.
Q. Well, the words you used in your paper here were -- were, "There are studies with the authors attributing benzene as a factor." That's what you wrote, correct?
A. That is what I wrote.
Q. And you didn't say "suggesting." Your word that you used was authors "attributing" benzene.
A. That's correct.
Q. And one of the illnesses that you cite in your paper, that authors have attributed to benzene, is CLL, true?
A. But I'm trying to think of a study where that is true, and I cannot think of one.
Q. All right. Well, did you not put CLL, chronic lymphocytic leukemia, in Table 3 of your paper?
A. Well, yes, it's in the table. I -- I think perhaps the word "possible" may have been inserted -- should have been inserted into that sentence.
Q. It wasn't inserted, though, was it? The word you

used was "attributing."

A. That is what it says in this book chapter. But I cannot, sitting here today, think of a study where the author has definitely said CLL is associated with benzene exposure.

Q. Well, do authors have to definitively state something in order for you to conclude that there is a causal relationship?

A. Well, what the author says or doesn't say, is important. I read it. But what I pay the most attention to are -- are the data, the findings that they are putting in their study.

Q. Is it not a true statement that epidemiological studies are designed to look for associations?

MS. McELDOWNEY: Object to the form.

A. You would need to pose that question to an epidemiologist.

Q. (BY MR. WALTERS) Do you think epidemiological studies are designed to study cause and effect?

MS. McELDOWNEY: Object to the form.

A. I would respond the same way.

Q. (BY MR. WALTERS) All right. So when you read an epidemiological study, are you expecting, then, to either rule in or rule out cause and effect?

MS. McELDOWNEY: Object to the form.

A. Am I expecting them? Who is "them?"
Q. (BY MR. WALTERS) An epidemiologist.
A. The authors --
Q. Correct.
A. -- of the study.
Q. Yes.
A. What they rule in and rule out, I read it, and I think about it. But again, I'm more interested in what their data suggests.

And as far as a single study, no single study is going to be able to determine cause and effect. The causation argument is going to be made by the overall weight of the literature.

Q. Isn't cause and effect -- doesn't that have to be made on an individual basis?

MS. McELDOWNEY: Object to the form.

A. You're going to have to give me an example of what you're asking me.
Q. (BY MR. WALTERS) Well, isn't the best epidemiology can give us, is whether or not there's an association between a chemical and an illness?

MS. McELDOWNEY: Object to the form.

A. I would say that's true.
Q. (BY MR. WALTERS) All right. And there's a difference between an association, and whether or

not, in an individual case, there's causation.

MS. McELDOWNEY: Object to the form.

A. The only way that you can assess whether there's causation, is going to be reading and evaluating the scientific evidence addressing that specific question.

Q. (BY MR. WALTERS) Now, was -- you're familiar, because I've reviewed your box over there, with the Australian petroleum workers study, the Healthwatch?

A. I'm familiar with that, yes.

Q. All right. And that was a study, looking at some 300,000 refinery workers?

A. I don't recall the exact number.

Q. And that original study came out in 2001, did it not?

A. The -- the part of that study that I'm the most familiar with is the publication in 2003 that Deborah Glass published.

Q. All right. Well, were you aware that when the original Healthwatch in 2001 came out, that they found an excess of CLL in the petroleum refinery workers?

A. I have heard that, yes.

Q. You didn't cite that anywhere in your paper, did you?

A. I did not, because when she evaluated her data more thoroughly and came out with a peer-reviewed version

of that data, there was not an excess.

Q. You mean after industry sponsored a rewrite of that paper?

MS. McELDOWNEY: Object to the form.

Q. (BY MR. WALTERS) You're aware that industry sponsored a rework of that paper?

A. What I'm aware of is the published data does not report an increase.

Q. Are you aware of petroleum companies' involvement in those subsequent studies?

A. I'm not aware of that.

Q. We can agree, can we not, that under your section for CLL, you did not, not only not mention the 2001, but you didn't mention the 2003, either, did you?

A. The 2003 what?

Q. Well, industry's rewrite of the Australian petroleum workers study.

MS. McELDOWNEY: Object to the form.

Your characterization of the --

A. I did not include that in that section, no, but I was aware of it.

Q. (BY MR. WALTERS) Now, back to your Table 3 where you say that there are --

A. Hold on. Excuse me just a minute.

Q. Oh, sure. Just tell me when you're ready.

Ready?

A. Not quite.

Okay. What page were you on again? I'm sorry.

Q. I'm on Page 542. I'm looking, again, at your statement that authors have attributed benzene as a factor in various malignancies, okay?

A. Okay.

Q. So based on your statement here that authors have attributed benzene as a factor in CLL, if a medical doctor wanted to look at a study to determine whether or not benzene, you could find any author that has attributed benzene as a factor in CLL, you would agree that that would exist.

MS. McELDOWNEY: Object to the form.

A. Well, maybe you've worded it a little different, but it seems like we've already gone through this and I've already answered it.

Q. (BY MR. WALTERS) No. My question is if a medical doctor was taking care of a patient with CLL, and he found out that patient was exposed to benzene, if he wanted to go and look for a study that attributed benzene as a factor, he would be able to find such a study, based on what you've identified in your paper.

MS. McELDOWNEY: Object to the form. You

mean any study?

A. I think if he did a search, he would be able to find many, many studies that have not attributed benzene, that has specifically looked at that association, and not found it.

Q. (BY MR. WALTERS) Okay. But I didn't ask you that. I asked you if he wanted to find a study that found -- attributed benzene, as you state in your paper, as a factor in CLL, that would exist in the published literature.

MS. McELDOWNEY: Object to the form. And I assume you mean study, versus editorial, review paper, et cetera.

A. I -- I can't think of a study where the authors have said benzene caused an increase in CLL.

Q. (BY MR. WALTERS) Why did you include CLL, then, in Table 3, referring people to there, when you say that there have been published reports and studies with authors attributing benzene as a factor? Is that a misprint?

MS. McELDOWNEY: Object to the form. He said reports.

A. Well, considering the amount of time we've spent discussing this sentence, again, I wish that I had put the word "possible" in there, and I think that

would have been a more accurate representation.
Q. (BY MR. WALTERS) All right. So if a doctor -- let's just use that word, then. If a doctor wanted to find a study that possibly attributed benzene to CLL, he could find such a study?
MS. McELDOWNEY: Object to the form.
A. He could find studies where that was part of their original goal, was to see whether or not benzene exposure was linked to an increased risk of CLL.
Q. (BY MR. WALTERS) And he could find a study, if he went to the Healthwatch 2001, that found an excess of CLL in petroleum refinery workers.
MS. McELDOWNEY: Object to the form.
A. But the Healthwatch 2001 was not peer-reviewed and published. And when that data was re-evaluated and gone through the peer-review process, that excess went away.
Q. (BY MR. WALTERS) I didn't ask you that. I asked you if he went to the Healthwatch 2001 study, he would find an excess of CLL in petroleum refinery workers exposed to benzene.
MS. McELDOWNEY: Object to the form.
A. It would be inappropriate to form any kind of opinions based on that nonpublished data, when you have a published study two years later looking at

that same data.

MR. WALTERS: Move to strike as nonresponsive.

Q. (BY MR. WALTERS) Do you understand my question?

A. I don't think I do.

Q. All right. If a doctor, who is treating a patient that had CLL, and thought benzene might be a factor, if he walked over to his computer and opened up the Healthwatch 2001, he would read, would he not, that there was an excess finding of CLL patients in the petroleum refinery workers.

A. In that non- --

MS. McELDOWNEY: Object to the form.

A. In that nonpublished study.

Q. (BY MR. WALTERS) Correct.

A. Without looking at anything else.

Q. Correct.

A. Yes.

Q. Now, let's talk about NHL. You also, in Table 3, where you state there's been published reports and studies, "Authors have attributed benzene as a factor in NHL," correct? That's what you wrote in your paper?

A. Yes.

Q. So, again, if a medical doctor was treating a patient

who had NHL, and thought benzene might be a factor, he could go find studies that would attribute benzene to NHL.

MS. McELDOWNEY: Object to the form. That's not what the paper said. It says studies and reports.

A. There are certainly studies that have addressed the relationship between benzene and NHL. There are many, many of them. So that is true.

Q. (BY MR. WALTERS) Over under "Non-Hodgkin's Lymphoma" in your paper, Page 544 -- and I'm looking down at the third paragraph. Do you see that?

A. Yes.

Q. "Not surprisingly, benzene has been implicated as a potential etiologic agent in the search for environmental and occupational causes of NHL." Did I read what you wrote correctly?

A. Yes.

Q. And do you stand by that statement today in 2006?

A. Which part of this statement are you asking if I stand beside?

Q. The sentence.

A. That it's not surprising, or that benzene has been implicated as a potential, there have been searches? Yes, I mean, this is true.

Q. Okay. The word that you used was "it's not surprising," correct?
A. Yes.
Q. If there were no studies and no one had ever tried to implicate benzene with NHL, you would have used words like "surprisingly," right?
MS. McELDOWNEY: Object to the form.
A. Right. If there were no studies and no one had ever looked, I probably wouldn't have had a section in here.
Q. (BY MR. WALTERS) So it was not -- it's not surprising to you, those were the words that you used?
MS. McELDOWNEY: Object to the form. Asked and answered.
A. Well, I appreciate this discussion, but this -- fine. It was a book chapter.
Q. (BY MR. WALTERS) It was a book chapter, where you weren't surprised when you got to the NHL section, that people suggested that benzene might be a cause of NHL.
MS. McELDOWNEY: Object to the form.
A. That does not surprise me, no.
Q. (BY MR. WALTERS) And it doesn't surprise you because you're aware that there are reports in the literature

that are statistically significant, that have associated benzene with NHL.

MS. McELDOWNEY: Object to the form.

A. No, that, I would disagree with.

Q. (BY MR. WALTERS) There's not one study that is statistically significant, that's associated benzene with NHL?

MS. McELDOWNEY: Object to the form. Is that the question?

MR. WALTERS: Yes.

Q. (BY MR. WALTERS) You know there are, don't you?

MS. McELDOWNEY: Object to the form.

A. There -- there are studies that have found statistically significant associations.

Q. (BY MR. WALTERS) And, in fact, although I understand you disagree with it, you write, and refer to the Yen and Hayes paper, and your paper, when you say, "A study of Chinese workers exposed to benzene reported a statistically significant increase in NHL associated with duration of exposure, but not with model benzene air concentrations."

So that's an example of a paper that found a statistically significant association between NHL and benzene, true?

A. No, that is not an example, and I would disagree with

that.

Q. Why did you state, then, "A study of Chinese workers exposed to benzene reported a statistically significant increase..."? Did they report a statistically significant increase?

A. Yes, associated with duration of exposure, not with cumulative exposure to benzene. So, yes, they found an association with working in that environment. But they specifically looked at benzene and tried to associate that risk with cumulative benzene exposure, and it was not there.

Q. What they found was that there were 17 workers in the exposed group with NHL, and only three in the nonexposed group. That's what they reported, wasn't it?

A. I -- I don't know what you're looking at. And that is not what they reported.

And the Hayes '97 study that I was referring to in this paragraph, I have over there in a binder. And if we're going to discuss it any further, I would like to get it out.

Q. Okay. Do you disagree, then --

A. So I'm going to get it out?

MS. McELDOWNEY: Do you want -- do you mind if he gets the paper out so he can answer your

questions?

MR. WALTERS: Well, I can show him.

MS. McELDOWNEY: Is that the Hayes '97 paper?

Q. (BY MR. WALTERS) Am I reading this correctly? I'm looking at the Yen '96. Are you familiar with that report of the Chinese workers?

A. I have read it. But the '97 is the one that is the best reviewed and cited overall analysis of the results.

Q. Okay. Well, are you aware that the '96, the first one, found 17 NHL in the exposed group, and only three in the nonexposed group? Is that what they reported?

A. This environmental health perspectives was a summary. But I do recognize the relative risk of three, with a nonstatistically significant conference interval, so I don't think that's inaccurate.

Q. It's not inaccurate that they found 17 in the exposed group, and only three in the nonexposed group, correct?

A. Right. But they try to associate non-Hodgkin's lymphoma with benzene, based on cumulative exposure, and that association was not there.

MR. WALTERS: Move to strike as

nonresponsive after he answered the question, "Right."

Q. (BY MR. WALTERS) Now, was this only looking at mortality, or was this looking at diagnoses?

MS. McELDOWNEY: Object to the form.

A. I don't know the answer to that. I would have to pull it up and look. I think it was mortality.

Q. (BY MR. WALTERS) Was the Pliofilm study also looking at mortality?

A. Yes.

Q. Do you know what the survival rate is of non-Hodgkin's lymphoma?

A. I think that's going to depend on the type, and it's going to depend on the era of medical treatment that you're referring to.

Q. You are aware that patients survive non-Hodgkin's lymphoma?

A. Yes.

Q. Have you been provided any information on how many non-Hodgkin's lymphomas that at least we're aware of, where the individuals lived or played near the Sugar Creek refinery?

A. Say that again.

Q. Sure.

Have you been provided any data on how many

non-Hodgkin's lymphomas exist in the Sugar Creek area?

A. I have read a report from the Missouri Department of Health that evaluated leukemia and other -- well, it was leukemia specifically, and brain cancer, in that study, looking at the -- this community.

Q. If Pliofilm and other epidemiological studies don't count persons with -- who are diagnosed with non-Hodgkin's lymphoma who have survived, that would affect the analysis, would it not, on whether or not there's an association between benzene and NHL?

MS. McELDOWNEY: Object to the form.

A. If it didn't show up in the follow-up -- I mean, it's possible.

Q. (BY MR. WALTERS) Because if you're only counting people that have died, and there's a bunch of people with non-Hodgkin's who were exposed and have lived, they obviously wouldn't be counted in that study, right?

MS. McELDOWNEY: Object to the form.

A. It's impossible for me to say how that would affect the overall study results without knowing what the survival rate was, and type. But conceptually, I think that's correct.

Q. (BY MR. WALTERS) Okay. I'm going to show you what

I'm going to mark as Exhibit 3.

(Whereupon, Pyatt Exhibit No. 3 was marked for identification.)

Q. (BY MR. WALTERS) And ask you if you have ever seen this paper, looking at -- it's a case-control study, looking at workers at Union Oil Company in California. Have you ever seen this study before?

A. Yes.

Q. And let me draw your attention and ask you if you -- I think you agree with what they pointed out in this study. And by the way, were you aware that they found an excess of non-Hodgkin's lymphoma in their workers?

MS. McELDOWNEY: Object to the form.

A. Yes.

Q. (BY MR. WALTERS) And this -- they state, and I'll ask if you agree with this, "The NHL series is large enough to be informative, but it includes only diseased NHL cases. It is likely that other Unocal employees have developed NHL, that are still surviving. Such persons are not included in this study. Thus, associations between work history and NHL may be distorted by factors related to survival."

Do you agree that associations between work history and NHL can be distorted if we're not

counting people that have been diagnosed, but don't die?

MS. McELDOWNEY: Object to the form.

If you can answer.

A. I think we just discussed that.

Q. (BY MR. WALTERS) All right. And they sort of memorialized in this study, what I think we agreed to, true?

MS. McELDOWNEY: Object to the form.

A. Depending on the numbers, yes, it's possible. There are a variety of refinery studies that have looked at SIR, the incident rate, as well, and they have not seen an increase in the incidence of non-Hodgkin's. So not all the literature is strictly related to mortality.

Q. (BY MR. WALTERS) Now, the Chinese study, this table here that we were looking at earlier, also looked at ALL, correct?

A. That, I'm not readily familiar with.

Q. Well, do you have any reason to disagree that they reported finding five cases of ALL in the exposed group, and only one in the nonexposed group? Do you have any reason to disagree with those findings?

MS. McELDOWNEY: Object to the form.

A. I -- that is what it says on this page.

Q. (BY MR. WALTERS) Now, you also cite in your paper, another study of Swedish seaman that reported a significant increase in NHL associated with benzene exposure. You cited that paper in your chapter, correct?
A. Yes.
Q. And I want to show you, and we'll mark as Exhibit 4 -- and you can feel free to refer to a copy of that paper.
(Whereupon, Pyatt Exhibit No. 4 was marked for identification.)
Q. (BY MR. WALTERS) Is Exhibit 4 what you cited in your study?
A. The Nilsson study? Yes.
Q. Now, I'm looking at the front page. Do you have any reason to disagree with their finding? And again, this was looking at, what? Ship seaman who were exposed to gasoline vapors?
A. It does not specify what they were exposed to. Chemical or product tanker is the description.
Q. Well, do you see under "Conclusions," "Seamen exposed to cargo vapors from gasoline and other light petroleum products..."?
A. "...on chemical or product tankers..." So there could have been a variety of exposures.

Q. All right. But they were exposed to gasoline and other petroleum products, true?
A. At least part of the time.
Q. All right. And what they found, and I'm looking up above that, that the odds ratios were increased for both lymphoma and multiple myeloma, true?
MS. McELDOWNEY: Object to the form.
Q. (BY MR. WALTERS) Were the odds ratios reported in this study, increased for those workers exposed to benzene, in both lymphoma and multiple myeloma?
A. There was a nonstatistically significant increase in non-Hodgkin's lymphoma in the 1960 cohort, and it was increased in the 1970 cohort.
Q. And it was statistically significant in that cohort, correct?
A. That's correct. But there was no increase in this study in leukemia increase.
Q. So what we have here, and I'm looking at Table 1 on Page 518, that in the 1970 cohort, they had 3.3 times as many non-Hodgkin's in the exposed group, as in the unexposed group, correct?
A. That is what they are reporting, yes.
Q. And in the 1960 cohort of their workers exposed to benzene, they had four times as many, true? That's what they reported?

A. They had an odds ratio of 4, yes.
Q. And the 1970 study was statistically significant, correct?
A. It is.
Q. So again, if we had a physician that was treating a patient for non-Hodgkin's lymphoma that had been exposed to benzene and wanted to find out if there was any support in the medical literature for a relationship, the Swedish seaman study would support that relationship?
A. No.
MS. McELDOWNEY: Object to the form.
A. Absolutely not, it wouldn't support that. There's no mention -- it's not benzene. It's gasoline or petroleum products or whatever else is carried on these chemical tankers. And with a non- -- no increase in the leukemias incidence, I think that would argue that it doesn't have anything to do with benzene.
Q. (BY MR. WALTERS) All right. Let's limit it to gasoline. If a doctor had a patient that was exposed to gasoline, and wanted to see if there was any relationship between gasoline and NHL, he could go to this study and find that there was a statistically significant relationship, correct?

MS. McELDOWNEY: Object to the form.

A. I would argue the same, that it doesn't specify that that is the only thing that was carried on these tankers.

Q. (BY MR. WALTERS) Well, when you reported in your paper, looking at what you said, you used the word "benzene exposure," didn't you? And I'm just going to read for the record. "A second study also reported a significant increase in NHL associated with benzene exposure." Those were your words, correct?

A. Yes.

Q. That's what you wrote in 2004?

A. Yes.

Q. Is that another example of where maybe you would, in 2006, want to have used different words?

MS. McELDOWNEY: Object to the form.

A. Yes, I would not consider this study very strong evidence, linking non-Hodgkin's lymphoma and benzene.

Q. (BY MR. WALTERS) That's your testimony on behalf of BP in 2006, correct?

A. That's my testimony as a professional toxicologist, reading this paper, sitting here at this table.

Q. Well, were you a professional toxicologist in 2004?

A. Yes.

Q. And in 2004, you had yet to provide any expert witness testimony for oil companies, correct?

MS. McELDOWNEY: Object to the form.

A. I think that's true, yes.

Q. (BY MR. WALTERS) Had you received any grant money to do any work by the API in 2004?

A. I -- no, I have not.

MR. WALTERS: Why don't we take a break.

(Brief recess taken.)

Q. (BY MR. WALTERS) Doctor, do you know how it was that BP found their way to you to consult with on this case?

A. I do not know how -- I mean, I can tell you how I was originally contacted, but I can't tell you what happened prior to that.

Q. Okay. How were you originally contacted?

A. One of the partners in the firm, Phil Rothbart, called me up on the phone and asked if he could meet with me.

Q. And did you meet with him?

A. Yes.

Q. When did that occur?

A. I'm thinking the very end of 2005, but it might have been early winter 2006.

Q. Had you heard anything about Sugar Creek or the

refinery there, prior to that time?
A. Not to my recollection, no.
Q. Have you been to the site?
A. I have not.
Q. What is your understanding of what kind of pollution is out at Sugar Creek from the refinery?
MS. CIPOLLA: Object to the form.
I'm sorry. Can you just read back the question again?
(Whereupon, the following portion of the record was read by the reporter:
"Question: What is your understanding of what kind of pollution is out at Sugar Creek from the refinery?")
A. I have seen discussion of an underground -- or a plume under -- under the refinery.
Q. (BY MR. WALTERS) I think you mentioned earlier in the deposition, that you have, in fact, reviewed documents relating to the site. Would that be true?
A. I told you what I've reviewed. I read Stephen Petty's report, but not -- you know, pretty superficially.
Q. Were you provided any internal documents from BP about what kind of releases the refinery had of petroleum products over the years?

MS. McELDOWNEY: Object to the form.

A. I was not provided any internal documents, no.

Q. (BY MR. WALTERS) Were you made aware, in any form, that there were time periods when the creek in Sugar Creek was flowing 25 percent gasoline?

A. I was not made aware of that, no.

Q. Now, other than British Petroleum, you've worked for other oil companies before, correct?

A. Yes.

Q. And you've been hired by Shell in the past, correct?

A. Through a law firm, yes.

Q. And what other oil companies, besides Shell and BP, have you been hired by?

A. I think --

MS. McELDOWNEY: Object to the form. I'm sorry. Have you been -- the question was -- could you restate it?

Q. (BY MR. WALTERS) Have you been hired to do work for any oil company, other than BP and Shell?

A. I was involved in -- we discussed a case earlier, Remboldt, and it was US Oil.

Q. Any others?

A. I think you mentioned Chevron as one of the defendants in the Wilkinson case.

Q. All right. So we have Shell, BP, US Oil, Chevron.

Any other oil companies?
A. Not -- not to my recollection, no.
Q. Now, as I understand it from your previous testimony, but I want to make sure that's not changed, you've provided testimony on behalf of a plaintiff in a benzene exposure case, correct?
A. I have never been asked, and I have never provided testimony.
Q. You've never provided a report for a plaintiff in a benzene exposure case, correct?
A. That -- same answer.
Q. Other than this case, are you currently retained to consult with, on any other cases for British Petroleum?
A. No.
Q. Are you currently retained in any benzene cases for Shell?
MS. McELDOWNEY: Other than the ones we already -- or may have talked about?
MR. WALTERS: Correct.
A. No.
Q. (BY MR. WALTERS) Now, you mentioned earlier that you found Mr. Petty's reliance on odor, unreliable. Is that your testimony?
A. Yes.

Q. Have you been provided any reports from Shell where they, in fact, relied on odor in performing estimate assessments?
A. No.
Q. Would it surprise you that Shell Oil, in fact, referred to a study as state of the art, where they used odor thresholds, odor recollections, to determine exposure estimates?
MS. McELDOWNEY: Object to the form.
A. Are you asking me if I would be surprised, or are you asking me if I've seen that study?
Q. (BY MR. WALTERS) Would you be surprised? I know you haven't seen it. You testified you hadn't seen it.
MS. McELDOWNEY: Object to the form.
A. I -- I don't know how -- I don't know whether I would be surprised or not surprised.
Q. (BY MR. WALTERS) Now, working with Shell, I'm sure you're familiar with the Marsh study, correct?
A. I've reviewed that study. I don't have the specific numbers on the top of my head.
Q. All right. Well, are you aware that the Marsh study performed by Shell, found an increased number of non-Hodgkin's lymphoma in their chemical plant workers?
A. I would have to pull that study out. I have it in

one of the binders over there.
Q. Now, you are currently doing work for API, correct?
A. Yes.
Q. And that stands for the American Petroleum Institute?
A. That's correct.
Q. What is the American Petroleum Institute?
A. Well, I'm probably not the right person to ask that. My understanding is that it's a trade organization, of which petroleum companies are members.
Q. And when were you hired by the American Petroleum Institute?
MS. McELDOWNEY: Object to the form.
A. I -- I don't recall the exact date. Sometime this past year, year and a half.
Q. (BY MR. WALTERS) And what were you asked to do by the American Petroleum Institute?
A. I was asked to help with the children's risk assessment for benzene, through the VCCEP program.
Q. The VCCEP program, is that a program sponsored by the Chemical Manufacturers Association?
A. It is a program sponsored by the US EPA.
Q. You were involved and asked to participate, based on grants from the Chemical Manufacturers Association, correct?
MS. McELDOWNEY: Object to the form.

A. I'm -- I'm not following your question.
Q. (BY MR. WALTERS) Well, how are you being paid to participate in this children's risk study?
A. Yes, the payment was coming through CMA, but my original involvement was through API.
Q. Is API paying for it, as well?
A. API paid for a portion of it. CMA paid for a portion of my involvement.
Q. Is that study done?
A. The risk assessment? Yes, we presented it to EPA in June. It's available online.
Q. Now, BP is a part of the American Petroleum Institute, correct?
A. That's my understanding, yes.
Q. Do you know whether or not industry trade organizations have an interest in the outcomes of benzene studies?
MS. McELDOWNEY: Object to the form.
A. You'll have to define "an interest in the outcome."
Q. (BY MR. WALTERS) Well, do you think that --
A. They are interested in the study, or they wouldn't sponsor the study.
Q. Do you think they have an interest in a study outcome?
MS. McELDOWNEY: Object to the form.

If you can answer.

A. I -- I don't know what you mean by that.

Q. (BY MR. WALTERS) Well, do you think the petroleum industry is happy when papers come out associating benzene with illnesses?

MS. McELDOWNEY: Object to the form.

A. I can't answer for API.

Q. (BY MR. WALTERS) Well, answer for yourself, Mr. Pyatt. Based on what you know, and just common sense, do you think companies that sell products with benzene in them are thrilled when studies come out associating benzene with an illness?

MS. McELDOWNEY: Object to the form.

A. I can only answer for the product -- the studies that I have conducted. And my conclusions were my own, based on the literature. There was no influence from the funding source as to my interpretation of the data.

And I am a doctor, by the way.

Q. (BY MR. WALTERS) You're a medical doctor?

A. No. But I have a PhD in toxicology.

Q. Do you prefer to be called Dr. Pyatt?

A. I would prefer that over Mister, yes.

Q. Okay. I'm a doctor, too. You can call me Lon.

MS. McELDOWNEY: I'm a doctor. Me, too.

Christin, too.

A. Well, you can call me David.

Q. (BY MR. WALTERS) Now, you're aware, are you not, that API has sponsored other projects, looking at, or relooking at, data on benzene exposure, correct?

MS. McELDOWNEY: Object to the form.

If you know.

Q. (BY MR. WALTERS) And specifically I'm talking about the Pliofilm studies. You're familiar with the Pliofilm studies, correct?

A. I am.

Q. And Renske's paper was the original Pliofilm, was it not?

A. I don't think that's right. I think, actually, Peter Infante published sort of a preliminary report in 1977.

Q. All right. And in your preparation for this case, did you review the Pliofilm study to see what they had to say about non-Hodgkin's lymphoma?

A. Yes.

Q. All right. And is it not true that the original Renske paper on Pliofilm did not mention non-Hodgkin's lymphoma?

A. I would have to go back and specifically relook at all the language in these studies.

Q. Are you familiar with Mary Paxton's '96 paper on Pliofilm?
A. I'm familiar with Mary Paxton's two papers in '94. If this is another environmental health perspective summary paper, I'm not as familiar with that. But I have it, and I can get it.
Q. Were you aware, and I'm just reading from this paper, that the reanalysis of the Pliofilm cohort was conducted for the American Petroleum Institute?
MS. McELDOWNEY: Object to the form.
Your question is, is he aware that's what the paper says?
Q. (BY MR. WALTERS) Are you aware that the reanalysis done by Ms. Paxton was conducted for the American Petroleum Institute?
A. I did not know the source of -- I think she's a doctor, as well, but I do not know the source of her funding.
Q. Are you familiar with the reanalysis that Kenny S. Croup -- Crump --
A. Crump (pronouncing KRUMP)? I've read it, yes.
Q. Were you aware that support for that work was provided by the Western States Petroleum Association?
MS. McELDOWNEY: Object to the form.
A. I did not know the source of Dr. Crump's funding.

Q. (BY MR. WALTERS) Let me ask you, do you think this is appropriate. He states down at the bottom that, "Appreciation is expressed to members of the benzene task force of the American Petroleum Institute for their review and suggestions." Do you think it's appropriate for a trade organization for oil companies to review and give suggestions to what's supposed to be an independent analysis of a cohort?

MS. McELDOWNEY: Object to the form.

If you can answer.

A. I don't think giving suggestions as to -- I don't know what they did. I don't know what kind of input they provided to Dr. Crump. But if it's editorial or organizational of the paper, no, I don't find that inappropriate at all.

Q. (BY MR. WALTERS) Do you think that raises the index of suspicion that there might be bias in a paper when a petroleum trade organization has reviewed and given suggestions to the author?

MS. McELDOWNEY: Object to the form.

A. I think that's going to depend on who the observer is that you're talking about.

Q. (BY MR. WALTERS) We have no idea what the suggestions were, do we?

A. I -- I don't have any idea what the suggestions were.

Q. Does it cast suspicion, in your mind, on reanalysis of data, when the petroleum institute is involved?

MS. McELDOWNEY: Object to the form.

A. It does not. And I've seen other things that Kenny Crump has done, and I think he is an excellent scientist.

Q. (BY MR. WALTERS) Do you think the tobacco industry had any involvement in some of those studies that we discussed earlier that didn't find an association between cigarette smoking and lung cancer?

MS. McELDOWNEY: Object to the form.

A. I do not have any idea.

Q. (BY MR. WALTERS) That's a fair analogy, isn't it? Tobacco companies to smoker studies, petroleum companies to benzene studies?

MS. McELDOWNEY: Object to the form.

A. I -- I can't answer that question.

Q. (BY MR. WALTERS) Are you doing any other work for the American Petroleum Institute?

A. Other than what?

Q. Other than what we've already discussed.

A. I -- I have one other project with them.

Q. All right. And what project is that?

A. A literature review on the etiological factors in childhood leukemia.

Q. Have you begun work on that project?
A. I have collected piles of literature.
Q. How much --
A. Yes, I've -- yes, I've begun work on it.
Q. How much are you being paid for that work?
A. That's actually confidential.
Q. But you are being paid by API for that work?
A. I am being paid for my time, yes.
Q. How much have you been paid by BP for your work in this case?

MS. McELDOWNEY: Lon, I don't know if we've actually paid any of his invoices, but we've brought them today, if you want his invoices that he submitted to date.

Q. (BY MR. WALTERS) What's the total dollar figure of the invoices that you've submitted to date?
A. I can --

MS. McELDOWNEY: You can go look at the invoices.

A. I can get them out. It's about $10,000.
Q. (BY MR. WALTERS) Do you have additional work to invoice?
A. This does not -- yes, but I have not summed that up.
Q. What's your hourly rate?
A. My hourly rate is $220 an hour.

Do you want these?

Q. Sure.

A. (Handing document.)

Q. Were you consulted to help the lawyers prepare deposition questions for any of the plaintiffs' experts?

A. I was not.

Q. I may have asked you this earlier. I apologize if I did. Are you doing any other work of any kind for BP? Medical, legal or otherwise?

A. No.

Q. Are you a shareholder?

MS. McELDOWNEY: Object to the form.

A. Am I shareholder in BP?

Q. (BY MR. WALTERS) Yes.

A. Well, probably. I have some mutual funds that I suspect, somewhere along the line, they may own shares in various -- I don't own any shares in BP directly.

Q. Are you familiar with -- now, API, American Petroleum Institute, that you've done work for, they have put out some toxicological reviews. Are you familiar with those?

A. Vaguely.

Q. All right. I want to show you what we'll mark as

Exhibit 5.

(Whereupon, Pyatt Exhibit No. 5 was marked for identification.)

Q. (BY MR. WALTERS) The 1960 API toxicological review on benzene, have you seen that publication?

A. I have seen this, yes.

Q. I want to ask you some questions about this publication, and ask you if you agree or disagree.

I'm looking over at Page 3, under "Chronic Effects," second paragraph. "The toxic action is exerted mainly on the hematopoietic system." Do you agree with that?

A. I do agree with that, Mr. Walters, but I'm not finding where you are on the paper.

Q. (Indicating.)

A. Okay.

Q. "It may take months or even years to show harmful effects." Do you agree with that?

MS. McELDOWNEY: Object to the form.

A. Well, I think that could be a little more specific. It's going to depend on which harmful effects you're referring to, but --

Q. (BY MR. WALTERS) That's the concept known as latency, correct?

A. Yes.

Q. And as I understand it, it's a recognized scientific principle that persons chronically exposed to benzene, may not show the harmful effects for many years, true?

MS. McELDOWNEY: Object to the form. Exposed to benzene?

MR. WALTERS: Correct.

A. It's going to depend on the -- the end point that you're referring to.

Q. (BY MR. WALTERS) Now, over on Page 4, second column, "Various individuals differ in their bone marrow response to benzene." Do you agree with that statement?

A. Yes.

Q. And that's the whole discussion we had earlier about individual susceptibility?

A. Correct.

Q. So it appears that the American Petroleum Institute knew, at least by 1960, that persons exposed to benzene might have different responses.

MS. McELDOWNEY: Object to the form. If you know.

A. I mean, this is an API document, so since it's in there, yes.

Q. (BY MR. WALTERS) Last thing on this paper, Exhibit

5, Page 5, under "Precautionary Measures."

A. Yes.

Q. Before we get to that, do you agree that benzene is a chemical that should be dealt with in a safe manner, as a general rule?

MS. McELDOWNEY: Object to the form.

A. You need to be more specific. What benzene are you referring to?

Q. (BY MR. WALTERS) Products that contain benzene. I mean, benzene is a recognized carcinogen by multiple organizations, correct?

A. Yes.

Q. OSHA recognizes it as a carcinogen, true?

A. Yes.

Q. IARC recognizes it as a carcinogen?

A. Yes.

Q. Even the American Petroleum Institute recognizes it as a carcinogen.

A. Yes.

Q. So when you have a product that is a recognized carcinogen, do you believe that it should be handled in a safe and prudent manner?

MS. McELDOWNEY: Object to the form.

A. Well, I think that -- that "safe and prudent manner" is going to depend on the concentration of the

benzene that is in the product.

Q. (BY MR. WALTERS) Do you agree with this statement, I'm looking at the last paragraph on Page 5, second column, "The concentration of benzene vapor in the air should be checked regularly in locations where the possibility of excessive exposure may be encountered." Do you agree with that statement?

MS. McELDOWNEY: Object to the form.

A. I'm not an industrial hygienist, but I would not disagree with this.

Q. (BY MR. WALTERS) Are you familiar with the 1948 API toxicological review on benzene?

A. Vaguely.

Q. Okay. Were you aware that it was prepared by professor Philip Drinker? Does that name sound familiar to you?

A. I have seen that name before. I don't have a copy of that.

Q. All right. Were you aware that Professor Drinker, who prepared a toxicological review for API, is the same Dr. Drinker that Stephen Petty relied on in making his benzene estimates for Justin Detel?

A. I noticed the study that he referred to as the Drinker study.

Q. Ask you if you agree with this statement from the

1948 API toxicological review. "Inasmuch as the body develops no tolerance to benzene, and as there is a wide variation in individual susceptibility, it is generally considered that the only absolutely safe concentration for benzene is zero." Do you agree with that statement?

A. I --

MS. McELDOWNEY: Object to the form.

A. I would have to disagree with that statement.

Q. (BY MR. WALTERS) Why?

A. Because I believe there are concentrations that are safe.

Q. What concentrations are safe?

A. One part per billion is safe.

Q. Is that safe for everybody?

A. Yes.

Q. Is that safe for a fetus?

A. Yes.

Q. How do you know?

A. There's no evidence to the contrary.

Q. So how do you square that with individual susceptibility?

MS. McELDOWNEY: Object to the form.

A. I don't need to square it with individual susceptibility. This notion of individual

susceptibility, if you look at the Pliofilm cohort and the population of workers that were exposed, the individuals that developed leukemia, by definition, are the susceptible individuals.

Q. (BY MR. WALTERS) All right. And --

A. So the doses -- the concentrations of benzene that were associated with an increased risk of AML, that is the concentration of benzene that is toxic to the susceptible individuals.

Many people in that cohort had no toxicity associated with whatever their exposures were. It may not have been exactly that, but --

Q. Well, how do you know that the guys or girls who got leukemia in Pliofilm, wouldn't have got leukemia with a lower dose?

A. Well, because there were individuals that were exposed to lower levels.

Q. But if they are not the individuals -- if they are not the susceptible population, that wouldn't help, would it?

MS. McELDOWNEY: Object to the form.

A. The enzymes -- the enzymatic systems that have been identified as increasing or decreasing or changing one's susceptibility to benzene, have been -- are being identified.

Q. (BY MR. WALTERS) Well, but my question --
A. And they are not that rare.
Q. My question was, in the Pliofilm studies, if the susceptible population got leukemia at a certain dose, then how can you say, or anyone say, that a lower dose would have given them the same response, leukemia?
A. What I'm saying is, --
MS. McELDOWNEY: Object to the form.
A. -- in the lower concentration dose, which is actually a larger population, those genetic polymorphisms were expressed in other individuals that did not develop AML.
Q. (BY MR. WALTERS) My question is, though, isn't it possible that the persons in Pliofilm who got leukemia at a certain dose, would have got leukemia at even a lower dose? That's a possibility, isn't it?
MS. McELDOWNEY: Object to the form with regard to your use of the word "possibility."
If you can answer that as a scientist.
A. I can't answer that.
Q. (BY MR. WALTERS) All right. And if you can't answer that question, then how can you say that there's an odor -- that's a dose threshold?

A. That's evident in every study that's out there, that there is a dose of benzene below which you don't see an adverse effect.

Q. But in every study out there, how do you know that whoever got leukemia at, let's say 50 parts per million, wouldn't have got it at 10 parts per million?

A. Because there are large populations of individuals exposed to 10 parts per million, that did not -- using your example, that did not have an increased risk. So you're assuming that that individual that got leukemia has this totally unique profile that makes him uniquely susceptible, and that's not going to be expressed in anyone else. And I'm saying that's total hypothetical, and it's not supportable by what we know about these polymorphisms.

Q. You cannot state in any study, that a person who got leukemia from benzene, wouldn't have got the same leukemia at a lower dose, true?

MS. McELDOWNEY: Object to the form.

A. That is too speculative for me to answer.

Q. (BY MR. WALTERS) You would agree that it's a possibility, would you not?

MS. McELDOWNEY: Object to the form as to the use of the term "possibility."

A. The only way I can address any question like that, is to refer back to the scientific literature. And at those lower doses there are many studies that do not support an increased risk of AML. That's the only way I know how to address that question.

Q. (BY MR. WALTERS) Now, you have reviewed some medical literature, have you not, looking at exposures to chemicals and the risk of childhood leukemia?

A. Yes.

Q. And are you familiar with the Shu study, a population-based case-control study of childhood leukemia in Shanghai?

A. Yes.

Q. And you would agree, would you not, and I'll show you the study if you need to, that they found a significantly associated maternal exposure to gasoline with ALL?

A. I will need to see the study.

MR. WALTERS: Let's mark this as Exhibit 6.

(Whereupon, Pyatt Exhibit No. 6 was marked for identification.)

Q. (BY MR. WALTERS) And I'm looking up in the abstract section.

A. So, no, based on my understanding of this study, and looking at Tables 7 and 8, I would not agree with

your assessment.

Q. All right. Would you agree with the authors' assessment, then, when they state, and I'm looking at Page 640, the last sentence before "Discussion," "The risk of ALL also was elevated when mothers were exposed to gasoline with the odds ratio of 1.7, or pesticides with an odds ratio of 3.5"? Do you agree with the authors' assessment that the ALL is elevated when mothers were exposed to gasoline?

A. Those numbers are correct.

Q. And those numbers show that the risk of ALL, as the author states, was elevated when mothers were exposed to gasoline, true?

A. In a nonstatistically significant manner, yes, they were elevated.

Q. Are you aware, from your review of the information on this case, that Justin Detel's mom was exposed to gasoline from the refinery?

MS. McELDOWNEY: Object to the form. Was he aware it's being alleged, or is he aware that's a fact?

MR. WALTERS: Either.

A. I -- I am aware that it's being alleged.

Q. (BY MR. WALTERS) All right. And so if a physician, for example, Dr. -- or any doctor of Justin Detel's,

or any other patient, wanted to find out if mom's exposure to gasoline might elevate the risk of ALL, this paper would support that conclusion, would it not?

A. Well, I -- I don't know how every doctor would interpret this data. But I would hope that a doctor would look at this and say, well, that's not a very large increase, 1.7, it's not statistically significant, so I can't rule out the possibility that this is just a chance finding, and go to the literature and look at all the other studies that are in existence that have evaluated this very same question.

Q. Well, it was almost a doubling of the risk, wasn't it?

A. It's 1.7.

Q. This was written by a medical doctor, not a statistician, correct?

A. I don't know who these people are.

Q. Well, he's got "MD" after his name. Does that sound like a medical doctor?

A. Well, if it's a Chinese degree, then it's a different degree than what we have in the United States. But, yes, if it's an American MD, yes, it's an American doctor.

Q. And this appears in an American peer-reviewed publication, doesn't it?
A. That doesn't answer the -- my original uncertainty, but -- it's fine. He -- they could be medical doctors, US certified medical doctors.
Q. It was statistically significant, the mom's exposure to pesticides, wasn't it?
MS. McELDOWNEY: Object to the form.
A. I'm not seeing the statistical analysis, but, yes, I would assume that that is.
Q. (BY MR. WALTERS) I'm just looking at the last sentence, "The risk of ALL also was elevated when mothers were exposed to gasoline or pesticides," and there was an odds ratio of 3.5 for the pesticides?
A. Right.
Q. So you would agree that this paper would support the conclusion that at least some chemicals can induce ALL, true?
MS. McELDOWNEY: Object to the form.
A. I would agree that that is the finding in the study. But I would disagree that it supports an association until you have evaluated the rest of the literature.
Q. (BY MR. WALTERS) Do you know if there's benzene in pesticides?
A. I don't know that, but I know pesticides is a very

broad class of chemicals.
Q. Do you know if there's benzene rings -- structures with benzene rings in pesticides?
A. I'm sure there are aromatic rings in some of the structures of pesticides.
Q. Are you familiar with the Smulevich paper, looking at parental occupation and risk factors for cancer?
A. Yes.
Q. And --
A. Not familiar enough to where we can talk about specific numbers.
Q. All right.

(Whereupon, Pyatt Exhibit No. 7 was marked for identification.)

Q. (BY MR. WALTERS) I'll hand you what we've marked as Exhibit 7.
A. Uh-huh.
Q. And ask you -- I'm looking at the next-to-the-last sentence in the abstract. Do you have any reason to disagree with the findings in this paper that there was an increased risk of non-Hodgkin's lymphoma related to maternal exposure to oil products?

MS. McELDOWNEY: Object to the form.

Q. (BY MR. WALTERS) And, in fact, was statistically significant on all fronts, with an odds ratio of 3.3,

and a confidence interval of 1.01.3 to 1.7?

MS. McELDOWNEY: Object to the form.

I'm sorry. Are you asking if that's what the paper says, or if he agrees with the finding?

MR. WALTERS: I'm asking if he has any reason to disagree with those findings.

MS. McELDOWNEY: Object to the form.

A. That is what the paper says.

Q. (BY MR. WALTERS) All right. And you --

A. The only reason why I would have reason to disagree with the findings, and it wouldn't be disagree with the findings, but the interpretation of the findings, is this is not the only study in existence that has evaluated that relationship.

Q. Okay. But you have no reason to disagree with their findings.

MS. McELDOWNEY: Object to the form. Asked and answered.

A. Yeah, I think I just answered that.

Q. (BY MR. WALTERS) Justin Detel had non-Hodgkin's lymphoma, correct?

A. Yes.

Q. And if, in fact, his mother was exposed to oil products from the refinery, it would be reasonable for a physician to rely on this paper in concluding

that non-Hodgkin's lymphoma is associated with exposure to oil products.

MS. McELDOWNEY: Object to the form.

If you can answer that.

A. Are you asking me if it's reasonable?

Q. (BY MR. WALTERS) Yes.

A. Then I would say it's not reasonable. If this were the only study in existence, then it would suggest that. But this is not the only study.

And even if you accept that this is true, then you have to do a more sophisticated analysis and start looking at the exposure levels, and were the exposure levels that Mrs. Detel had in any way comparable to the exposure levels that were expressed in this paper.

Q. (BY MR. WALTERS) Are you familiar with the Dryver paper, "Occupational Exposures and Non-Hodgkin's Lymphoma in Southern Sweden"?

A. Yes.

Q. And is it not true --

A. I'm sorry. If we're going to -- I need to see it.

Q. All right. I'll show it to you.

A. I am familiar with the study, but not every number.

Q. And this was looking at almost -- well, exactly, apparently, 859 non-Hodgkin's lymphomas. Does that

ring a bell?

A. I'm -- I wouldn't disagree with that, Mr. Walters, but I just -- I don't have it in front of me.

Q. Right.

And do you have any reason to disagree with their findings that exposure to gasoline and other oil products for more than five years was associated with increased risks of NHL? Isn't that exactly what they reported in this paper (handing document)?

MS. McELDOWNEY: Object to the form.

A. That is what they are reporting in the study, yes.

Q. (BY MR. WALTERS) And you have no reason to disagree with those findings, do you?

A. Only insomuch as they are inconsistent with much of the rest of the literature.

Q. Now, you're familiar with, because I saw it in your box, the Buckley paper on pesticide exposures in children with non-Hodgkin's lymphoma?

A. I've read that paper, yes.

Q. All right.

A. Do you want this one back (handing document)?

Q. Yes.

A. Do you want these back?

Q. The ones we didn't mark --

A. These are exhibits, so we'll just pile them up.

Q. Leave them there.

All right. We'll mark the Buckley paper as Exhibit 8.

(Whereupon, Pyatt Exhibit No. 8 was marked for identification.)

Q. You're familiar with this paper, correct?

A. I have read this paper, yes.

Q. Looking under "Results," do you have any reason to disagree with their finding, and I'm going to quote, "A significant association was found between risk of NHL and increased frequency of reported pesticide use in the home."

MS. McELDOWNEY: Object to the form.

Q. (BY MR. WALTERS) Do you have any reason to disagree with their finding?

A. I'm looking at their data now. Just give me a minute.

That is what the study is supporting, yes -- reporting.

Q. You're aware from review of Justin Detel's medical records, that the form of lymphoma he had was T-cell lymphoblastic lymphoma?

A. That's my understanding, yes.

Q. Looking over at Page 2318, do you have any reason to disagree with their statement that starts out, "The

greatest ORs..."? "The greatest ORs were observed for household insecticide use in the lymphoblastic lymphoma subgroup..." What does that mean?

MS. McELDOWNEY: Object to the form.

If you know.

A. Based on this study and their statistical analysis and the surveys of household insecticide use, they found an elevated risk of this particular subtype, lymphoblastic lymphoma.

Q. (BY MR. WALTERS) The very form and subtype that Justin Detel suffered from, correct?

MS. McELDOWNEY: Object to the form.

A. Well, there -- there is a T and a B form of lymphoblastic lymphoma, and they don't differentiate that in this study.

Q. (BY MR. WALTERS) Fair enough.

Does this study, in your opinion, support an association between chemicals and lymphoblastic lymphoma?

MS. McELDOWNEY: Object to the form.

A. You -- you can't extrapolate out and use the broad term "chemicals," so, no.

Q. (BY MR. WALTERS) Well, let's use "insecticides." Does this study support the relationship between insecticide exposure and lymphoblastic lymphoma?

MS. McELDOWNEY: Object to the form.
A. To the extent that this is a single study, and excluding it from the rest of the literature, yes.
Q. (BY MR. WALTERS) So you would agree that at least the chemical make-up of insecticides can have an impact on the lymphoid line cell lineage.
MS. McELDOWNEY: Object to the form.
A. Are you referring to this paper, or more generally speaking?
Q. (BY MR. WALTERS) Well, both.
A. Are you talking about toxicologically from insecticide exposure?
Q. Well, insecticide exposure is going to have to necessarily, if it's associated, affect the lymphoid cell lineage, isn't it?
A. If it's associated with lymphoblastic leukemia, yes.
Q. So you would agree that there are at least some chemicals that the lymphocytes are sensitive to.
MS. McELDOWNEY: Object to the form.
A. That's a pretty different question than what we were just discussing.
Q. (BY MR. WALTERS) You would agree that there are at least some chemicals that create an overproduction of lymphocytes, true?
MS. McELDOWNEY: Object to the form.

A. There are some chemicals that produce an overproduction of lymphocytes?
Q. (BY MR. WALTERS) Correct.
A. I would not disagree with that.
Q. That's what a lymphoma is, isn't it? It's an overproduction of lymphocytes?
A. Well, it's not quite that simple.
Q. In layman's terms.
A. There's a block in differentiation, which is why they live as long as they do. There's many aspects of it. Just a simple overproduction of lymphocytes is not lymphoma. Our lymphocyte count increases every time we get sick, and we don't get lymphoma.
Q. An overproduction that forms a tumor.
A. Well, that's a different question.
Q. I know that. That's the question. An overproduction of lymphocytes that produce a tumor, is, in layman's terms, what a lymphoma is.
MS. McELDOWNEY: Object to the form.
A. It's -- yes.
Q. (BY MR. WALTERS) Do you know whether or not lymphocytes are sensitive to benzene, in particular?
MS. McELDOWNEY: Object to the form.
A. Do you -- what do you mean by "sensitive"?
Q. (BY MR. WALTERS) Does benzene have an affect on

lymphocytes?
A. At certain concentrations, yes.
Q. And what does that affect?
A. In occupationally exposed workers, as -- it produces cytopenias, some of which are lymphocytopenias. So it's a suppression of lymphocyte cells.
Q. Are you aware of any studies that have reported that lymphocytes are not the most sensitive cell type to benzene?
MS. McELDOWNEY: Object to the form.
A. I have seen that argued in papers here and there.
Q. (BY MR. WALTERS) And were you a part of a program for the Voluntary Childrens Chemical Evaluation Program in June?
A. Yes, Mr. Walters, that's the VCCEP program.
Q. You were one of the presenters, correct?
A. Yes.
Q. BP was a sponsor, right?
A. Okay.
Q. Well, did you know that?
A. I -- I knew there was a long list. I didn't remember specifically.
Q. I'm looking at a slide here that has "BP" at the top, and there is a long list: Chevron, Dow, Dupont, Exxon Mobil, Shell, Conoco, Petroleum companies,

basically, right?

MS. McELDOWNEY: Object to the form. What's the question?

Q. (BY MR. WALTERS) Petroleum companies sponsored this program where you were a presenter.

MS. McELDOWNEY: Object to the form. Asked and answered.

Q. (BY MR. WALTERS) True?

A. And as well as the groups within CMA. That's the way the VCCEP program is set up.

Q. So there -- and you, or someone in this program, cites a paper, Rothman. Are you familiar with that paper?

A. I am.

Q. And Rothman, in fact, concluded that not -- or maybe the study, itself, that not all studies have reported that lymphocytes are the most sensitive cell type, true?

A. I don't recall if that was Dr. Rothman's conclusion or not. But I think that was my slide, and I would agree with that.

Q. So you would agree that there is disagreement in the medical literature of benzene's effect on the lymphocytes.

MS. McELDOWNEY: Object to the form.

A. Well, I think there are some studies that indicate that neutrophils might be more suppressed than lymphocytes, in a study here and a study there. And others suggest that the lymphocytes are the ones that are the most significantly suppressed.

THE WITNESS: Would you guys mind if we took another five-minute break?

MR. WALTERS: Sure.

(Brief recess taken.)

(Whereupon, Pyatt Exhibit No. 9 was marked for identification.)

Q. (BY MR. WALTERS) Doctor, I'm going to show you what you provided to me as Exhibit 9, which is your invoice. And that covers all your work up through, looks like, August 24th, 2006, is that right?

A. I think that's right, yes.

Q. I notice on there, nine hours of time reviewing Ryan trial. What did you review from the Ryan trial?

A. Well, I -- I looked through a lot of it. I read the deposition of -- I can't remember his name. Wernke?

Q. Okay.

A. And Bayer, I think, Dr. Bayer. And some of the testimony of, I think Dr. Spencer and Dr. Petty and -- but not all of it.

Q. We talked about leukemia. You also believe that

benzene can cause aplastic anemia, correct?

MS. McELDOWNEY: Object to the form.

A. I believe under high-dose exposure, benzene has been associated with aplastic anemia, yes.

Q. (BY MR. WALTERS) And you also believe that benzene can cause myelodysplastic syndrome?

A. That is -- that --

MS. McELDOWNEY: Object to the form.

A. Under appropriate exposure conditions, high-dose exposure, yes.

Q. (BY MR. WALTERS) And those are all illnesses that originate out of the bone marrow, would that be true?

MS. McELDOWNEY: Object to the form.

A. By definition, they are, yes.

Q. (BY MR. WALTERS) Based on my review of your deposition in the Stubbs case, you do agree that herbicides may present risk for lymphomas, correct?

MS. McELDOWNEY: Object to the form.

A. I think that literature is fairly conflicted, and I wouldn't say that it's very strong, but there are studies that have suggested that, yes.

MR. WALTERS: I'm done. Thank you.

MS. McELDOWNEY: Can I just state one thing for the record.

Dr. Pyatt, we may be providing Dr. Pyatt some

additional witness depositions for -- that have been taken in this case, that he may review for purposes of his opinions in this case. So we can let you know which depositions they may be.

I can tell you right off the bat, I think there were some fact depositions that we haven't yet sent to Dr. Pyatt. And also to the extent that either Drs. Landolph or Dahlgren may have supplemental opinions or identify additional documents that they review or rely upon for purposes of any opinions that they may have at the time of trial, we reserve the right to have Dr. Pyatt review their opinions and express any opinions he may have as to those.

MR. WALTERS: Okay.

THE REPORTER: Read and sign?

MS. McELDOWNEY: Read and sign, please, yes.

(Witness excused.)

DAVID PYATT, PhD

STATE OF)
) SS:
COUNTY OF)

Subscribed and sworn to before me this day of , 20 .

NOTARY PUBLIC

My Commission Expires: .

Caption: JUSTIN DETEL vs. BP CORPORATION NORTH AMERICA INC., et al.

Reporter: Barbara A. Griffith/John M. Bowen & Associates

NOTARIAL CERTIFICATE

STATE OF MISSOURI)
)
COUNTY OF JACKSON)

I, BARBARA A. GRIFFITH, Certified Shorthand Reporter for the State of Missouri, do hereby certify that pursuant to Notice to Take Deposition, at the Hotel Boulderado, 2115 13th Street, in the City of Boulder and State of Colorado,

DAVID PYATT, PhD,

came before me, was by me duly sworn to testify the whole truth of his knowledge of the matters in controversy aforesaid, was examined and his examination then written in shorthand by me and afterwards typed, presentment of the deposition to the witness being expressly waived by counsel and the witness, as hereinbefore set forth, on the day in that behalf aforesaid; that the deposition is hereafter, by the witness, to be read over, signed and sworn to; and thereafter, said deposition to be returned.

I further certify that I am not counsel or relative of either party, or clerk or stenographer of either party, or of the attorney of either party, or otherwise interested in the event of this suit.

IN TESTIMONY WHEREOF, I have hereunto set my hand and seal at my office in said County and State, this 25th day of September, 2006.

BARBARA A. GRIFFITH, CSR, CCR
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