Exhibit 597

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA
SOUTHERN DIVISION
No. 7:23-CV-00897

IN RE:
CAMP LEJEUNE WATER LITIGATION

This Document Relates to:
ALL CASES

VIDEO-RECORDED EXPERT DEPOSITION OF ARMINE K. SMITH, MD

Wednesday, July 2, 2025
10:09 AM EST

Reported by: Denise Dobner Vickery, CRR, RMR
JOB NO.: 7403097

Wednesday, July 2, 2025

10:09 AM EST

Video-Recorded Expert Deposition of ARMINE K. SMITH, MD, held at the offices of:

KELLER POSTMAN

1101 Connecticut Avenue NW

Suite 1100

Washington, DC 20036

Pursuant to notice, before Denise Dobner Vickery, Certified Realtime Reporter, Registered Merit Reporter, and Notary Public in and for the District of Columbia.

APPEARANCES:

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APPEARANCES: (CONTINUED)

ALSO PRESENT:

Deshawn White, Videographer

ALSO PRESENT VIA ZOOM:

Adam Bain, Esq. - USDOJ

Nathan Bu, Esq. - USDOJ

Carson Garand, Esq. - USDOJ

Zina Bash, Esq. - Keller Postman

Grace DeBoer - Summer Intern, USDOJ

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DEPOSITION EXHIBITS

P R O C E E D I N G S

- - -

THE VIDEOGRAPHER: We are now on the record.

My name is Deshawn White. I'm a videographer for Golkow a Veritext division. Today's date is July 2, 2025.

This video deposition is being held at 1101 Connecticut Avenue, Northwest, Washington, DC in the matter of Camp Lejeune Water Litigation versus United States of America in the United States District Court for the Eastern District of North Carolina.

The deponent is Dr. Armine Smith.

And the court reporter is Denise Vickery.

Will counsel please identify themselves for the record, followed by the court reporter administering the oath.

MR. WHITE: Lucas White for the Department of Justice and with me are

my colleagues, Josh Carpenito and Grace DeBoer.

MR. MANDELL: Zachary Mandell for Plaintiffs Leadership Group.

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ARMINE K. SMITH, MD

called for examination, and, after having been duly sworn, was examined and testified as follows:

- - -

EXAMINATION

- - -

BY MR. WHITE:

Q. Good morning, Dr. Smith. My name is Luke White. We met very briefly before going on the record.

If you could please state and spell your full name for the record.

A. Armine A-r-m-i-n-e Smith S-m-i-t-h.

Q. Okay. Have you ever been deposed before?

A. Yes.

Q. Okay. How many times?

A. Probably five, maybe a few more.

Q. Okay. Were any of these in your personal capacity?

A. Twice in personal capacity, yes.

Q. Okay. Were the remainder of these as an expert witness?

A. Yes.

Q. Okay. We'll come back to that, but given that you've testified before, a lot of this is probably old hat. So I'll try to give you the abridged version.

You're under oath today to tell the truth, just as if you would in -- in trial.

Is there any reason why you can't do that today, like memory impairing medication or substances?

A. No reasons.

Q. Okay. The court reporter is writing everything that we say down on paper, and to make her job easier, we should try to keep our verbal pace at a reasonable clip. Verbal answers are needed. Uh-huhs and huh-uhs and head nods and shakes are very hard to put on paper.

We -- this one is trickier than it sounds, but we should be very careful not to speak

over one another. I will do my best to let you finish your answer before I begin my next question. If I cut you off, I assure you it is not intentional. So please just let me know, and I'll shut up and you can finish your answer.

And if you could let me finish my complete question before you begin your answer, just to avoid crosstalk, and it makes the court reporter's job a lot easier.

If you don't understand one of my questions, please ask me to clarify it, and I'd be happy to do so as best as I can. But if you don't ask me to clarify the question, we'll all assume later that you weren't confused.

Does that make sense?

A. Makes sense.

Q. Okay. This is not an endurance competition. So if you need to take a break at any point for any reason at all or no reason at all, that's perfectly fine. Just let me know, and we can do that.

And I will try to take a break maybe every hour-ish or so, but I'm really bad at forgetting to do that. So if I forget and you

want a break, please speak up.

My only ask is that you finish whatever question is on the table before we take a break. So question, answer, break. Not question, break, then answer.

Does that make sense?

A. Makes sense.

Q. All right. One last thing. After certain questions, you'll probably hear Mr. Mandell say "objection." That's just fine. Let him state his objection on the record, and then we'll proceed with answering the question.

The exception is if he directs you not to answer a question based on a claim of privilege, but I don't think we'll be getting into that today.

All right?

A. Sounds good.

Q. You said that you were deposed -- been deposed about five times, maybe a couple more.

Two in your personal capacity, two as an expert or the remainder as an expert; is that correct?

A. That's correct.
Q. Okay. Can you tell me about the two depositions that were in your personal capacity?
A. Family matter, divorce.
Q. Okay. Both of them?
A. Yes.
Q. Okay. Did you end up testifying at a trial or hearing or just over depo?
A. For my personal? For my -- for my divorce?
Q. Yes.
A. Went to trial once, yes.
Q. Okay. Cool.
On -- and then probably three to five more times as an expert witness; is that correct?
A. That sounds right.
Q. Okay. Did you ever testify in trial as an expert witness?
A. I have once.
Q. Okay. Was it jury trial or bench trial?
A. It was a jury trial.
Q. Okay. Do you know -- remember where

it was?

A. New York.

Q. New York City or state?

A. It was New York City.

Q. Okay. Of the times that you've testified in depositions as an expert witness, as best you can recall, how many times were for the plaintiffs and how many times were for the defense?

A. I believe once was for defense and the rest were for plaintiffs.

Q. Okay. Okay. We'll get into those a little bit more as we go along.

But to start off, how did you prepare for today's deposition?

A. Do you mean past week? Past month? Past year?

Q. This is fair. This is fair.

In the past, how did you prepare for today's deposition in the past month? For example, did you speak with an attorney?

I don't want to know the substance of any conversations, but that you spoke to an attorney, one of the attorneys for PLG would be --

would be a part of the preparation that I'm asking about.

A. Yes, I spoke with the attorneys in the past month.

Q. Okay. How many times?

A. Three times, I think.

MR. MANDELL: I can't answer.

THE WITNESS: Okay. But I think -- I think three times.

BY MR. WHITE:

Q. Okay. Were all three of those times with Mr. Mandell?

A. With Mr. Mandell and once with the other Mr. Mandell.

Q. Okay. That's going to get confusing. I'll try to my best to -- to make it clear.

A. (Laugh).

Q. Did anybody else participate in these meetings and then the Messrs. Mandell?

A. No.

Q. Okay. How long were each of these meetings, roughly?

A. One hour and then two-hour.

Q. Okay. Were these by videoconference? Were these in person?
A. Two were video, once was in person.
Q. Okay. The one that was in person, has that been in the past day or so leading up to this deposition?
A. Yesterday.
Q. Okay. Okay. Did you look at any documents when you were speaking to the Messrs. Mandell?

MR. MANDELL: I'm going to object and just instruct you not to answer as to anything we talked about. So with that caveat.

MR. WHITE: Yeah, understood. Absolutely.

BY MR. WHITE:
Q. At no point do I want to know the substance of your conversations with either of the Messrs. Mandell, but to the extent you talked about any or did you look at any documents?
A. I've glanced over my reports.
Q. Okay. Can you recall any other documents?

A. And I believe a couple of the articles that I cited in my reports.
Q. Okay. Can you recall any other documents?
A. Can't recall anything else.
Q. Okay. Can you recall which articles you cited in your reports that you looked over in your preparation for today's deposition?
A. I've looked at potentially three maybe articles.
Q. Okay.
A. One was Bove. Actually, two -- one was Bove. The other one was Aschgar maybe. I'd have to look at the names and then I can really tell you.
Q. Does Aschengrau sound --
A. Aschengrau. That's the one.
Q. Okay I may be mispronouncing that, but as long as we have the same mispronunciation --
A. Yes. Yes.
Q. -- I think we'll be on the same page.
A. Yes.

Q. Okay. Can you recall what the third one was?

A. Third one was another Bove article.

Q. Okay. Do you recall which particular Bove, or Bove, articles this was?

A. 2014.

Q. Okay. Both of the 2014s?

A. Yes.

Q. Okay. Have you talked, spoken with or had written communication with any of the other experts for PLG?

And I will add the same caveat that I added before, and I'm sure Mr. Mandell would say, I don't want to know the substance of any of those conversations. I just want to know if any occurred.

A. That's easy. No.

Q. Okay. Cool.

Have you spoken with anybody else to prepare or about -- to prepare for or about your deposition today?

A. No.

MR. MANDELL: I'm going to object, but you can answer.

THE WITNESS: Oh.
MR. MANDELL: That's okay. Just give me a second to object if you can.
THE WITNESS: Okay.
BY MR. WHITE:
Q. Have you ever communicated in writing with any of the other experts in this case?
A. No.
MR. WHITE: Okay. At this point, I want to go ahead and enter a few exhibits that we'll be referencing throughout the case.
(Document marked for identification as Exhibit 1.)
BY MR. WHITE:
Q. I'm going to hand you what's been marked as Exhibit 1.
Is this the report you wrote for Mrs. Tukes?
A. Yes. In addition, there are a couple of other documents attached to the back of it.

Q. Okay. Does that include your CV?
A. Yes.
Q. And your testimony history?
A. Yes.
Q. Okay.
(Document marked for identification as Exhibit 2.)
BY MR. WHITE:
Q. I'm going to hand you what's been marked as Exhibit 2.
And if you can just keep those stacked in front of you, we'll be coming back -- back to and from each one as we go along.
A. Yes.
Q. Is that your report that you wrote for Mr. Howard?
A. Yes, and then also my CV and some other papers.
Q. Okay.
A. Compensation.
Q. Okay.
(Document marked for identification as Exhibit 3.)
BY MR. WHITE:

Q. And I hand you what's been marked as Exhibit 3.

Is this your -- the report that you wrote for Mr. Mousser in this case?

A. Yes.

Q. Including the same papers there at the back?

A. Yes.

Q. All right.

(Document marked for identification as Exhibit 4.)

BY MR. WHITE:

Q. Hand you what's been marked as Exhibit 4.

Is that the rebuttal report that you've written in this case?

A. Yes.

Q. Okay. And that relates to Mrs. Tukes, Mr. Howard, and Mrs. -- Mrs. Tukes, Mr. Howard, and Mr. Mousser, correct?

A. (Reviews document.)

I am quoting Tukes and Howard here.

Q. Okay. Okay. Oh, and you also had a -- I don't have a copy with me.

You also had a supplemental report that you wrote for Mr. Mousser's case; is that correct?

A. Yes.

Q. Okay.

(Document marked for identification as Exhibit 5.)

BY MR. WHITE:

Q. I'm going to hand you what's been marked as Exhibit 5.

Is this an errata correction sheet that you submitted for the Howard, Mousser, and Tukes reports?

A. Yes.

Q. Okay. I will come back to these each as we go through the deposition, but I wanted to make them exhibits just starting out.

Do these reports and the Mousser supplemental report that you submitted, do these contain all the opinions that you plan on offering in this case?

A. Yes.

Q. Okay. In forming your opinions in this case at any point, did you talk verbally, in

writing, by any means, with any of the other experts in the case?

A. Can you repeat it, please?

Q. Sure.

In forming your opinions in this case, did you communicate either in writing, orally, verbally or any other means, did you communicate with any of the other plaintiffs' experts in this case?

A. No.

Q. Okay. Did you communicate in forming your opinions in this case with anyone other than the attorneys or the experts?

A. No.

Q. Okay.

MR. MANDELL: I'm going to object to that but...

BY MR. WHITE:

Q. Okay. Did you ever communicate with Mr. Howard?

A. No.

Q. Mr. Mousser?

A. No.

Q. I take it neither Ms. Tukes?

A. Correct.
Q. Okay. So none of their family members or friends or coworkers?
A. No.
Q. Okay. I take it you've never spoken to any of their employers or medical providers?
A. No.
Q. Okay. Have you spoken to any other plaintiffs in the case?
A. No.
Q. Okay. How did you first become aware of the Camp Lejeune litigation?
A. I believe it was when I was contacted by the attorneys.
Q. Okay. When were you first contacted by the attorneys about this litigation?
A. I can't recall exactly.
Q. Okay.
A. It was a while ago.
Q. Is it sometime in 2024 or 2023? One of those years?
A. Yes.
Q. Okay. Would it be in 2024?
A. I honestly can't recall.

Q. Okay. Okay. Who first reached out to you about working on this -- on this case?

And I don't want to know the substance of the communication, just the attorney who first reached out to you.

A. So first I was reached, yeah, the person who reached out to me or the company that reached out to me is this Expert Witness Network.

Q. Okay. Have you worked with the Expert Witness Network before?

A. Yes.

Q. Okay. Do you do all of your expert witness work through that network?

A. Most of it.

Q. Okay. When did you -- so that's when you were first communicated to, someone first reached out to you about the case.

When did you become formally retained as an expert in this litigation?

A. It was shortly thereafter.

MR. MANDELL: Objection.

BY MR. WHITE:

Q. Okay. Who retained you? Was it a specific law firm?

A. Mandell's law firm.
Q. Okay. He's not going to be able to help you with the questions. He's not trying to be rude.
A. (Laugh).
MR. MANDELL: Just whatever your best answer is.
THE WITNESS: Okay.
BY MR. WHITE:
Q. As best as you can remember. That's all we can do today.
A. Okay.
Q. Did you execute a retainer agreement?
A. I actually don't recall if it's a standard retainer agreement through that Expert Witness or it's a separate one with them.
Q. Okay. Okay. Did you perform any work on the Camp Lejeune case before becoming -- before signing the agreement?
MR. MANDELL: Objection.
THE WITNESS: No. Oh.
MR. MANDELL: That's okay.
BY MR. WHITE:

Q. Just to make it clear, the answer was no?

A. No.

Q. Okay. What was your assignment in this matter?

MR. MANDELL: Objection.

And I would instruct you not to answer as to any communications between any of the attorneys and yourself, but other than that, you can answer if you can.

THE WITNESS: My role was to analyze the facts and patient materials and serve as expert witness.

BY MR. WHITE:

Q. Uh-huh. Was it just for these three plaintiffs?

MR. MANDELL: I'm going to object and instruct you not to answer as to any other work that you would have done on other aspects of this case.

I think me and -- we've talked about this with -- I don't want to say too much, but I'm going to object and

instruct you not to answer as to anything other than these three plaintiffs.

MR. WHITE: Okay.

BY MR. WHITE:

Q. What are your -- what are you charging for your work on this case?

A. It's an hourly fee.

Q. Okay.

A. May I say that? Is that okay to say?

MR. MANDELL: Yeah.

THE WITNESS: Okay.

I can't recall if it's 650 or 750. I think it's 650.

BY MR. WHITE:

Q. 650. Okay.

A. Inflation has changed that.

Q. I was in private practice. I know all about that.

Does any part of any fee go to the expert witness service? Are you aware of any part of the fee going to the expert witness service?

A. Not that I'm aware.

Q. Okay. Is it a flat hourly fee?

A. I charge more for deposition than for review of records.
Q. Okay. And what is your deposition rate?
A. So I think the deposition is 750.
Q. Okay. And is that the same 750 that would be charged for trial?
A. For trial I have a flat rate for a whole day.
Q. Okay. So everything else would be 650 an hour?
A. I believe so.
Q. Okay. Is this your standard hourly rate?
A. Yes.
Q. Okay.

(Document marked for identification as Exhibit 6.)

BY MR. WHITE:

Q. I'm going to hand you what's been marked as Exhibit 6.

(Document marked for identification as Exhibit 7.)

BY MR. WHITE:

Q. And then there will be an Exhibit 7 as well. Here you go.

All right. Do you recognize these two documents in front of you, Exhibit 6 and 7?

A. Yes.

Q. Okay. Are they the invoices for your work on this case?

A. Yes.

Q. Are these the only two invoices you've sent on this case so far?

A. I believe so.

Q. Okay. Up at the top underneath your tax ID, I see Invoice #24 and #25.

Do you number your invoices sequentially across different cases?

A. So these are all invoices that come to this tax ID.

Q. Okay.

A. If that makes sense.

Q. Okay. I'm just curious. Because the earliest of these two invoices is dated December 18, 2024 and it says Invoice #24.

I'm just trying to make sure that there's not an invoice -- invoices 1 through 23.

A. Not to this case.
Q. Okay. That was my question.
A. Okay.
Q. Thank you. That was a better way of framing it that I should have started with.
A. Okay.
Q. Thank you, Doctor.
The date on this first one says December 18, 2024.
Does that refresh your recollection about when you may have first became retained on this case?
A. Yes. It must have been shortly before that.
Q. Okay. So probably like November/December of 2024?
MR. MANDELL: Objection.
You can answer.
THE WITNESS: I honestly don't recall.
BY MR. WHITE:
Q. Okay. Okay. I -- I see a "Paid" stamp on both of these, in the top right-hand corner of Exhibit -- of the March 2, 2025 one and

then in the middle of the December 18, 2024 one.
Is that -- is that your stamp?
A. No.
Q. Okay. But everything else on these two invoices you -- you prepared?
A. Yes.
Q. Okay. Do these two invoices reflect the total amount of work that you have billed for thus far in this case?
A. Yes.
Q. Okay. Do you expect to send another invoice out soon following this deposition?
A. Yes.
Q. Okay. Is there any difference between any of the amounts that you've billed for and the amounts that you've ultimately received payment for?
A. No.
Q. Okay.
A. It was paid as -- as billed.
Q. Okay. Other than forthcoming invoices for today's deposition, do you expect any other compensation in the future from this case?
A. No.

MR. MANDELL: Ah. That's okay.

BY MR. WHITE:

Q. When did you first get into expert work?

A. I can't say precisely, but it's been multiple years.

Q. Okay. I know you've testified -- you said earlier you've testified in maybe three to five cases as an expert witness.

How many cases in total have you served as an expert in, including those in which you may not have testified at a deposition?

A. It will be a very rough estimate because I can't recall, but probably between 20, 25.

Q. Okay. Okay. If you had to -- and, of course, this is also a rough estimate, and for these kinds of questions that's all I'm -- that's all I'm looking for here because, you know, we can only go off the best of your recollection.

But what is the general split between plaintiff side and defense side of those -- of those expert engagements?

A. It's mostly plaintiff.
Q. Okay. If you had to give a percentage on it, again understanding this is rough math, what percentage would be plaintiffs?
MR. MANDELL: I'm going to object, but you can answer.
THE WITNESS: Possibly 75 to 80 percent plaintiff.
BY MR. WHITE:
Q. Okay. Okay. Are these -- how many of these were medical malpractice cases?
A. All of them.
Q. All of them? Okay.
Is this your first time testifying in a case about a toxic exposure?
A. I believe so.
Q. Okay. How many open expert engagements do you have right now?
A. I don't know what that means by "open."
Q. Sure. I'm sorry.
How many -- as it stands today, do you know how many cases in which you are identified as an expert witness?

The Camp Lejeune litigation would be one.

Are you working on any other pieces of litigation right now as an expert witness?

A. I am. I can't tell you exactly how many.

Q. Okay. Over/under five?

A. Probably five.

Q. Okay. Okay. And I'm only looking for a rough number here, and I'm not going to ask your total annual income or anything.

But roughly speaking, what percentage of your annual income would be from expert work?

MR. MANDELL: I'm going to object, but you can answer.

THE WITNESS: Say less than 5 percent.

BY MR. WHITE:

Q. Okay. Okay. Have you ever done any expert work for the Bell Legal Group?

A. I cannot recall.

Q. Okay. Beyond -- beyond this case.

Do you recall doing any expert work

beyond Camp Lejeune for Keller Postman?

A. No.

Q. Okay. How about same question but for Lieff Cabraser?

A. No.

Q. Okay. Same question but for the Dowling law firm?

A. No.

Q. Same question but for Weitz & Luxenberg?

A. No.

Q. Okay. Same question but for Wallace & Graham?

A. No.

Q. Same question but for Lewis & Roberts?

A. No.

Q. Same question but for Mr. Mandell's firm?

A. I'm sorry. Other than this?

Q. Yes, other than Camp Lejeune.

A. No, I have not.

Q. Okay. Thank you. And thank you for that clarification.

At any point you need -- you need clarification on my question, just -- just say so and I'm happy to do as best as I possibly can.

Okay?

A. Okay.

Q. Have you ever testified -- have you ever served as an expert witness in a case on behalf of the United States as a -- as a party?

A. Do you mean as plaintiff or?

Q. I'm -- I'm sorry.

Have you ever testified in a case where the party who hired you as an expert was the United States?

A. No.

Q. Okay. Have you ever testified in a case where the party who hired you was suing the United States?

A. There was one case against VA doctor.

Q. Okay. Was that a medical malpractice case?

A. Yes.

Q. Okay. Do you remember where that was?

A. I don't. I think it went to federal court, but I don't remember where.
Q. Okay. When, roughly speaking, was that?
A. It's got to be at least three years ago.
Q. Okay. Did you write a report?
A. I believe so, yes.
Q. Okay. Did you testify in deposition?
A. I don't think it went to deposition.
Q. Okay. I take it that you didn't testify at trial then?
A. No.
Q. Okay. Was that a kidney cancer case?
A. No.
Q. Okay. Was it a bladder cancer case?
A. No.
Q. What kind of -- what was the underlying medical condition that gave rise to the medical malpractice case?
MR. MANDELL: I would just instruct you that if you -- if the case

is ongoing and you're not disclosed in the case, then I wouldn't answer that, but if it's anything other than that, you can generally say.

THE WITNESS: I think the case is closed. It was a prostate cancer.

BY MR. WHITE:

Q. Okay. Okay. Have you ever testified in a case -- in a malpractice case regarding kidney cancer?

A. Yes.

Oh, I'm sorry. Testified or letter?

Q. I'm sorry. That's a good clarification.

Have you ever written a report in a case involving kidney cancer?

A. Yes.

Q. Okay. How many of your expert cases were involving kidney cancer?

A. I can recall at least three.

Q. Okay. Were these -- were these misdiagnosis cases?

A. Yes.

Q. Okay. Were there any other -- I'm just trying to get a feel for what kind of cases these were.

Were all three cases dealing with misdiagnosis of kidney cancer?

A. No.

Q. Okay. Were two of them related to misdiagnosis of kidney cancer?

A. One.

Q. One of them was.

What were the other two?

A. Just mismanagement.

Q. Okay. Okay. How about testifying in cases about bladder cancer?

A. I have.

Q. Okay. How many?

A. The court testimony was about bladder cancer.

Q. Okay. How many times have you written an expert report about bladder cancer?

A. It's been a few. Maybe three or four.

Q. Okay. How many of these were misdiagnosis cases?

A. At least one.
Q. Okay. How many were mismanagement cases?
A. The rest.
Q. Okay. Okay. Were any of these cases about upper tract urothelial cancer specifically?
A. Yes.
Q. Okay. How many?
A. One.
Q. One of them? Okay.
In forming your opinions in this case, did you use any support staff?
A. No.
Q. Okay. By "support staff" I mean assistants or scribes, researchers or anyone to do calculations.
You did not use any staff along those lines?
A. No.
Q. Okay. How often do you send invoices for your expert work?
A. Not frequently enough, as you can see. When I think about it.

Q. When -- when it starts to accumulate and it's time to send one out?
A. Correct. Yes.
MR. MANDELL: Objection.
BY MR. WHITE:
Q. Okay. Okay.
A. Off -- off the record.
Q. Yeah.
MR. MANDELL: You want to go off the record?
THE WITNESS: I just want to make a joke.
I think I need to send you an invoice with all this invoice conversation. Unless you've spoken.
MR. WHITE: I'm sorry, Zack.
MR. MANDELL: It's okay.
BY MR. WHITE:
Q. Okay. We can go off the record or take a break if you want.
A. We can take a break.
Q. Okay.
MR. MANDELL: Whatever you want to do.

THE WITNESS: A water break.
MR. WHITE: I can take a break.
THE VIDEOGRAPHER: Time is 10:42 AM. Off the record.
(A recess was taken.)
THE VIDEOGRAPHER: The time is 10:50 AM. We are now on the record.
MR. WHITE: All right. Thank you, Deshawn.

BY MR. WHITE:

Q. We're back after a short break. While we were on a short break, did you talk to anybody about the substance of your testimony today?

A. No.

MR. WHITE: Okay. I'm going to do a mass submission of -- of exhibits here.

(Document marked for identification as Exhibit 8.)

BY MR. WHITE:

Q. I'm going to hand you what's been marked as Exhibit 8.

Is that the Materials Considered List for your report on Mrs. Tukes?

A. Yes.

Q. Okay.

(Document marked for identification as Exhibit 9.)

BY MR. WHITE:

Q. I'm going to hand you what's been marked as plaintiffs' -- as Government's Exhibit 9.

Is that your Materials Considered List for your report on Mr. Howard?

A. Yes.

Q. Okay.

(Document marked for identification as Exhibit 10.)

BY MR. WHITE:

Q. I think you can imagine what's coming next. Here's Exhibit 10.

Is that your Materials Considered List for your report on Mr. Mousser?

A. Yes.

Q. Okay.

(Document marked for

identification as Exhibit 11.)
BY MR. WHITE:
Q. This will be Exhibit Number 11.
And am I correct that that is a Supplemental Materials Considered List that lists additional materials in addition to the three prior exhibits in front of you?
A. Yes.
Q. Okay.
(Document marked for identification as Exhibit 12.)
BY MR. WHITE:
Q. I'm going to hand you what's been marked as Exhibit 12.
Am I correct that that is an additional Supplemental Materials Considered List that lists further materials that you considered in addition to the ones in the preceding exhibits?
A. Yes.
Q. Okay.
(Document marked for identification as Exhibit 13.)
BY MR. WHITE:
Q. Last one. Exhibit Number 13.

And am I correct that this is another Materials Considered List in addition to the materials listed on the preceding exhibits?

A. Yes.

Q. Okay. Between these three Materials Considered Lists for the three reports and these three Supplemental Materials Considered Lists, do these list all of the materials that you considered in forming your opinions in this case?

A. They should, yes.

Q. Okay. Did you prepare these?

A. Yes, mostly.

Q. Okay. Are there any documents that you considered in this process but did not list?

A. I don't think so.

Q. Okay. Did you bring any documents with you today for purposes of this deposition?

A. Just my reports.

Q. Okay. Okay. Do those copies have any notes on them?

A. Yes.

Q. Are they notes for your testimony today?

A. I don't --

MR. MANDELL: Objection.

THE WITNESS: Yeah. I don't think so.

BY MR. WHITE:

Q. Okay. Okay. Do you know of any studies in these -- well, I'll come back to that later.

All right. You're a urologic oncologist, correct?

A. Yes.

Q. Okay. And you see patients through Johns Hopkins?

A. Yes.

Q. Okay. Is that at Sibley Memorial?

A. Yes.

Q. Okay. Is that the only place where you see patients?

A. I see patients and I operate on patients. So I see patients at Sibley. I operate on patients in multiple locations.

Q. Okay. Thank you for that clarification.

The places where you operate on patients, are those also all within the Johns

Hopkins system?

A. Yes, and also George Washington University.

Q. Okay. Do you have any other -- other than through Johns Hopkins, is there any other organization through which you see or operate on patients like a private practice or do you have any associations with other hospitals?

A. No.

Q. Okay. And you have a professorship at Johns Hopkins?

A. Yes.

Q. What classes do you teach?

A. I mean, I teach urology.

Q. Okay.

A. To residents.

Q. Okay. How often do you do that?

A. For, you know, classroom instruction --

Q. Uh-huh.

A. -- it's not as frequent.

Q. Okay.

A. But from day-to-day instruction is four times a week.

Q. Okay. And that would be as part of the residents' clinical work at the hospital?

A. Yes.

Q. Okay. You said the classroom component isn't as often.

Can you give me an idea about how often that would be?

A. I would say once every three months.

Q. Okay. Any other classes that you teach?

A. No.

Q. Okay. Is there a research component to your work with Johns Hopkins?

A. Yes.

Q. Okay. Are you expected -- is it one of these situations where you're expected to have research product?

A. Usually, yes.

Q. Okay. Okay. Do you have any administrative roles, like a director of such and such department or anything along those lines?

A. I'm the director of urologic oncology --

Q. Okay.

A. -- at Sibley.
Q. Okay. Any other administrative roles?
A. I'm on some committees, you know, like robotic committee, quality improvement committee.
Q. Okay.
A. Things of that nature.
Q. Okay. So if I were to look big picture at your medical and professional life, I see about five different buckets.
Your clinical work.
A. Uh-huh.
Q. Your academic or teaching work, your research work, your -- any administrative -- these administrative roles that you mentioned, and your expert work. So I see five buckets.
Are there any other major categories that I am missing?
MR. MANDELL: Objection, but you can answer.
THE WITNESS: Consulting for, you know, pharmaceutical companies.
BY MR. WHITE:

Q. Okay. Okay. If you had to describe the distribution of your time between these six different major categories, obviously in rough percentages, how would you -- how would you describe that?

A. Majority clinical. I would say about maybe 80 percent clinical and then, you know, the teaching becomes part of the clinical as well just because it's integrated. I'd say about maybe 10, 15 percent research, and the other 5 percent would go between the -- the administrative roles and, you know, extra stuff that I do.

Q. Okay. Okay. So in reviewing your CV, it looks to me that you have a clinical emphasis on urologic care for women.

Am I understanding that right?

A. That's my special interest.

Q. Okay. How long have you had that focus?

A. I mean, we've established this bladder cancer of women program about maybe six years ago.

Q. Okay. Has it been -- was that a clinical interest or focus of you before that

period as well?

A. You know, I -- it's -- it's -- I can't really kind of say whether it was -- I think it just morphed into it --

Q. Okay.

A. -- more or less.

Q. Okay. Other than obvious anatomical differences between men and women, how does urologic oncological care differ by gender?

A. Women are understudied and under, you know, treated I would say.

Q. Okay.

A. So it's less attention being paid to women in urologic malignancies.

Q. Okay. Any other differences?

A. I mean, there is some biological differences in how they develop especially for bladder cancer and how, you know, how their -- what's the word I'm looking for? How they deal with the cancer and how their treatments are.

Q. Okay.

A. The outcomes. That's the word I'm looking for. Outcomes.

Q. How about for anything with kidney

cancer that would differ by gender?

A. I mean, in epidemiologically, you know, women have less kidney cancer than men do, but the outcomes are mostly similar.

Q. Okay. Okay. Any differences in treatment?

A. No.

Q. Okay. How about upper tract urothelial cancer?

A. Again, there's some subtle differences, but no major outcome differences.

Q. Okay. And just because I have a terrible time pronouncing that -- pronouncing that word, can we use UTUC to refer to --

A. Please let's do that.

Q. And, Doctor, you will -- you will see, much to my patient's chagrin, I did not go to medical school, and it will be evident in my pronunciation of words today.

What is the gender breakdown of the patients you see?

A. Probably 50/50.

Q. Okay. So it's not exclusively -- exclusively women?

A. Absolutely not.
Q. Okay. Okay. What kind of cancer do you usually that you -- what kind of cancer do you see most often in your clinical practice?
MR. MANDELL: Objection, but you can answer.
THE WITNESS: Bladder.
BY MR. WHITE:
Q. Okay. Again, this is rough percentages. What percentage of your -- of your clinical patient -- patients that you see would be bladder cancer patients?
A. Probably 70 percent.
Q. Okay. What's the next most common cancer that you see in your clinical practice?
A. Kidney cancer.
Q. Okay. What percentage would that be?
A. Another -- so what did I say for the bladder? 70?
Q. 70?
A. So I would say about another 25 percent would be kidney.
Q. Okay. These are rough percentages.

I'm not going to check your math.

A. Correct.

Q. In those, in that 70 percent 25 percent figures that you gave, is UTUC included in one of those or do you -- or would you consider that in a third category, given those percentage breakdowns we just discussed?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I would group it with bladder.

BY MR. WHITE:

Q. Okay. Okay. Have you ever had an occasion in your clinical practice to determine the cause or etiology of a cancer?

A. A lot.

Q. Okay. Does that -- does the cause or etiology of a cancer change how you treat the patient?

A. Sometimes.

Q. Okay. What times would it change how you treat -- what treatment you give to the patient?

A. So, you know, if we were to take

the -- let's say the upper tract disease, UTUC, if they have a genetic disposition like a Lynch syndrome, then the monitoring is different and, you know, we'd monitor the kidneys along with the bladder as well.

Q. Okay. I would imagine genetic etiologies would probably play a role in treatment of bladder and kidney cancer.

Am I right?

A. Yes, bladder is less, you know, dependent on genetics but kidney, yes.

Q. Okay. Other than genetic causes or etiologies of cancer, are there any other causes or etiologies that play a role in determining how you treat a patient?

MR. MANDELL: Objection.

You can answer.

THE WITNESS: I mean, if there are any etiologies that contribute to the formation of the cancer, we usually would try to see if we can perform cessation like for smoking.

BY MR. WHITE:

Q. Okay.

A. So that will affect of how we treat patients.

Q. Okay. So determining a -- so is it fair to say that you would try to determine contributing etiologies and see if you can change them?

A. Correct.

Q. Okay. Any other ways in which cause or etiologies play a role in determining how you treat a patient?

A. Again, I think, you know, if we look at the theory, if let's say there is a condition that predisposes the patient to form more aggressive type of cancer, the treatment may be a little bit more radical than otherwise.

Q. Okay. Okay. How do you go about determining the etiology or cause of a cancer in these situations that we just discussed?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: Usually by asking patients.

BY MR. WHITE:

Q. Okay. Let's -- let's take genetics,

for example. What kind of questions do you ask?

A. I usually ask if they have any history of cancer in the family, including extended family.

Q. Okay. Anything else?

A. For genetics?

Q. Uh-huh.

A. I mean, certain conditions that go hand in hand with the genetic syndromes. Like for kidney cancer, some of these syndromes have like skin bumps or, you know, lung cysts. So those are the things I would ask.

Q. Okay. So you ask patients about their any family history of -- of cancer or these related conditions, correct?

A. Yes.

Q. Any other ways you go about finding that kind of information?

MR. MANDELL: Objection. Form.

THE WITNESS: Answer?

MR. MANDELL: Yeah. Yeah. Unless I instruct you not to answer, yeah, answer it, yeah.

THE WITNESS: I mean, if there are other records available, that would be it.

BY MR. WHITE:

Q. When you say "records," do you mean records of the other family members who have the cancer condition?

A. Yes.

Q. Okay. How often are you able to obtain records from a patient's family member?

A. Not frequently.

Q. Okay.

A. Rarely.

Q. Okay. I would also imagine if it's their mother or grandmother, it might -- there might be like difficulties in obtaining those documents from that relative's cancer or condition history; is that right?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I mean, some patients come prepared with their, you know, these documents pertaining to the family members.

BY MR. WHITE:

Q. Uh-huh. Okay. In what percentage of cases are you able to obtain medical records about a patient's family member with a cancer or condition?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: Very low.

BY MR. WHITE:

Q. Very low?

A. Uh-huh.

Q. Okay. Under 10 percent?

A. Yes.

Q. Okay. Under 5 percent?

A. Yes.

Q. Okay. Did you see any documents like that, any medical records about family members' cancer or relevant condition history, as part of your work in this case?

A. May I look at my report for Tukes?

Q. Yes, please.

A. Okay.

Q. And at any point you need to look at any of these exhibits in front of you to refresh

your recollection, please do so.

For the record, I just might occasionally ask you which one you're looking at, but that's about it.

A. (Reviews document.)

Okay. I see that for Ms. Tukes I saw genetic counseling records for UNC Chapel Hill about mother.

Q. Okay. Oh, the mother's genetic counseling records?

MR. MANDELL: Objection.

THE WITNESS: It was a mention of the mother.

BY MR. WHITE:

Q. Okay. Okay. In your clinical practice, have you ever had occasion to determine the etiology of a cancer was from PCE?

MR. MANDELL: Objection.

THE WITNESS: Not specifically, but, you know, some of the, let's say, occupations that may have been exposed to these kinds of chemicals.

BY MR. WHITE:

Q. Okay. What kind of occupations do

you mean?

A. Or -- or, you know, some of these patients who have served in military or things of that nature.

Q. Okay.

A. You know, I believe PCE was the dry cleaning kind of solutions, things like that.

Q. Okay. Any other occupations that you can think of?

A. May I take a look as well?

Q. Yes, please.

A. Okay.

Q. And this is your Tukes report?

A. I'm still looking at the Tukes, yes.

Q. Okay.

A. (Reviews document.)

Yeah, I think dry cleaning.

Q. Okay.

A. For PCE, right, you asked?

Q. Yes, ma'am.

A. Yes, uh-huh.

Q. I'm sorry. Yes, Doctor.

In your clinical practice, have you ever had occasion to find the etiology of a cancer

was due to TCE?

A. Again, not specifically that compound but, you know, I always ask if patients have worked in the industries that may be exposed to solvents.

Q. Okay.

MR. MANDELL: Just -- just note my objection. Sorry, I was a little late on that one.

MR. WHITE: I'll spot you that one.

BY MR. WHITE:

Q. What occupations would be relevant to that for solvents?

A. I don't know exactly if I ask, like I said, specifically for TCE, but I ask, you know, work in textile, work in dry cleaning, work with petroleum and all these kind of organic solvents.

Q. Okay. Okay. Have you ever had occasion in your clinical practice to find the etiology of a cancer was due to vinyl chloride?

A. Only as part of this whole volatile organic compounds.

Q. Okay. So that would be through

looking at or considering their occupational history?

A. Yes.

Q. Okay. Including some of the occupational areas that we just discussed for TCE and PCE?

A. Yes.

Q. Okay. Would you have a similar answer to benzene instead of vinyl chloride, PCE, or TCE?

Have you had occasion in your clinical practice to find the etiology of a cancer was caused by benzene?

A. Yes.

Q. Okay. And would that be through the same method that we've been discussing just now?

A. Yes.

Q. Okay. Have you ever had occasion in your clinical practice to find the etiology of a cancer was due to Camp Lejeune water?

A. Yes.

Q. Okay. How many patients have you made that etiology determination for?

A. At least two that I can recall.

Q. Okay. Roughly speaking, when were these?

A. Years ago.

Q. Okay. Okay. How about in your -- well, without divulging patient identifying or confidential information, do you know how long either of those patients were stationed at Camp Lejeune?

MR. MANDELL: Objection.

THE WITNESS: I did not ask the specifics.

BY MR. WHITE:

Q. Okay. And that would be for both of them?

A. Yes.

Q. Okay. Other than the volatile organic compounds that we've been talking about at Camp Lejeune, have you ever had occasion in your clinical practice to find that the etiology of a cancer was due to any other toxic exposure that we haven't yet talked about?

MR. MANDELL: Objection.

THE WITNESS: Are we talking about kidney? Bladder? Anything?

BY MR. WHITE:

Q. Sure.

A. Anything. I mean --

MR. MANDELL: Objection.

THE WITNESS: Yeah, I mean, we've talked about smoking. There is some other for upper tract cancer exposures that I routinely ask about, like Paracetamol.

Some of the compounds that can be, like, part of the -- the etiology for upper tract for patients who are not in the U.S. Arsenic. So those are the things.

BY MR. WHITE:

Q. Okay. Okay. Okay.

Is it fair to say that you -- so you mentioned you ask if they smoke or have taken Paracetamol.

A. Uh-huh.

Q. Would it be fair to call those risk factors for bladder or kidney cancer?

MR. MANDELL: Objection.

You can answer.

BY MR. WHITE:

Q. Yeah.

A. Yes.

Q. Okay. Generally speaking -- and let's talk about kidney cancer first -- can you identify any other risk factors?

A. Yes. You know, what's quoted in literature is hypertension, chronic kidney disease.

Q. Would diabetes be one?

A. I mean, diabetes is linked to kidney disease sometimes as well. So.

Q. Okay. Would obesity be one?

A. Yes.

Q. I think you alluded to this earlier. Would male gender be one?

A. Yes.

Q. Okay. Is age a risk factor?

A. Yes.

Q. Okay. Are there any risk factors for kidney cancer that depend that -- that turn on race?

A. Can you explain? What do you mean by turning on race?

Q. Sure.
Are there any risk factors associated with race or ethnicity for patients of kidney cancer?
MR. MANDELL: Objection, but you can answer.
THE WITNESS: Certain types of kidney cancer can be linked to, you know, different racial predisposition.
BY MR. WHITE:
Q. Okay. What would those be?
A. So, you know --
MR. MANDELL: Objection.
THE WITNESS: -- for African Americans, you know, sickle cell could predispose them to a certain kind of kidney cancer.
BY MR. WHITE:
Q. Okay.
A. Rare.
Q. Okay. Can you think of any others?
A. Not that I can think of.
Q. Okay. For upper tract urothelial cancer, does it have similar risk factors to

kidney cancer?

MR. MANDELL: Same objection.

You can answer.

THE WITNESS: Yes, but also they have exposure to -- I went to medical school, but I have a hard time pronouncing that one too -- aristolochic acid, which is a very kind of minute percentage of people who develop, but it's a risk factor as well.

BY MR. WHITE:

Q. I regret to inform you, you may have to spell that for the court reporter on the next break.

A. Okay.

Q. Roughly speaking, what percentage of your patients do you determine the etiology of their cancer?

A. I myself or my team?

Q. Let's start with you yourself.

A. Okay. Probably not a huge amount.

Q. Okay. Over/under 10 percent?

A. Over 10 percent.

Q. Over/under 20 percent?

A. I'd say over 20 percent.
Q. Over/under 30?
A. More than 50 I would say.
Q. More than 50?
A. Yes.
Q. Okay. Over 50 percent of the cases you determine the etiology for?
A. They have a predisposing risk factor, yes.
Q. Okay. They have a predisposing risk factor.
Okay. Does having a predisposing risk factor and etiology, are you using those terms interchangeably?
MR. MANDELL: Objection.
THE WITNESS: I think for the purpose of your questions I did.
BY MR. WHITE:
Q. Okay. Okay. Do you have any patients who have no predisposing risk factors for kidney cancer?
A. Yes.
Q. Okay. What percentage do you think, roughly speaking, would that be?

A. Would be a considerable percentage. I would say maybe 70 percent.

Q. Okay. Have no risk -- predisposing risk factors?

A. Yes.

Q. Okay.

A. And I'm sorry. So I think this becomes a little bit of a gray territory, right? Because we've talked about age and race -- and race and age and, I'm sorry, sex.

Q. Uh-huh.

A. So if we count these as risk factors, then, no, right? Because average patient I see would fit in that category.

Q. By definition, about half of your patients would be -- would be male?

A. Right. Yeah.

Q. Okay. That's a very good clarification. Thank you.

Let me ask it again with that -- with that caveat.

Other than gender and age, what percentage of the patients do you see clinically have no other predisposing risk factors?

MR. MANDELL: I'm going to object, but you can answer.

THE WITNESS: Okay. So that would be about -- for kidney specifically, I would say about 60, 70 percent.

BY MR. WHITE:

Q. Okay. How about upper tract uro- -- UTUC?

A. Again, majority of patients. I would say 70.

Q. Okay. How about for bladder?

A. For bladder because smoking is so prevalent, that number would be much less. So I would say about maybe 30, 40 percent.

Q. Okay. Okay. All right.

I'm going to go through a few questions where I'm just trying to determine what kind of medicine you practice and what kind of medicine you don't practice.

Do you consider yourself a nephrologist?

A. No.

Q. Okay. How about an epidemiologist?

A. No.
Q. Okay. Geneticist?
A. No.
Q. Okay. Toxicologist?
A. No.
Q. Okay. Environmental exposure modeler?
A. No.
Q. Okay. Environmental risk assessor?
A. No.
Q. Okay. An economist?
A. Economist?
Q. Yeah.
A. No.
Q. An accountant?
A. No.
Q. Worse one of all, Doctor.
Attorney?
A. Absolutely not.
Q. Good answer.
Do you consider yourself an expert in pharmacology?
A. No.
Q. How about environmental health?

A. No.
Q. Okay. Occupational medicine?
A. No.
Q. Statistics?
A. No.
Q. Okay. Are you qualified to make disability assessments for your patients?
MR. MANDELL: Objection.
You can answer.
THE WITNESS: I mean, I don't know what that means exactly.
BY MR. WHITE:
Q. Sure. I'll give you an example.
There's sometimes for workers' compensation or disability insurance claims, people will have doctors make formal percentage-based disability assessments for their patient where a doctor might say, because of this condition, my patient is 70 percent disabled, or because he lost his arm, it's 40 percent disabled, or something along those lines.
Have you ever had occasion to do anything like that?
A. So for temporary disability, you

know, after a treatment, yes, but never for permanent or anything like that.

Q. Okay. Are you qualified to make quantitative toxicological risk assessments for chemicals?

MR. MANDELL: Objection.

You can answer.

THE WITNESS: I mean, I can interpret literature, but I don't write literature like that.

BY MR. WHITE:

Q. Okay. Are you qualified to do the actual mathematical assessment of -- of toxicological risk calculation?

MR. MANDELL: Same objection.

You can answer.

THE WITNESS: No.

BY MR. WHITE:

Q. Okay. How about are you qualified to make quantitative toxicological exposure assessments for chemicals?

MR. MANDELL: Objection.

THE WITNESS: I'm not clear on that.

BY MR. WHITE:

Q. Sure.

Are you -- are you qualified to make the mathematical quantitative calculations for determining toxicological exposure for chemicals?

MR. MANDELL: Objection.

THE WITNESS: Probably not.

BY MR. WHITE:

Q. Okay. Have you ever participated in human health environmental risk assessments like with the EPA or ATSDR?

A. No, not formally.

Q. Okay. Did you say "not formally"?

A. Yeah. No.

Q. Okay. Have you ever participated in such an assessment informally?

A. I mean, just for my own. Again, kind of reading literature, etc.

Q. Okay. So just in your -- in your own time reading materials about such assessments; is that correct?

A. Correct.

Q. Correct?

A. Yes.

Q. Okay. Thank you.

Have you ever read any of the EPA's risk assessment guides?

A. Was it one of the EPA materials I reviewed? If it's there, then maybe.

Q. Okay. How about specifically the EPA's Risk Assessment Guidance for Superfund sites?

A. I don't -- I don't believe so.

Q. Okay. How about the EPA's Guidelines for Carcinogen Risk Assessment?

A. I don't believe so.

Q. Okay. Have you ever published any peer-reviewed work on PCE, TCE, vinyl chloride, or benzene?

A. No.

Q. How about for any other volatile organic compounds?

A. Not directly, but I wrote some chapters on kind of involving the risk assessment for the urothelial cancers and kidney cancers.

Q. Okay.

A. That may have alluded to some of those, not specifically.

Q. Okay. So it may have alluded to generally toxicological exposures?

A. Occupational exposures, yes, risk factors.

Q. Okay. Is that -- is that listed on your CV?

A. It should be.

Q. Okay. Could you help me find it on your CV just so I make sure I know where it's at?

A. So the upper tract chapters have that, and also I wrote a chapter for kidney cancer.

Q. I'm looking. Unfortunately, I don't have page numbers on this.

A. So, so book and textbook chapters. Yeah, there's no page number here.

Q. Yeah, that's actually I was looking at the same spot. So.

A. So page 3 I guess.

Q. Okay.

A. So the urothelial like 2, 3, 4, and 5 and 6 all have some risk assessment.

Q. Okay. Did you do any of the risk assessment that's present in those chapters?

A. Myself? No.
Q. Okay. Okay. Would you be qualified to do any of the risk assessment that's in those chapters?
A. Again --
MR. MANDELL: Objection.
You can answer.
THE WITNESS: -- what is -- what is -- can you explain "risk"? What that means?
BY MR. WHITE:
Q. Sure.
Are you qualified to make quantitative assessments of those risks using statistics and mathematics?
MR. MANDELL: Objection.
THE WITNESS: No.
BY MR. WHITE:
Q. Okay. Have you ever read any textbooks about dose or exposure modeling?
MR. MANDELL: Objection.
THE WITNESS: I can't recall. Maybe.
BY MR. WHITE:

Q. Okay. How about for environmental risk assessment?

A. Again, maybe.

Q. Okay. Okay. Other than the book chapters, have you ever published any peer-reviewed work on a specific toxicological substance or substances?

A. No.

Q. Okay. Where are you licensed to practice medicine?

A. Currently, DC and Maryland.

Q. Okay. Have you ever been the subject of a disciplinary action in regards to your medical license?

A. No.

Q. Okay. Ever been a party to a medical malpractice action?

A. Once and the case was dropped.

Q. Okay. Did it settle or was it just affirmatively dropped?

A. It was like even before it proceeded to have any kind of legal implications.

Q. Okay. Okay. For the next questions, I'm just going to use -- let's start

with Mrs. Tukes' report.

A. Yes.

Q. And I'm just going to use that as a model to walk through and ask you questions, and whenever I -- whenever we need to shift to looking at one of the other reports, I'll let you know.

Does that make sense?

A. Yes.

Q. All right. Let's take a look at page -- it's numbered as page 2, but it's probably the fifth page into the packet.

You reference the standard of "at least as likely -- at least as likely as not" in your reports; correct?

A. Yes.

Q. Did you use any other standards beyond "at least as likely as not"?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I believe I used "more likely than not" as well.

BY MR. WHITE:

Q. Okay. Any others?

A. I don't believe so.

Q. Okay. Have you ever used the "at least as likely as not" standard in your clinical practice?

A. I mean, not in the legal terms but, I mean, I think a lot of the times, trying to decide on kind of equivalent treatments or interpreting literature on kind of equivalent, again, treatments.

Q. Okay. Have you ever used the standard to -- the standard "at least as likely as not" to make a diagnosis, whereby you would say or think something along the lines of: At least as likely as not, this patient has diagnosis X?

Have you ever used it in that way?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I guess so. Probably.

BY MR. WHITE:

Q. Okay. Do you understand "at least as likely as not" to mean equal chance of going either way?

A. Yes.

MR. MANDELL: Objection.

Sorry.
BY MR. WHITE:
Q. Okay. So 50/50 coin flip kind of standard?
MR. MANDELL: Objection, but you can answer.
THE WITNESS: Yes.
BY MR. WHITE:
Q. Okay. Have you ever used it to make surgical determinations along the lines of: It's 50/50 or a coin flip whether this patient needs this particular surgery?
A. I don't think we operate based on a coin flip. Usually has to be more than that for me to operate.
Q. Okay. And why is that?
A. I mean, usually kind of the benefits of the surgery have to be much more clear than the 50/50. So, you know, surgery versus no surgery is -- is not a fair representation. I would say maybe surgery A versus surgery B, maybe that would be a different kind of representation.
Q. Okay. Okay. How about you use the standard along the lines of: It's 50/50 a coin

flip patient needs medication Y versus medication Z?

A. Yes.

Q. Okay. Have you ever used the "at least as likely as not" standard in your research work?

A. I mean, I've seen it in an article, but not my personal research.

Q. Okay. What was the article in which you saw "at least as likely as not" standard used?

A. I believe that was one of the articles that was disclosed on the supplemental materials that I reviewed.

Q. Okay. Other than that one article, are you aware of the "at least as likely as not" standard being used in any other's research?

A. I mean, not when it's -- not -- not spelled out that way but, you know, any non-inferiority trial that looks at the treatment A versus B is pretty much that standard.

Q. Well, just to make it clear on the record, what is a non-inferiority trial?

A. That means, you know, if we have one treatment when we're -- but we're having another

treatment which may be newer to see if the outcomes are going to be equivalent to the first one.

Q. Okay. And this would be a new treatment in an experimental phase?

A. Yes.

Q. In like a --

A. A lot of times.

Q. -- human trial?

A. Yes. Yes.

Q. I'm sorry. I did not mean to speak over you.

A. Yes.

Q. Okay. And is the reason for using that, inferiority assessments for new medication research, to make sure that the study participants aren't any worse off for participating in the study?

A. Exactly.

Q. Okay. But that is not the standard by which to introduce a new medication; is that correct?

MR. MANDELL: Objection.

THE WITNESS: It depends.

BY MR. WHITE:

Q. Okay. In what situations do you know of where a new medication can be introduced beyond the experimental human trial phase based on a 50/50 coin flip "at least as likely as not" standard?

MR. MANDELL: I'm going to object, but you can answer.

THE WITNESS: I'm trying to think of a concrete medication.

But let's say there was a new medication approved for bladder cancer, a new regimen that was approved for bladder cancer, that is as good as the prior medication that we've used before, and now the medical oncologists are a little confused which one to use.

So that's kind of, you know, that's the type of introduction that you asked about pretty much.

BY MR. WHITE:

Q. Okay. I'm sorry. That was my fault because I asked an unclear question.

In what -- are you aware of a

pharmaceutical company being able to bring a medication, introduce a new medication based on an "at least as likely as not" standard?

MR. MANDELL: Objection.

THE WITNESS: You know, frankly, I don't recall if FDA approves, you know, medication based on as, you know, that kind of a concept.

BY MR. WHITE:

Q. Okay. Okay. Have you ever used the "at least as likely as not" standard in any of the other expert reports that you've written for litigation?

A. I don't think so.

Q. Okay. What standards did you use in those other reports?

A. I mean "more likely than not."

Q. Okay. Is your understanding that "at least as likely as not" is a lesser standard than "more likely than not"?

A. I mean, I wouldn't call it a lesser standard, but it's a different standard.

Q. Okay. So if a likelihood is 50/50, a coin flip, that would be not "more likely than

not," correct?
A. Yes.
Q. Okay.
A. Sounds like an English teacher, but yes.
Q. I'll be very careful in how I ask these questions. I'm not in that, but I think you got that one.
A. (Laugh). Okay.
Q. Would you agree with me that "at least as likely as not" is a legal standard?
A. Yes.
Q. Okay. Do you know where it comes from?
A. I --
MR. MANDELL: Objection. Foundation and form, but you can answer.
THE WITNESS: I think it was either Congressional approval or this ATSDR definition.
BY MR. WHITE:
Q. Okay. Do you know where and why the ATSDR uses that standard?
A. I quoted the ATSDR when I put a

definition for it.

Q. Okay. Do you know in what cases they use that standard?

MR. MANDELL: Objection.

THE WITNESS: I don't recall.

BY MR. WHITE:

Q. Okay. Do you know how this standard is used in other areas of the law?

MR. MANDELL: Objection.

THE WITNESS: No.

BY MR. WHITE:

Q. Do you know how the standard is used by the Department of Veterans Affairs?

MR. MANDELL: Objection.

THE WITNESS: No.

BY MR. WHITE:

Q. Okay. Have you ever heard this standard called "equipoise"?

A. That's what I wrote.

Q. Okay. All right. So that's a yes?

A. Yes.

Q. Okay. Would you agree with the following statement:

"Equipoise denotes a lack of

consensus across the medical community."

MR. MANDELL: Objection.

THE WITNESS: No, I don't think that's the definition because I have the definitions here and that's not what it says.

BY MR. WHITE:

Q. Okay. If it's not the definition, would you still agree with the statement that it denotes a lack of consensus across the medical community?

MR. MANDELL: Objection.

THE WITNESS: I would disagree with that.

BY MR. WHITE:

Q. Okay. Would you agree or disagree with this one:

"Equipoise is used in clinical research to refer to a situation where there is uncertainty or conflicting expert opinion about the relative merits of two or more interventions rather than a perfect balance of opinions."

MR. MANDELL: Objection. Form and foundation, but you can answer.

THE WITNESS:

(Reviews document.)

So I can go by kind of, again, what I quoted and that's not what I quoted.

So the quote said was either meta-analysis does not, you know, have a convincing evidence or meta-analysis conducted, but at least one epidemiological study is a high utility that associates.

BY MR. WHITE:

Q. Okay. Beyond the definition that you use in your reports, would you still agree or disagree with that statement?

A. Can you read it again?

Q. Sure.

Equipoise is used to -- I'm sorry. Let me restart.

"Equipoise is used in clinical research to refer to a situation where there is uncertainty or conflicting expert opinion about the relative merits of two or more interventions rather than a perfect balance of opinions."

MR. MANDELL: Objection.
THE WITNESS: Yeah, that's not how I think about this.
BY MR. WHITE:
Q. Okay. Okay. Have you ever heard this standard "at least as likely as not" referred to as the "benefit of the doubt" --
MR. MANDELL: Objection.
BY MR. WHITE:
Q. -- as to giving one side the benefit of the doubt?
MR. MANDELL: Objection.
THE WITNESS: I haven't heard that.
BY MR. WHITE:
Q. Okay. In your medical research, have you ever reached a conclusion by giving one potential outcome the benefit of the doubt versus another one?
A. I mean, I don't think we use "benefit of the doubt" when we conduct research.
Q. Okay. Okay. In clinical treatment of patients, have you ever made one diagnosis over the other because you're using a benefit of the

doubt to that one particular diagnosis versus the other?

MR. MANDELL: Objection.

THE WITNESS: No, I don't think so.

BY MR. WHITE:

Q. Okay. Are you aware of any empirical metric that defines the benefit of the doubt?

A. No.

Q. Okay. Where did you receive -- so I see here you've quoted the statute under the CLJA, and that's the one "standards to meet the burden of proof described in paragraph 1."

Where did you obtain that?

A. Some of the materials was passed to me in the very beginning of the -- my engagement.

Q. Uh-huh. Okay. I don't want to know about substance of communications you had with the lawyers.

But is this the standard you were -- that was part of your basic instructions to use?

MR. MANDELL: Objection.

Don't answer any questions in

terms of communications from lawyers to you. I would interpret "instruction" that way but...

MR. WHITE: Yes.

MR. MANDELL: So don't do that, but if there's some other way that you can interpret that, then you can go ahead and answer.

THE WITNESS: I mean, I was just given the materials.

BY MR. WHITE:

Q. Okay. So you were given this statutory language that's quoted in your report?

A. Yes, it was in the materials.

MR. MANDELL: Objection. Yeah.

BY MR. WHITE:

Q. Okay. Were you similarly given the language that's quoted in the bottom half of the causation standard section of the Tukes report where it has the underlined text "sufficient evidence for causation"?

MR. MANDELL: I'm going to object and again instruct you not to

answer in terms of communications to you. So I'm going to give you that instruction.

THE WITNESS: Again, it was in the -- in the packet of all the information that was forwarded to me.

BY MR. WHITE:

Q. Okay. Okay. Have you ever -- in any of your other expert reports, have you ever cited a piece of statutory language?

A. I honestly can't recall.

Q. Okay. Have you ever cited statutory language like that in a peer-reviewed medical publication?

A. No.

Q. Or any other medical literature that you read?

A. No.

Q. What is your understanding of the phrase "evidence sufficient to conclude that a causal relationship exists"?

MR. MANDELL: Objection.

THE WITNESS: I mean, just what it sounds like. There's evidence

that there is (A) some relationship to the cause.

BY MR. WHITE:

Q. Okay. Do you agree that a correlation between an exposure to a substance and a disease in the -- in the person is not necessarily the same as the exposure causing the disease?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: Correct.

BY MR. WHITE:

Q. Okay. Would you agree that part of determining whether an association is causal as opposed to a mere correlation includes evaluating the quality of the studies reporting the association?

A. Yes.

Q. Okay. And part of determining whether an association is causal as opposed to merely correlation would include whether chance and biases can be ruled out with reasonable confidence?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. In medical literature and with respect to ruling out chance and biases, what does reasonable confidence mean to you?

MR. MANDELL: Objection.

THE WITNESS: I don't -- I don't know if I can answer that question the way you are posing it.

BY MR. WHITE:

Q. Sure.

A. Can you change it?

Q. Yes. Let me see what I can do here.

In point 3 of the standard, and this tips onto the next page, page labeled number page number 3 in your Tukes report. It says:

"Number 3. Meta-analysis has not been conducted, but there is at least one epidemiological study considered to be of high utility in which an association between the exposure and increased risk of the disease of interest has been found and in which chance and biases can be ruled out with reasonable confidence."

As the phrase "reasonable confidence" is used there, what does that phrase mean to you?

A. I mean, meaning the study has scientific merit --

Q. Okay.

A. -- and it's kind of hit all the checkmarks for, you know, being -- again, what's the word that I'm looking for? Have a merit.

Q. Okay. So the first line of this says:

"A meta-analysis has not been conducted, but there is at least one epidemiological study to be considered of high utility."

Have you ever treated a patient on the basis of one study if there are other studies that reach the opposite conclusion?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I mean, usually that's not the case. Usually there are multiple studies on each topic published and, you know, yes, sometimes they all

have the same conclusion. Sometimes there's some conflicting conclusions.

BY MR. WHITE:

Q. Uh-huh. In such a situation, would you ever rely upon one study that's going a different direction from the remaining studies on the topic to base a patient's treatment positions on it?

MR. MANDELL: Objection. Form and foundation, but you can answer.

THE WITNESS: So if there are three studies that tell me, you know, the opposite of the one study I want to use, I would probably not use that study.

BY MR. WHITE:

Q. Okay.

A. Like well-written studies.

Q. Yeah. Understood. Understood.

So if we can go --

Have you ever used the phrase "a reasonable degree of scientific or medical certainty" in your academic publications?

A. I don't think so.

Q. Okay. How about the same phrase but

in your clinical practice?

A. No. I think it's very much of like a -- I use it more for legal.

Q. You've predicted my next question. Do you use the standard "a reasonable degree of scientific or medical certainty" in your expert work?

A. Yes.

Q. Okay. Have you used that -- other than your reports in this case, have you used that standard "to a reasonable degree of scientific or medical certainty" in all of your prior expert reports, to the best of your recollection?

A. Yes.

MR. WHITE: Okay. All right. I'm noticing that we are at 11:45. We can go off record.

MR. MANDELL: Sure.

THE VIDEOGRAPHER: The time is 11:46 AM. We are now off the record.

(A recess was taken.)

THE VIDEOGRAPHER: The time is 11:56 AM. We are now on the record.

BY MR. WHITE:

Q. All right, Doctor. We're back after a short break.

Did you have occasion to talk to anybody about the substance of your testimony today or during that break?

A. No.

Q. Okay. Just a couple things I want to follow up on.

You said that you did some consulting work for pharmaceutical companies?

A. Yes.

Q. What is the nature of that consulting work?

A. It's on my CV. You know, they ask me about their products or, you know, in development of products and things of that nature.

Q. Okay. So would that be assisting in drug development?

A. Drug development, implementation, yes.

Q. How about any of the testing or clinical trials for medications?

A. Yes.

Q. Okay. Do you -- trying to think the

best way to phrase this.

Do you run the clinical trials or do you assist on the side?

A. I don't know what's the best to answer it.

You know, clinical trials are fairly complex, right? So they're, like, initiated by a company and then, you know, the sites run it for them. So I've been part of the sites that run some things for them.

Q. Okay. Are all of these drugs for urologic cancers?

A. Yes.

Q. Okay. Okay. Any -- do you work for one particular pharmaceutical company, or is it sort of an intermediary that the companies hire to conduct their clinical trials?

A. No. On my CV under consultantships, it lists the companies that I've worked with.

Q. Okay. Okay.

A. It's probably the last -- I should really number the CV. It's like in the middle somewhere.

Q. Okay. That's okay.

Also, I asked you some questions about your -- well, I'll come back to that.

On page -- the numbered page 3 of Mrs. Tukes' report, which I believe is Exhibit Number 1, you give a medical history for Mrs. Tukes. And I just want to go through and make sure that -- make sure that I am understanding this correctly.

When you say "multifocal" tumors, that means in layman's terms tumors appearing on different spots of the organ?

A. Yes.

Q. Okay. And bilateral tumors would mean appearing on both sides, in this case both kidneys?

A. Yes.

Q. Okay. Multifocal and bilateral tumors in the same person. That is not a common presentation for kidney cancer, correct?

MR. MANDELL: Objection.

THE WITNESS: Correct.

BY MR. WHITE:

Q. This isn't used here, but it's used in a couple other places in your report.

Am I correct that synchronous tumors mean tumors that are occurring at the same time?

A. Yes.

Q. And metachronous tumors are tumors that appear at different times?

A. Yes. Metachronous.

Q. Okay. Thank you.

You note that Mrs. Tukes has post nephrectomy chronic kidney disease, or referred to by CKD.

Is her CKD as it stands today, or at least as of the last medical records you reviewed for her, is her CKD clinically manifested in anything other than her eGFR figures?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I mean, the last records we have are after her kidney transplant, aren't they?

BY MR. WHITE:

Q. Uh-huh.

A. So yes. I mean, it's manifested by her having kidney transplant.

Q. Okay. Is she in her -- in her

present state, other than the lowered eGFR numbers indicating CKD, is she experiencing any clinical symptoms or any loss of functions or capacities due to CKD?

MR. MANDELL: Objection.

THE WITNESS: I mean, again, CKD resulted in transplant and then, you know, now she has a different lifestyle after transplant. So I don't know how to put these two together.

BY MR. WHITE:

Q. Okay. Okay. Has she had CKD after her transplant?

A. I don't recall her creatinine numbers after, like, the most recent.

Q. Okay. Okay. You note that Ms. Tukes -- Mrs. Tukes has hypertension.

Was that before or after her nephrectomies, or both?

A. She had -- appears to me it was before.

Q. Okay. Do you know if she has hypertension following her kidney transplant?

A. I don't recall that information.

Q. Okay. You note that she has sleep apnea.

Was that -- did she have that before the nephrectomy or after the nephrectomy, or both before and after?

A. I don't recall that.

Q. Okay. Would the fact that she has sleep apnea be relevant to your opinions?

A. No.

Q. Okay. How about the fact that she has hyperparathyroidism of renal -- okay.

What is hyperparathyroidism of renal origin?

A. Some -- some definition by endocrinologist or nephrologist.

Q. Okay. Are you qualified to make that diagnosis?

A. No.

Q. Okay. Okay. So is that diagnosis relevant to the opinions you offer here today?

A. No.

Q. Okay. How about for osteoarthritis?

A. Not relevant.

Q. Okay. Are you aware -- so there's

some discussion in your report about Mrs. Tukes' mother's cancer, and we know that it mentions a renal mass and it was metastatic.

Are you aware of any other sites where Mrs. Tukes's mother had cancer beyond just the kidney?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: No, I think it was unclear.

BY MR. WHITE:

Q. Okay. Okay. And it's unclear that the cancer started at the kidney and spread elsewhere versus the cancer started elsewhere and spread to the kidney, correct?

A. That's correct.

Q. Okay. Are you aware of any of the facts surrounding Mrs. Tukes' cousin having kidney cancer?

A. No.

Q. Okay. Do you know whether the cousin was on Mrs. Tukes' mother's side of the family?

A. I don't recall that information.

Q. Okay. Okay. What would you consider to be a stable creatinine level in a patient like Mrs. Tukes post kidney transplant?

MR. MANDELL: Objection.

THE WITNESS: Again, this is something that a nephrologist would assess.

BY MR. WHITE:

Q. Okay. So are you -- so are you qualified to offer any opinions about whether or the extent to which Mrs. Tukes's chronic kidney disease is controlled or uncontrolled?

A. Correct.

Q. You are not qualified to make those opinions?

A. Correct.

Q. Okay. Are you aware that Mrs. Tukes who died as a result of kidney cancer?

A. I wasn't aware of that.

Q. Okay.

MR. MANDELL: One second.

MR. WHITE: Sure.

MR. MANDELL: When we came back from a break, did you unmute by any

chance?

THE VIDEOGRAPHER: It's unmuted now.

MR. MANDELL: It's unmuted?

THE VIDEOGRAPHER: It's unmuted.

MR. MANDELL: Great. Thank you.

BY MR. WHITE:

Q. If we can turn to the next page. This is internally paginated page number 4 of Exhibit 1, and we see at the top number 7 "Dr. Irving Allen Report."

In this first paragraph at the top of page 4, are you offering any genetics opinions independent of those contained in Dr. Allen's report?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: No.

BY MR. WHITE:

Q. Okay. In the second paragraph, are you offering any genetics opinions independent of those contained in Dr. Allen's report?

MR. MANDELL: Objection.
THE WITNESS: No.
BY MR. WHITE:
Q. Okay. How about in the third paragraph?
A. Yes.
Q. You are offering opinions of your own?
A. Based on the report.
Q. Okay. So your genetics opinions -- is it fair to say that your genetics opinions in that third paragraph are based on the conclusions provided by Dr. Allen in his report?
A. Yes.
Q. Okay. If Dr. Allen is incorrect about the increased -- the genetically-based increased susceptibility on those two genes, could that change the opinions that you offer in that third paragraph?
MR. MANDELL: Objection.
THE WITNESS: Partially.
BY MR. WHITE:
Q. Okay. If he is -- if he is wrong and she, Mrs. Tukes, does not have increased

susceptibility due to those two genes, would anything you say in that third paragraph still be valid?

MR. MANDELL: Objection.

BY MR. WHITE:

Q. I'm sorry. Would still be accurate?

A. Okay. Give me a moment to look at it.

Q. Sure. Sure.

A. (Reviews document.)

I think probably my first sentence would stay the same and the rest would -- would change.

Q. Okay. In the first sentence, the facts that -- you say "Mrs. Tukes did not have any other risk factors."

Would that part stay the same?

A. Yes.

Q. Okay. You start that sentence by saying "This is significant."

If it turns out that Dr. Allen is wrong in his opinions, that would be -- that would not be significant, correct? Or would it --

MR. MANDELL: Finish your

question.
BY MR. WHITE:
Q. Let me restart.
The significance of Dr. Allen's report would be diminished if he were incorrect in his conclusions, correct?
A. Yes.
Q. Okay. Okay. If we look down to Section 8 about in the middle of the page "Exposure Assessment and Factual History," you -- you list PCE, TCE, vinyl chloride, and benzene and some figures there listed in micrograms per liter.
Am I correct that you are take -- that these are the numbers extracted from Dr. Reynolds' report?
A. Yes.
Q. Okay. Are you adding any of your own independent opinions to reach these figures, or are you just taking her figures, for lack of a better phrase, copy and pasted into your report?
A. I'm not making any independent assessments.
Q. Okay. Okay. Mrs. Tukes herself was

not in the military, correct?
A. Correct.
Q. Okay. I think you note this is in there.
Mrs. Tukes lived at the -- at a place called the Hostess House on Hadnot Point in June of 1985.
Is that your understanding?
A. Yes.
Q. Where did you get that fact from?
A. It may have been her testimony.
Q. Okay. Have you ever seen any documents that reference her living at the Hostess House in June of 1985?
A. I don't recall.
Q. Okay. You state that she lived there at the Hostess House in June of 1985, but was then in the Sherwood Mobile Home Park beginning in July of 1985, correct?
A. Yes.
Q. So she would have been at the Hostess House for, give or take, a month?
A. Hostess House.
(Reviews document.)

Yes.

Q. Okay. Are you aware if the Sherwood Mobile Home Park is on Camp Lejeune or off-base?

A. I'm sorry, I can't recall that.

Q. Okay.

A. It says it's "across the street."

Q. Sure. Okay.

Are you aware if the water received at the Sherwood Mobile Home Park at that time in the latter half of 1985, are you aware if it was supplied by the United States?

MR. MANDELL: Objection.

THE WITNESS: I don't recall that.

BY MR. WHITE:

Q. Okay. Are you -- are you aware if that water was contaminated in any way?

MR. MANDELL: Objection.

THE WITNESS: I'm not aware of it.

BY MR. WHITE:

Q. Okay. In your analysis in Mrs. Tukes' report, do you consider any contamination from these five months from July

1985 to December 1985, do you consider that in your -- the contaminant levels that you analyze in your report?

MR. MANDELL: Objection.

THE WITNESS: You said July '85 to December?

BY MR. WHITE:

Q. Correct.

A. No. I -- I have there levels of benzene noted.

Q. Okay.

A. That's about it.

Q. And you're talking about the chart that tracks from page 6 onto page 7?

A. Correct.

Q. Okay. Do you know if those 3.00 benzene figures -- you're looking at the ones on the far right-hand column?

A. Yes.

Q. The ones in red, are you aware if those are included in the total of 60 down at the bottom of that chart that is on page 7?

A. I can't recall, but it's easy to check.

Q. Okay. And that would just be?
A. Calculator.
Q. Okay. And one would check by just totaling up the figures that are not in red ink versus the figures that are in red ink?
A. Yes.
Q. Okay. Okay. Then you state that from December 1985 to January 1987, Mrs. Tukes was at Tarawa Terrace, right?
A. Yes.
Q. And --
MR. MANDELL: Can I find where you are again?
MR. WHITE: What's that?
MR. MANDELL: I'm missing where you are.
MR. WHITE: Oh, I'm sorry. We're on --
MR. MANDELL: Oh, are you on -- I thought you were referring to the report. I'm sorry.
MR. WHITE: I'm talking about the exposure --
MR. MANDELL: Yep.

MR. WHITE: -- figures that she talks about on page 4 and probably onto page 5.

MR. MANDELL: Okay. I didn't -- I thought you were reading from a place in the report. You got me confused of it.

MR. WHITE: That's okay. It's I'm reading from my outline.

MR. MANDELL: Sounds good.

MR. WHITE: Okay.

BY MR. WHITE:

Q. From -- okay. Let me make sure I get this.

You state in your report that Mrs. Tukes was at Tarawa Terrace from December '85 through January 1987, correct?

A. Yes.

Q. Okay. So that's about 13 months, give or take, right?

A. Yes.

Q. Okay. So you just -- for Mrs. Tukes' report, you just took the contaminant levels straight from Dr. Reynolds' report,

correct?

A. Yes.

Q. Is that also the case for the Mr. Mousser and Mr. Howard reports?

A. Yes.

Q. Okay. If Dr. Reynolds's figures are incorrect for, for example, the 13 months at Tarawa Terrace and the contaminant levels were lower than what she says, that could change the substance of your opinions, correct?

MR. MANDELL: Objection.

THE WITNESS: It could.

BY MR. WHITE:

Q. Okay. As for Mrs. Tukes' time at Hadnot Point, if it were determined that there was no contamination in the water system at Hadnot Point for the month that she was at Hostess House, that could change your opinion, correct?

MR. MANDELL: Objection.

THE WITNESS: Well, I think the Hadnot Point only commented on benzene. So I don't think it would change very substantially.

BY MR. WHITE:

Q. Okay. It would, if I'm correct, change the 60 micrograms per liter to zero, correct?

A. Yes.

Q. Okay.

MR. MANDELL: Note my objection to that question.

BY MR. WHITE:

Q. You state -- and we might be onto page -- yeah, we're now onto page 6 in your report. You state that:

"The levels of PCE in the Camp Lejeune water supply exceeded the EPA's maximum contaminant levels (MCLs)."

Do you know how the EPA determines MCLs?

A. I don't recall the methodology.

Q. Okay. Did you independently research the MCLs for PCE, TCE, vinyl chloride, or benzene?

A. I've looked at the EPA, yes.

Q. Okay. Do you know the assumptions that the EPA makes when setting these MCLs?

A. I can't recall.

Q. Okay. Do you know over what length of time of exposure at or above the MCL the EPA assumes when calculating its MCLs?

A. Again, can't recall at the moment.

Q. Do you think you -- did you know that information at some point in time?

A. When I looked up the MCLs.

Q. Okay. How they -- how they determined --

So at the time you looked up the MCLs you knew how the MCLs were determined by the EPA?

A. I believe so.

Q. Okay. Do you know that the MCLs are designed to be acceptable daily drinking water concentrations over a lifetime of exposure that the EPA generally assumes to be 70 years?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I trust that you're quoting the right -- the right phrase.

BY MR. WHITE:

Q. Okay. Do you know if Dr. Reynolds

did any analysis in her reports, or in determining the numbers that you use in your reports, that includes similar assumptions of a lifetime of exposure at 70 years at these levels?

MR. MANDELL: Objection.

THE WITNESS: I don't recall her methodology for putting these tables.

BY MR. WHITE:

Q. Okay. Are you aware that the EPA take the cumulative dose of a contaminant and averages it out over the person's lifetime --

MR. MANDELL: Objection.

BY MR. WHITE:

Q. -- in determining the MCLs?

A. Sounds right.

Q. Okay. Do you know if Dr. Reynolds did a similar analysis to reach the figures that are quoted in your report?

A. I don't recall.

Q. Okay. Do you know what the probability of cancer is from a lifetime of drinking water exposure at the MCL level is?

MR. MANDELL: Objection. Form and foundation.

You can answer.

THE WITNESS: I mean, it's elevated. I can't tell you the number.

BY MR. WHITE:

Q. Okay. You can't tell me the increase of the probability?

A. Correct.

Q. Okay. Are you qualified to make that calculation of increased probability due to exposures at or above the MCLs?

A. (Pause).

MR. MANDELL: Objection, but you can answer.

THE WITNESS: Probably.

BY MR. WHITE:

Q. Okay. Are you qualified to do the quantitative mathematical and statistical analysis of the increase in probability of cancer due to a lifetime of exposure of drinking water at the MCL level?

MR. MANDELL: Objection.

THE WITNESS: I probably could, but I would engage a statistician.

BY MR. WHITE:

Q. Okay. Are you qualified to make a quantitative calculation of cumulative dose and average it over a person's lifetime?

MR. MANDELL: Objection.

THE WITNESS: No.

BY MR. WHITE:

Q. Okay. Are you qualified to -- scratch that.

So I'm going to take a look at the tables on page 6, and I'm going to talk about this first one. It's an orange square on the top corner, blue row, and then some green cells in the middle.

Can you tell me what your understanding of the figures are in the first green column from the left under TCE?

A. So to me looks like these were the concentrations per month --

Q. Okay.

A. -- at the Tarawa Terrace.

Q. Okay. At any point, did you have a table of these figures beyond the rows quoted here or the rows listed here?

MR. MANDELL: Objection.

THE WITNESS: I don't recall that.

BY MR. WHITE:

Q. Okay. I see there's a red cell immediately underneath the orange cell that says "Exposure Dates."

Do you know what the -- is that -- is the color of that cell supposed to signify anything?

A. I mean, it's a partial month for once.

Q. Okay. Is that what you intended to denote by that cell being colored red?

MR. MANDELL: Objection.

THE WITNESS: It -- it is or maybe that was when she was not -- yeah, I think it was a partial month.

BY MR. WHITE:

Q. Okay. Did you prepare this table that's in here or was it supplied?

A. No, I did.

Q. Okay. What did -- what did you intend to convey by making the cell red?

A. I think it was -- give me just a

second.

Q. Sure.

A. (Reviews document.)

Yeah, I think that's what I had.

Q. Okay. Did you copy and paste this table out of any materials prepared by Dr. Reynolds?

A. I believe it was from, yes, Dr. Reynolds.

Q. Okay. Okay. Take -- okay.

And so the figures in the green cells, what are the units of those?

A. So microgram per ML for that certain month.

Q. Okay. So microgram --

A. I'm sorry. Microgram per liter. Sorry. My bad.

Q. That's okay.

Is it -- so the units of these green cells would be microgram per liter per month?

MR. MANDELL: Objection.

THE WITNESS: Per each month, yes.

BY MR. WHITE:

Q. Yeah. For that particular month.
For the month of January 1986, there were 0.18 micrograms per liter that month?
A. January? Yes, uh-huh.
Q. Okay. Your understanding -- so just taking that cell for an example, is your understanding of that number the total micrograms she would have been exposed to that month or do you -- let me ask it this way.
What is your understanding of 0.18 in that cell?
A. So it was the micrograms per liter in the water for that month.
Q. Is that the total amount that she was exposed to? Is that an average concentration across the month or some other metric?
MR. MANDELL: Objection, but you can answer.
THE WITNESS: That's the concentration.
BY MR. WHITE:
Q. Okay.
A. Per month.
Q. Is it averaged over the course of

the month, or is it taken at any one particular day?

A. I actually don't recall --

Q. Okay.

A. -- the exact.

Q. Okay. Then the numbers down at the bottom of this column, 3.65, 82.85 and so on, what units are these in?

A. So these are micrograms per liter in per month or total months. So that's the cumulative.

Q. So that would be -- so that would be taking the first column, 3.65 micrograms per liter per 13 months listed in that column, give or take?

A. Yes.

Q. Taking into account the partial one at the top?

A. Yes.

Q. Okay. So that would be a figure -- that is a concentration figure across 13 months?

A. That's the total amount for 13 months.

Q. Okay. So your -- okay.

Would the table -- the corresponding

tables in the Mousser and Tukes -- in the Mousser and Howard reports have the same units that we just discussed with respect to the Tukes report?

A. Yes.

Q. Okay. So the correct unit for the figures at the bottom of this first table would be micrograms per liter per month?

A. Yes.

Q. Or micrograms per liter?

MR. MANDELL: Objection.

THE WITNESS: Micrograms per liter per month.

BY MR. WHITE:

Q. Okay. Totaled across those 13 or so months?

A. Yes.

Q. Okay. Have you ever seen in any of the toxicological or epidemiological studies instances where monthly concentrations like that were totaled up over a period of time?

A. I think I had some of these quoted. If you don't mind, I'll look at page 13.

Q. Sure.

A. So I quoted some of the studies that

some of these were per milligram, some of these were parts per billion, and some of these microgram per liter per month.

Q. Okay.

A. So these were the ones that I considered.

Q. Taking -- let's just take one for an example. The first bullet point. Cumulative exposure to 27.1 to 44.1 milligrams of PCE.

A. Uh-huh.

Q. And the equivalent corresponding number for that would be -- if we turn back to the table on page 6 -- 82.85, that PCE number there?

MR. MANDELL: Objection.

THE WITNESS: So one is microgram per liter and the other one is milligram. So a little bit of a different unit.

BY MR. WHITE:

Q. Okay. To convert micrograms per liter to milligrams per liter, one would shift the decimal point over 3 spaces, correct?

MR. MANDELL: Objection.

THE WITNESS: Multiply by a

thousand.

BY MR. WHITE:

Q. Okay. Okay. The figure in the first bullet point is in milligrams, correct?

I'm sorry.

The first bullet point on page 13, that figure is in milligrams, correct?

A. Yes.

Q. Okay. And then the figures at the bottom of Table 6 are in micrograms per liter, correct?

MR. MANDELL: Objection.

THE WITNESS: Micrograms per liter per month, yes.

BY MR. WHITE:

Q. Okay. If I wanted to see how -- mathematically how that figure 82.85 micrograms per liter per month would compare to the 27.1 to 44.1 milligrams in that first bullet, how would I do that?

MR. MANDELL: Objection.

THE WITNESS: So if you look at the bullet points on the same page, I mean, you can kind of compare these. So

microgram per liters are, you know, they have a thousand. So you would multiply it by a thousand.

BY MR. WHITE:

Q. Sure.

I'm just talking about the first one. The one that's listed in milligrams.

If I wanted to compare apples and oranges from those milligrams to the micrograms per liter per month in Table 6, how would I do so?

MR. MANDELL: Objection.

THE WITNESS: I think you multiply by a thousand. So they would become 27,100 and 44,100.

BY MR. WHITE:

Q. Okay. To get from milligrams to micrograms per liter a month?

MR. MANDELL: Objection.

THE WITNESS: Yes, to change them to a proper unit.

BY MR. WHITE:

Q. Okay. The exposure figure in that first bullet point, there is not a time component listed there, correct?

A. Correct.
Q. Okay. Nor is there a denomination of over how much water this 27.1 to 44.1 milligrams was distributed, correct?
A. Correct.
Q. Okay. And there is such a concentration component to the table -- figures in Table 6, correct?
A. Yes, table page 6 has kind of both.
Q. Okay. And -- yeah.
And page 6, that would also have a time component too over the course of these months listed, correct?
A. Yes.
Q. Okay. So is it your testimony that to compare the 27.1 to 44.1 milligrams PCE to the 82.85 milligrams of PCE listed in Table 6, you would multiply the 27.1 by a thousand and the 44.1 by a thousand?
MR. MANDELL: Objection.
THE WITNESS: Yes.
BY MR. WHITE:
Q. Okay. Okay.
A. You're making me doubt my math now.

Q. I -- I doubt on that.
A. Okay.
Q. If you look at the table at the bottom of page 6, the cells inside of this table, most of them are 0s, but I see figures in the rightmost column and this continues onto page 7.
What units are these figures in?
A. Same. Microgram per liter per month.
Q. Okay.
A. Or I shouldn't say per month. Microgram liter months.
Q. Microgram liter months.
A. Yeah.
Q. Okay. And then the 60 at the bottom far right cell -- and this is on spilling over onto page 7 -- what units would that 60 be in?
A. Same.
Q. Micrograms?
A. Liter months.
Q. Per liter months.
Okay. And the corresponding tables in the Mousser and Howard reports would be the same, correct?

A. Yes.
Q. Okay.
A. Yeah. Can I just say? Mousser and Howard only had one table as opposed to two tables in Tukes.
Q. Okay.
A. Yeah.
Q. And am I correct that Mrs. Tukes had two tables because she was at one point alleging to live on Hadnot Point and at another point alleging to have lived on Tarawa Terrace, correct?
A. Yes.
Q. Okay. Have you ever looked up the MCL for --
A. I'm sorry. Can I correct?
Q. Sure.
A. I think she visited Hadnot Point at some point in time too, not just lived there.
Q. Okay.
A. Yeah.
Q. How is that fact included in your analysis?
Well, let me ask it this way.
The fact that she visited Hadnot

Point, does that change any of the exposure numbers listed in that table that total up to 60 that we were just discussing?

A. No, I don't think so.

Q. Okay. Early in the report, you quoted the MCL for PCE.

Do you know what the MCL is for TCE?

A. I'd have to look and see. I would have quoted it in my analysis.

Q. Okay.

A. (Reviews document.)

I'm not really sure if it's quoted. So I can't recollect the MCL.

Q. Okay. Do you know if it's quoted in your Mousser or Howard reports?

A. I can check.

Q. Okay. I'm also going to ask about the MCLs for vinyl chloride and benzene. If you'd like to check for all three as you're going through the reports.

A. Yes.

(Reviews document.)

Yes, I quoted 5 micrograms per liter for PCE and then 2 micrograms per liter for vinyl

chloride and then 5 microgram per liter for benzene.

Q. Okay. What units are those MCLs in?

A. Microgram per liter.

Q. Okay. Is that sometimes referred to as parts per billion?

A. Yes.

Q. Okay. Are those interchangeable at least when talking about liquid contaminants in this way?

A. The parts per billion versus microgram per liter?

Q. Correct.

A. I believe so, yes.

Q. Okay. You state in -- if we can turn back to Mrs. Tukes' report, you state that:

"Mrs. Tukes' exposure levels meet or exceed the thresholds identified in epidemiological studies linking these contaminants to RCC risks."

Just as a housekeeping thing, RCC means renal cell carcinoma?

A. Yes.

Q. Okay. Which chemicals in your

analysis in Mrs. Tukes' report meet or exceed those threshold limits?

MR. MANDELL: Objection.

THE WITNESS: I would have to look at where I wrote that.

(Reviews document.)

Yes, TCE and PCE.

BY MR. WHITE:

Q. Okay. So vinyl chloride would not exceed those thresholds for Mrs. Tukes?

MR. MANDELL: Objection.

THE WITNESS: Give me just a second.

BY MR. WHITE:

Q. Sure.

A. (Reviews document.)

I mean, based on what I quoted in Mr. Howard's, you know, 13 is above the level.

Q. For Mr. Howard?

A. Well, no. The -- the levels that are established to be above the MCL.

Q. Okay. Are you using the MCL as the thresholds identified in the epidemiological studies as you use that term on page 7 --

MR. MANDELL: Objection.

BY MR. WHITE:

Q. -- from Mrs. Tukes' report?

A. No, I use it as whatever is defined by EPA just as it is defined.

Q. Okay. So you are taking the MCLs set forth by EPA as the thresholds identified in epidemiological studies linking these contaminants to RCC risks?

MR. MANDELL: Objection. That misstates the testimony, but you can answer.

THE WITNESS: No. So EP -- I'm using it as EPA's kind of standard level for contamination that they mention.

BY MR. WHITE:

Q. Okay. Let me ask.

What are the thresholds identified in the epidemiological literature that you reference on page 7 for Mrs. Tukes', for example, vinyl chloride exposure?

A. Are we looking at the table or are we looking at anything else?

Q. Looking at the table, which of -- so her -- the bottom of the table on page 6 under vinyl chloride.

A. Okay. Page 6. Uh-huh.

Q. It lists 13.04.

A. Uh-huh.

Q. Is it your testimony that that number exceeds the thresholds identified in epidemiological studies?

A. Exceeds the EPA MCL.

Q. Okay.

A. Epidemiological studies, there are some that are quoted, and these are not specifically quoting vinyl chloride in my -- on the page 13.

Q. Okay.

A. But if I look at the section that talks about vinyl chloride and benzene, I don't think I put the number or the level there.

Q. Okay. Without it being in your report, sitting here today, are you able to tell me what that level is based on the literature you cite here?

A. I mean, I would probably refer to

the EPA MCL.

Q. Okay. And you would be -- in the absence of the levels for vinyl chloride that -- that aren't specifically mentioned in your report, you would turn to the EPA's MCL for vinyl chloride, correct?

MR. MANDELL: Objection. Misstates the testimony, but you can answer.

THE WITNESS: Yes, or to the other kind of part about the volatile compounds that are kind of summed up together in some of these numbers that I mention on page 13.

BY MR. WHITE:

Q. Okay. How about for benzene?

And I think this is the table on page 7, the 60.

Which thresholds identified in epidemiological studies does Mrs. Tukes' exposure at 60 exceed?

A. Same answer as for vinyl chloride.

Q. Okay. None of the -- I'm looking at the list of studies you gave on page 13.

I don't see any of those that are specifically benzene.

Is that -- am I reading that right?

A. I think they summed it up as volatile compounds.

Q. Okay. And that would -- your understanding of volatile compounds would be sort of -- would be TCE, PCE, vinyl chloride, and benzene combined?

A. Yes.

Q. Okay. Any other thresholds on which you rely to say that Mrs. Tukes' benzene exposure exceeds the thresholds identified in epidemiological studies?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I remember I think there were some supplemental tables in the Bove I think the papers I've seen.

BY MR. WHITE:

Q. Do you remember which Bove paper it was?

A. I don't recall it. I think it's four of them. We can pull and look.

Q. Okay. That's okay. We'll get there.

A. Okay.

Q. What is -- have you reviewed any studies that calculates something called a "threshold dose" for any of the four chemicals on which you opine?

A. Threshold dose. That specific term I can't recall.

Q. Okay. When you say "thresholds identified in epidemiological studies," do you mean the figures listed on page 13 of Mrs. Tukes' report and, as you mentioned a couple times, the EPA MCLs.

Are there any -- is that what you mean by "thresholds identified in epidemiological studies"?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. Any other bases for determining the thresholds identified in epidemiological studies?

A. I don't recall the specific studies

that I quoted if they had the threshold listed per se.

Q. Okay.

A. But mainly this was both, yes.

Q. Okay. Are you -- did any of the studies you reviewed set out to calculate a threshold exposure level above which one could expect to see these outcomes and below which the risks are -- are not increased?

MR. MANDELL: Objection.

THE WITNESS: I don't think any, other than what I quoted.

BY MR. WHITE:

Q. Okay. You have in the Mousser and -- in the Mousser and Howard reports, you have a bullet point list of exposures similar to the one on page 13 of Mrs. Tukes' report.

And just to be sure that we're all looking at the same thing. In Mr. Mousser's report that list of materials is also on page 13 of Mr. Mousser's report, which I believe is Exhibit 3.

Would your answers be the same for Mr. Mousser with respect to these levels as they

were for Mrs. Tukes?

MR. MANDELL: Objection.

THE WITNESS: They had different levels of exposure.

BY MR. WHITE:

Q. Mrs. Tukes and Mr. Mousser had different levels of exposure?

A. Yes.

Q. Okay. When you say -- in Mr. Mousser's report, if you turn to page -- page 6 and sort of in the middle there, you say:

"Mr. Mousser's exposure levels meet or exceed the thresholds identified in epidemiological studies linking these contaminants to these cancers -- this cancer."

The thresholds you reference there in that sentence, would those be those listed on page 3 of Mr. Mousser's report?

A. Those would be listed on page 5.

Q. I'm sorry. Page 13.

A. Page 5. Oh, sorry. Yes, exceeding. Exceeded the EPA MCLs.

Q. Uh-huh.

A. And then grouping based on kind of

level of exposure, then it would be applicable to the page 13.

Q. Okay.

A. Does that make sense?

Q. I think so.

A. Okay.

Q. You refer to "meet or exceed the thresholds identified in epidemiological studies" on page 6 of Mr. Mousser's report.

A. Right.

Q. Right?

A. Uh-huh.

Q. If I wanted to see what those thresholds are identified in epidemiological studies, I would turn to page 13 of Mr. Mousser's report and look at those bullet points, and perhaps I would also turn to the EPA's MCLs for the applicable chemicals?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: Yes, both.

BY MR. WHITE:

Q. Okay. Both.

I think you can guess where I'm

going next, but if we could look at Mr. Howard's report, and that I believe is Exhibit 2.

And if you turn to page 5 in Mr. Howard's report, you say:

"Mr. Howard's exposure levels meet or exceed thresholds in epidemiological studies linking these contaminants to RCC risks."

If I wanted to find those thresholds identified in epidemiological studies that you reference there on page 5, I would turn to the bullet points that begin on page 10 of Mr. Howard's report and spill onto page 11 and refer to the EPA's MCLs for the applicable chemicals, correct?

A. Yes.

MR. MANDELL: Objection, but you can answer.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. Thank you.

Okay. Let's -- let's turn back to Mrs. Tukes' report as a -- as a guide to walk through these cites.

With respect to PCE exposure, are

you able to give me a number above which one could expect to see causation of kidney cancer UTC and below which the chemical could not cause such cancer?

MR. MANDELL: You can answer.

THE WITNESS: Can I give you that number? No.

BY MR. WHITE:

Q. Okay. Is that number -- how would -- if you wanted to know that number, what would you do to figure that out?

A. I mean, I would --

MR. MANDELL: Objection.

THE WITNESS: -- look at the cumulative exposures outlined by both.

BY MR. WHITE:

Q. Okay. If I wanted to know the threshold amount of PCE -- I'll phrase it this way because I can't remember what I asked my first one about.

If I wanted to know the threshold amounts of PCE or TCE or vinyl chloride or benzene above which one could expect to see causation of kidney cancer UTC -- UTUC for those chemicals and

below which those cancers could not be caused by those chemicals, how would you determine that?

MR. MANDELL: Objection. Asked and answered, but you can answer it again.

THE WITNESS: Looking again at the levels of exposures outlined by both.

BY MR. WHITE:

Q. Okay. Let's take a look at page 13 of -- at page 13 of the Tukes report.

You state that Mrs. Tukes' exposure was "substantial."

What is the definition of substantial that you've used? Or what is the definition of substantial as you use it here in Mrs. Tukes' report?

A. I meant, you know, significant.

Q. And what would be the definition of that?

MR. MANDELL: Objection.

THE WITNESS: Something that kind of shows up in this epidemiological kind of numbers and reports exceeding the

thresholds.
BY MR. WHITE:
Q. Okay. Where does -- can you give me an example of an exposure amount that would not -- that would be insubstantial?
A. I mean --
MR. MANDELL: Objection.
THE WITNESS: -- close to zero.
BY MR. WHITE:
Q. Close to zero? Okay.
One of the numbers, just take, for example, the fourth bullet point down --
A. Uh-huh.
Q. -- on page 13. You list cumulative exposure of 1 to 3100 micrograms per liter month of TCE.
Is it your testimony that any exposure within that range would be a substantial exposure?
MR. MANDELL: Objection.
THE WITNESS: Yes, based on the -- on the evidence that's published.
BY MR. WHITE:

Q. Okay. Below that, there's a similar range of 1 to 155 micrograms per liter month of PCE.

Same answer. Is that any exposure within that range, in your view, substantial?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. Below that one, cumulative exposure of 1 to 4600 micrograms per liter month of exposure to all compounds at Camp Lejeune.

Is it your testimony that exposure within that range would be substantial?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. So if one had exposure to 1 microgram per liter month of TCE for their time at Camp Lejeune, that, in your view, would be a substantial exposure?

MR. MANDELL: Objection.

THE WITNESS: Well, I mean, I'm not making that call. I'm just relying on the experts who make that

call, yes.
BY MR. WHITE:
Q. Okay. I'm just trying to figure out where substantial begins in that range.
That range includes 1, right?
MR. MANDELL: Objection.
THE WITNESS: Based on -- yes. Based on the quoted literature, yes.
BY MR. WHITE:
Q. Okay. So if one had exposure to 1 microgram per liter month of TCE, for example, that, in your view, would be substantial exposure because it falls within that range referenced in the fourth bullet point on page 13 of Mrs. Tukes' report?
MR. MANDELL: Objection.
THE WITNESS: Potentially.
BY MR. WHITE:
Q. Potentially.
What would it depend on?
A. I mean, on how many compounds, you know, kind of circumstances.
Q. Okay. If one had exposure to

1 microgram per liter month of TCE, 1 microgram per liter month of PCE, and by definition it would be 2 micrograms per liter month of exposure to all compounds at Camp Lejeune. So 1, 1, 2 across those bullet points.

Would that, in your view, be a substantial exposure?

MR. MANDELL: Objection.

THE WITNESS: Yeah, that's more than 1. It's already 2.

BY MR. WHITE:

Q. Okay. Okay. Let's take a look at -- let's take a look at, if you could, still on page 13, that first bullet point. Cumulative exposure to 27.1 to 44.1 milligrams of PCE.

Am I correct that that refers to the Aschengrau study, Footnote 8?

A. Yes.

Q. Okay. That was a case-control study, correct?

A. If you'd like to pull that paper, I'm happy to look at it --

Q. Okay.

A. -- to refresh the memory.

Q. You're one step ahead of me, Doctor. While he's digging that out, am I correct that a case-control study compares exposed people with a diagnosis -- the cases -- versus a group of people without the diagnosis, also known as the controls?

Is that basically correct in layman's terms?

A. Yes. I mean, it's not only pertaining to exposure cases, but any kind of cases.

Q. Sure.

It's a -- it's a common structure --

A. It's --

Q. -- for these guys?

A. -- people with something of interest and then controls.

Q. Okay. Okay.

(Document marked for identification as Exhibit 14.)

BY MR. WHITE:

Q. I'm going to hand you what's been marked as Exhibit 14.

Is that the Aschengrau study that

you cite here?

A. Yes.

Q. Okay. Am I correct this case examined the folks with the diagnoses in question in this case -- kidney cancer is what we're going to focus on -- using a latency period; is that right?

A. Yes.

Q. Okay. And using a latency period in a study like this is presuming a lag time between exposure and the later cancer, correct?

A. Yes.

Q. Okay. So just by example, if someone in the study with a diagnosis of kidney cancer was diagnosed in 1985 and the latency period were 15 years, the authors would consider in this case their exposure up until 1970?

A. Say it again.

Q. Yeah. Sure.

For example, if a case in this study --

A. Uh-huh.

Q. -- someone with kidney cancer were diagnosed with kidney cancer in 1985 and if the

latency period the authors used was 15 years, the authors would look at the exposure for that person up until 15 years before their diagnosis?

A. Yes.

Q. Okay. And -- okay.

And if they were diagnosed in 1985, they would look at exposure prior to 1970, 15 years before?

A. Yes.

Q. Okay. And if the latency period were ignored, then all that exposure up until the date of diagnosis would be considered, correct?

MR. MANDELL: Objection.

I'm so sorry. Can you? Can you? I missed that one.

MR. WHITE: No, no, that's fine.

MR. MANDELL: I apologize.

MR. WHITE: It's going to happen.

MR. MANDELL: Yeah. Thank you.

BY MR. WHITE:

Q. If the authors -- the authors -- let

me do it this way.

If the latency period were ignored in an exposure study like this, then all exposure up until the date of diagnosis would be considered and there wouldn't be that 15-year lag time, correct?

A. Yes, I think that's what they -- that's what they did.

Q. Okay. If you could do me a favor and look at page 6 of the Aschengrau study. This would be internally paginated number 289, and it gives some odds ratios for bladder cancer, kidney cancer, and leukemia.

Were they able to calculate any odds ratios for kidney cancer when they assumed a 15-year latency period?

A. No, because they didn't put it in the latency area.

Q. Okay. Do you know if there were any cases that were considered exposed when they used a 15-year latency period?

A. I saw it in the text before. So I think they did some estimates, but with adding the latency, these were not significant. So that's

why they didn't quote, I believe.
Q. Okay. So if you look at -- we're still on page 289 -- at the column, the rightmost column starting with "Thirteen bladder cancer, 6 kidney cancer, and 7 leukemia cases"?
A. Hold on.
Q. I'm sorry.
A. Where is it again?
Q. I'm sorry. I was looking at the wrong place.
A. Okay. We're looking at without latency?
Q. Yeah.
A. Okay.
Q. How many kidney cancer cases were they looking at whenever they included latency?
MR. MANDELL: Are you looking at the chart?
THE WITNESS: I think he's looking at the chart.
BY MR. WHITE:
Q. I am looking at --
A. Table 4?
Q. Yes.

A. Okay. How many kidney cases without latency were zero.

Q. Okay. Do you see any statistically significant odds ratios for kidney cancer on the chart on Table 4 at the bottom of page 289?

A. I mean, there's a wide range of the interval.

Q. Does that make it more or less statistically significant?

A. You know, it's hard to say with such a small number of patients, and I think that's why they had such a wide range of confidence interval.

Q. Okay. Would the range of the confidence interval for kidney cancer in this Aschengrau case -- in this Aschengrau study include the potential that there is no causal effect between PCE and kidney cancer?

MR. MANDELL: Objection.

THE WITNESS: So it looks like they still got a number over 1, which seems to have pushed, you know, past the significance point.

But if -- yes, by definition if it's less than 1, then there would be

no increased risk --

BY MR. WHITE:

Q. Okay.

A. -- when they -- when they read the numbers.

Q. Okay. So I'm looking across from kidney cancer at the bottom in the second row up, and for any exposure it says 1.23 and then below that it has parentheses 0.40 to 3.11.

Am I correct that that 0.40 to 3.11 is the confidence interval?

A. Yes.

Q. Okay. And the fact that that confidence interval includes 1 and below means that it is not statistically significant using 95 percent confidence intervals?

A. I don't know if that's the definition, but it would be better to have it over 1 completely.

Q. Okay.

A. Yeah.

Q. Okay. You use -- looking back to page 13, you use cumulative exposure of 27.1 to 44.1 milligrams.

Can you show me where in the study that you pull that figure from?

A. All right. You're going to give me a few minutes --

Q. Sure.

A. -- to look at this.

(Reviews document.)

It's on the page 289.

Q. Uh-huh.

A. And on the left side.

Q. Okay. I think I see where you're referring to.

A. Uh-huh.

Q. Is it --

A. The 90th percentiles?

Q. Yes.

And that's of the exposed controls, correct?

A. Exposed controls, yes.

Q. Okay. So that means the controls in the study would not have kidney cancer, correct?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. So that is the amount of exposure that the group of participants had at the 90th percentile and did not develop kidney cancer, correct?

MR. MANDELL: Objection.

THE WITNESS: Give me just a second to read it.

(Reviews document.)

I mean, reading it that's -- it looks like the 90th percentile. That's what it was, yes.

BY MR. WHITE:

Q. Of the control group?

MR. MANDELL: Objection.

THE WITNESS: Exposed controls, yes.

BY MR. WHITE:

Q. And the control group would be people who did not develop kidney cancer, correct?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. If you take a look on the next page.

Let's see what we're looking at here. Okay. Tell you what.

Let's go ahead and look at the next bullet point down in page 13 of Mrs. Tukes' report Exhibit 1, and it says sustained exposure to 0.25.3 parts per billion of TCE.

And I understand you to be citing the Andrew study, which is page -- Footnote 18?

A. Yes.

Q. Okay. When you say "sustained exposure" there, what do you mean by sustained?

A. If you pulled the article, we can probably --

Q. Okay.

A. -- figure it out.

MR. WHITE: Okay. Can we go off the record while we sort this out?

MR. MANDELL: Sure.

MR. WHITE: Thanks.

THE VIDEOGRAPHER: Time is 1:07 PM. We are now off the record.

(A recess was taken.)

THE VIDEOGRAPHER: Time is 1:17 PM. We are now on the record.

BY MR. WHITE:

Q. All right. Thank you, Doctor. We're back after a short break.

Did you talk to anybody about the substance of your testimony while you -- while we were on a short break?

A. No.

Q. Okay. I want to go back to the Aschengrau study, which I believe was Exhibit 14, I believe.

A. And may I make --

MR. MANDELL: 14.

THE WITNESS: -- a comment with that to follow up on one of the questions that I answered earlier or?

BY MR. WHITE:

Q. You would like to adjust your answer?

A. Yes.

Q. Okay. Please do.

A. Okay. So I looked at the methodology for this Aschengrau study. So the 90th percentile they referred, it was for all the subjects in the study, even though they actually

only quoted for the case exposed control, but that was something that they calculated for the whole kind of covert of the patients.

Q. Including the cases --

A. Yeah.

Q. -- and controls together?

A. Yeah. So they only -- they reported 90th percentile above which, you know, they considered high exposure.

Q. And that would be including the controls as well, correct?

A. Yes, that's the assumption I'm getting from reading the methodology --

Q. Okay.

A. -- a little bit closely, more closely now.

Q. Okay. So is your testimony that -- if we're looking on internally paginated page 289?

A. Uh-huh.

Q. And we're looking towards three-quarters the way down that first column, the sentence says "The 90th percentiles."

Oh, I'm sorry. All right. We'll turn back to page 289 of the Aschengrau study.

About three-quarters of the way down that first column, the sentence says:

"The 90th percentiles among exposed controls were 27.1 and 44.1 milligrams, respectively."

Is it your testimony that that is the 90th percentile for both exposed and -- for both exposed controls and exposed cases together?

A. Yes.

Q. Okay. Even though it says just controls there?

A. Yes.

Q. Okay. All right. If we could turn to the next page.

And about two-thirds down the first column at the end of the first paragraph after "Discussion," it says that:

"No kidney cancer cases were considered exposed when latency was taken into account, and no meaningful increases in the risk of kidney cancer were detected without latency."

Am I correct that this sentence means that when the authors assumed that there would be at least a 15-year latency period between

exposure and cancer diagnosis that there were no kidney cancers in the case?

MR. MANDELL: Objection to form, but you can answer.

THE WITNESS: Okay. So we're talking about the first paragraph after "Discussion"?

BY MR. WHITE:

Q. Uh-huh.

A. Okay. So they said because of small numbers, the relative risk could not be estimated because of the latent period, you know, calculations with or without. So they reference the small numbers when they were making this discussion.

Q. In the sentence where they say "Because of small numbers," that's with -- with respect to bladder cancer, correct?

A. Yes.

Q. Okay. And then the next sentence with respect to kidney cancer, it says:

"No kidney cancer cases were considered exposed when latency was taken into account, and no meaningful increases in the risk

of kidney cancer were detected without latency."

Am I correct that when the authors assume at least a 15-year lag time between exposure and diagnosis, there were, in fact, no exposed kidney cancer cases in the cohort that they studied?

MR. MANDELL: Objection to form, but you can answer.

THE WITNESS: Yes, that the latency that they were observing was kind of led them to that -- to that conclusion.

BY MR. WHITE:

Q. Okay. And where they say "no meaningful increases in the risk of kidney cancer were detected without latency," am I correct that that refers to the table on the preceding page where the confidence intervals include the risk ratio of 1?

A. (Reviews document.)

Yes.

Q. Okay. Okay. We can set that one aside.

Doctor, do you know what a

dose-response curve is?

A. I think so, yes.

Q. Could you tell me what a dose-response curve is?

A. I mean, looking at kind of how the change in dose affects the response of the patients.

Q. Okay. Am I correct that a positive monotonic dose-response curve means that, as the exposure to the substance goes up, the risk associated with it also goes up?

A. I mean, I haven't looked at the statistical definition but sounds about right.

Q. Okay. Okay. In your opinion, is a nonmonotonic dose-response curve consistent with toxicity?

A. Oh, I can't opine on that.

Q. Okay. Okay. Let's take a look at the Parker study, and if I am correct, this is the study you reference in the third bullet point on page 13 of Mrs. Tukes' report, Exhibit 1.

I have a copy here for you.

A. Yes. Okay.

(Document marked for

identification as Exhibit 15.)

MR. MANDELL: Thank you. What is the number?

MR. WHITE: Good question.

THE WITNESS: 15.

MR. WHITE: 15.

MR. MANDELL: That has a stamp on it just so I am --

THE WITNESS: Yes.

MR. MANDELL: Okay.

MR. WHITE: We pre-stamped.

MR. MANDELL: That's fine. That's fine. I just wanted to make sure.

BY MR. WHITE:

Q. And you cite the number that you get for exposure here. Exposure to a TCE concentration of 267.4 parts per billion.

Do you know where you obtained this number in the Parker study?

A. No. I have to look at it.

Q. Okay. If you take a look at Table 20 almost at the very end of the document.

A. Okay.

Q. It says "Contaminants in Well G & H,

Woburn, Massachusetts 1979."

A. Uh-huh.

Q. And it says chloroform, trichloroethylene, tetrachloroethylene, 1,1,1 tetrachloroethane, and a couple other chemicals I'm not going to hazard a pronunciation of.

Out from trichloroethylene, which is TCE, correct?

A. Yes.

Q. Okay. It says 267.4.

Is this where you obtained the 267.4 parts per billion figure referenced in the third bullet point of Mrs. Tukes' report on page 13?

A. Yes, it looks like it.

Q. Okay. Are you aware of any part in this study that isolates TCE from PCE from any of the other chemicals listed there on that table, such that the toxicity of one could be measured or analyzed versus any of the others?

A. You have to give me a minute.

Q. Okay.

A. (Reviews document.)

No. I think they looked at the kind of per well and put the contaminants per well.

MR. WHITE: Okay. I'm receiving a message that we might be muted again on the Zoom. I'm sorry.

THE VIDEOGRAPHER: Sorry.

MR. MANDELL: That's okay. That's okay.

MR. WHITE: It's all good. It's better than the opposite.

MR. MANDELL: Technology these days.

BY MR. WHITE:

Q. Okay. Did the Parker study, the one you have in your hand right now, did that show a causal association between TCE concentrations and kidney cancer?

A. Let me pull up the part about the renal cancer I was just looking at before.

Q. Sure.

A. There was a suggestion that the incidence was higher in males.

Q. Okay. Do you know if the authors considered that suggestion substantial enough to conclude that there is an association between TCE exposure and kidney cancer?

MR. MANDELL: Objection.

THE WITNESS:

(Reviews document.)

I mean, they didn't explicitly talk about it, but they said that there was incidence of renal cancer elevated.

BY MR. WHITE:

Q. Okay. If you could turn to page 32. This is the internal paginated --

A. Yeah, that's where I'm looking at.

Q. Okay. First sentence says:

"Information gathered thus far fails to establish any association between environmental hazards and increased incidence of childhood leukemia and renal cancer in Woburn. The hypothesis suggesting that the increase in leukemia incidence was associated with environmental hazards in Woburn and specifically to the contamination of drinking water supplies is neither supported nor refuted by the study findings. Interviews with parents of leukemia cases, two groups of matched controls, and family members of renal cancer cases revealed no associations between any environmental factors and

disease."

Am I correct that the authors of this study could not find no association between the exposures there in Woburn, Massachusetts and kidney cancer?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I think what they -- I think they intended to in their -- in their recommendation to cause or to look further at these associations.

BY MR. WHITE:

Q. Uh-huh. So do you interpret this as recommending further research on the matter?

A. Yes.

Q. Okay. But subject to that recommendation for further research, this study, the four corners of this study does not show an association between environmental contaminants referenced there in Woburn and renal cancer?

MR. MANDELL: Objection.

THE WITNESS: Yes, they said information gathered thus far, thus far. So with the limited amount of information

they had, they couldn't establish that.
BY MR. WHITE:
Q. Okay.
A. So that's why they recommend to get more information going forward.
Q. Okay. Let's take a look at --
A. Are we done with this one?
Q. Yeah, we can put Mrs. Tukes' report to the side for the moment and let's pull up Mr. Mousser's, and if I could direct your attention to page 8.
A. I'm sorry. Which page?
Q. Page 8. I'm sorry.
A. Mousser.
Q. I mumbled.
A. Okay.
Q. You state that:
"Populations exposed to Camp Lejeune levels of TCE exhibited statistically significant increases in bladder and kidney cancers, both of which share a urothelial origin with UTUC."
A. I'm sorry. Where are you reading this from?
Q. I'm very sorry.

You see the heading that says "Camp Lejeune Studies"?

A. Yes. Okay.

Q. And it's the last sentence of that paragraph.

A. Yes.

Q. You say that there are levels of -- that:

"Populations exposed to Camp Lejeune levels of TCE exhibited statistically significant increases in bladder and kidney cancers, both of which share a urothelial origin with UTUC."

And you provide a couple footnotes, and I want to turn to a couple of them.

Footnote 11 is Dr. Bove's -- or Bove's -- study, 2024 Cancer Incidence Study; is that correct?

A. Yes.

Q. Okay.

(Document marked for identification as Exhibit 16.)

BY MR. WHITE:

Q. This has been marked as Exhibit 16.

Do you know if this study that you

have in front of you, the 2024 incidence study by Dr. Bove, did it control for obesity?

A. I can look and see.

Q. Sure.

A. (Reviews document.)

Q. And, Doctor, I'm also going to ask you if they controlled about -- if they controlled for high blood pressure, family history, diabetes, and other potential exposures. So while you're looking for any controls of obesity just for time's sake.

A. Yep.

Q. Thank you.

A. (Reviews document.)

All right. So weakness of this study was lack of information, smoking, alcoholic consumption, unmeasured risk factors.

Q. What page is that on, Doctor?

A. I'm looking at the 132. No, that's not the page number. Is this the page?

MR. MANDELL: The page number is at the bottom.

THE WITNESS: Okay. 11.

MR. MANDELL: You see that's

-1 -2?

THE WITNESS: 11.

BY MR. WHITE:

Q. Okay.

A. Smoking was encouraged. Confounding. Not latency period.

(Reviews document.)

And then looking at the methodology on page 3, yes, I don't see that they include obesity and some of the other ones that you've mentioned.

Q. Okay. So to clear it up on the record, you do not see where the study controlled for obesity?

A. Correct.

Q. Or high blood pressure?

A. Correct.

Q. Or family history?

A. Yes.

Q. Or diabetes?

A. Yes.

Q. Or smoking?

A. They mention it. They didn't control it, no.

Q. Okay. And they didn't control for other potential toxic exposures, correct?
A. I mean, what do you mean?
Q. Beyond Camp Lejeune?
A. Yes, uh-huh.
Q. They did not control for non-Camp Lejeune?
A. They did not.
Q. Okay. All right. You stated in Mr. Mousser's report that there are statistically significant increases in bladder and kidney cancers and you cite this study.

Can you show me where in this study there are statistically significant increases for bladder and/or kidney cancers?

And there's a table with very small words and numbers, and if you need a straight edge, I brought one if that would be helpful to you.

A. (Reviews document.)

So we're looking at the bladder and kidney, right?

Q. Uh-huh.
A. Okay.

Q. I should say yes. I violated my own deposition.

A. (Reviews document.)

Yes, I don't -- I don't think these showed. These had the statistically intervals that were -- that were above 1.

Q. Okay.

A. So they showed some. They showed elevated risk, but some of these were below 1, the confidence interval. So I think that would be like weaker -- weaker correlation.

Q. Okay. Another one of the studies that you cite is Dr. Bove's 2014 military mortality study --

A. Okay.

Q. -- which I believe is Footnote 13.

And this will be Exhibit 17.

(Document marked for identification as Exhibit 17.)

BY MR. WHITE:

Q. Here you go.

A. Okay.

Q. Did this study control for -- and I'll give you these -- these factors together in

case you want to review the study for this at once.

A. Uh-huh.

Q. Did this study control for obesity, hypertension, family history, diabetes, or other exposures to the same chemicals?

A. I will let you know in a minute.

Q. Sure.

A. (Reviews document.)

Yeah, I don't see that they controlled for that one.

Q. Okay.

A. Can I ask just a question?

How many -- how many military -- active military people with diabetes, hypertension, obesity are there? Probably not a large amount.

Q. Don't have that on the top of my head.

A. Yeah, I'm wondering if that's why they were not really interested in these questions.

Q. If you could turn to -- well, in your report, you state that there are

significant -- statistically significant increases in bladder and kidney cancers.

Could you let me know, can you find those statistically significant increases in bladder or kidney cancer in the study for me?

A. Yes.

(Reviews document.)

I think probably the best table is the Table 7.

Q. Okay.

A. Looking at the kidney cancer with the elevated hazard ratio and, again, if technically we're looking at the confidence interval, it goes below 1.

Q. Okay.

A. But overall the number is 1.59.

Q. Okay. If you look across there -- and I'm on table --

Do you see anywhere else in the study that has statistically significant elevations for kidney or bladder cancers?

A. I think there was something on Table 5 maybe. Just a second.

(Reviews document.)

Yes, Table 5. Kidney cancer had 1.35.

Q. Is that statistically significant, looking at the confidence intervals?

A. So the lower limit of confidence interval goes below 1.

Q. Okay.

A. But, again, if we discount everything that's written in the literature that confidence interval dips below 1, then we would have no scientific studies. So I think, you know, just kind of focusing on this number alone doesn't do the justice.

Q. Okay. Let's turn back to Table 7.

A. Uh-huh.

Q. And looking at the PCE figure for kidney cancer, which is the first -- basically the first row of Table 7.

A. Yes.

Q. For low exposure, it has a hazard ratio of 1.4; for medium exposure, it has a hazard ratio of 1.82; and for high exposure, it has a hazard ratio of 1.59.

Is that a positive monotonic

dose-response curve?

MR. MANDELL: Objection.

THE WITNESS: I don't think if I can tell it's monotonic curve.

BY MR. WHITE:

Q. Okay.

A. It's a positive association that shows increased risk, yes.

Q. Okay. Are you qualified to offer -- to assess the dose-response curve indicated in any -- by any of the data in Table 7?

MR. MANDELL: Objection.

THE WITNESS: I don't think we're looking at the dose curve. I think we're looking at the exposure groups.

BY MR. WHITE:

Q. Okay.

A. It's not a continuous dose curve, if I understand correctly.

Q. Okay. If we use exposure, does this -- does this show a monotonic increase in hazard ratio when the exposure levels increase?

A. I don't think I can say if it's monotonic or not, frankly.

Q. Okay.

Is that -- are you qualified -- are you qualified to make that determination one way or the other?

A. Well, I haven't seen the curve, number one. So let's start with that.

Q. Uh-huh. Are you qualified to, based on these -- these data here, these three numbers -- the 1.4, 1.82 and 1.59 -- just based on those three numbers, are you qualified to say whether or not that that is monotonic?

A. I'm qualified to interpret these numbers.

Q. Okay.

A. I don't know -- I don't know what to make of this monotonic business. Sorry.

Q. That's okay.

And another one of -- looking back to page 8 of the Mousser report.

In that same spot where you say -- where you cite statistically significant increases in bladder and kidney cancers, another one of the studies that you cite is Dr. Bove's other 2014 report, the civilian mortality report.

We could pull that up, and this will be Exhibit 18.

(Document marked for identification as Exhibit 18.)

BY MR. WHITE:

Q. Similar to my last questions, can you tell me if this study controlled for any of the following factors: smoking, obesity, high blood pressure, family history, diabetes, or other potential toxic exposures?

A. (Reviews document.)

I don't believe so, no.

Q. Okay. And, again, you stated that there are statistically significant increases in bladder and kidney cancers, and you cited to this study.

Using the 95 percent confidence interval, can you identify any statistically significant increases for bladder or kidney cancers in this study?

A. I mean, I'm not sure why we're using the -- what was the -- what was the confidence interval that you?

Q. The 95 percent confidence interval.

A. Okay. Just a second.
(Reviews document.)
Yeah, multiple pages, multiple peoples have elevated hazard ratios with, you know, a wider confidence interval than 1.
Q. Do any of those confidence intervals that you just mentioned include numbers below 1?
A. They do.
Q. Okay. Do any of the increased mortality ratios for any kidney cancer or bladder cancer in this study, are there any increased hazard ratios where the confidence interval is entirely above 1?
A. No.
Q. Okay. Let's take a look at -- all right.
You can go back to Mrs. Tukes' report, which is Exhibit 1, and I want to talk about some of the discussions you have on page 8, beginning on page 8.
You state that you "have reviewed the general causation expert reports of Drs. Hatten and Bird."
Did you review any of the other

general causation reports offered by the plaintiffs in this case besides Drs. Hatten and Bird?

A. I'd have to look in because there were a lot of different reports. So I forget which ones were general causation, which ones were which.

Q. Okay. So if I wanted to know whether or not you looked at any of the plaintiffs' general causation reports that you reviewed beyond Drs. Bird and Hatten, I would turn to your Materials Considered Lists?

A. Yes.

Q. Okay. If you did not have Drs. Hatten and Bird's report -- reports, is it fair to say you would still have the same opinions that these chemicals cause -- can cause kidney cancer?

MR. MANDELL: Objection.

THE WITNESS: Yes, I think so.

BY MR. WHITE:

Q. Okay. So would you say that you provide opinions on causal associations between these cancer -- between these chemicals and kidney

and UTUC independent of the opinions offered in Dr. Bird's and Dr. Hatten's reports?

MR. MANDELL: I'm going to object.

THE WITNESS: Again, talking about causation versus kind of correlation.

BY MR. WHITE:

Q. Uh-huh.

A. Probably my assumptions are made easier by these general causation experts as well.

Q. Okay.

A. But I think I would still have an opinion that yes.

Q. Okay. You say that you "researched and read the epidemiology, toxicology, and mechanistic evidence."

By "evidence" I take it that you mean the studies cited in your reports and listed in your Materials Considered Lists?

A. Yes.

Q. Okay. Anything else beyond those studies and the various medical records and other materials listed on your Materials Considered

Lists?

A. No.

Q. Okay. Did you run searches to obtain the studies that you cite in your -- in your reports?

A. Yes, some of them.

Q. Okay. What databases did you use?

A. I actually used PubMed.

Q. Okay. Any others?

A. Sometimes Scopus or Google Scholar.

Q. Okay. Any others?

A. No.

Q. Okay. Did you save these search strings that you used to apply to these databases?

A. I don't know. I don't think so.

Q. Okay. If I wanted to recreate the same searches that you did that rendered the studies you cite and list, how would I do that?

A. I mean, I would -- if I were to run the search today, I would probably put, you know, disease of interest and the -- and the compound of interest.

Q. Okay. Is that the search strings that you used then, or do you not recall the

search strings that you used then?

A. I don't recall, but most likely.

Q. Okay. Did you have any other search parameters that you used like date of publication or field of study or particular journals?

A. No.

Q. Okay. Did every study rendered in your search end up cited in your reports?

A. I believe so, yes.

Q. Okay. So you did not -- did you -- any of the studies that rendered in your searches, did you exclude any of your search results?

A. Honestly, possibly. Not really sure.

Q. Okay. Did any of your search results render any studies failing to show an association between kidney cancer or UTUC and any of the chemicals at issue here?

A. Possibly.

Q. Okay. If you wanted to find out, what would you do?

A. I'd have to run the search again all over.

Q. Okay. If you saw studies that rendered in your searches showing or failing to show an association between kidney and/or UTUC -- kidney cancer and/or UTUC and the chemicals at issue, is that something that you would have addressed in your report had you seen it?

A. I would have cited it or -- I'm sorry. I would have probably not cited or I would have said the evidence was weaker.

Q. Okay. Okay. There are some studies listed in your Materials Considered Lists that aren't cited in your report.

What was your methodology for determining what to cite and then what to just list in the Materials Considered Lists?

MR. MANDELL: I'm sorry. Can you read that back for me? I missed that part of that.

(The reporter read the record on page 193 lines 13-15.)

MR. MANDELL: Wasn't there something before that? I think that was what I missed. Yeah, I think it was like something --

(The reporter read the record on page 193 lines 10-12.)

MR. MANDELL: I see. Okay. That's the part I missed. Yep.

BY MR. WHITE:

Q. I know there's some back-and-forth, but is the question still clear to you or do you --

MR. MANDELL: Sorry about that.

MR. WHITE: No, that's okay.

BY MR. WHITE:

Q. Is the question still clear to you or would you like me to repeat it?

A. No, no. It's clear.

Q. Okay.

A. I mean, if there was anything that I was directly quoting from the study, I cited it.

Q. Okay. And if you weren't quoting directly from the study, you would not cite it?

A. I would not cite it.

Q. Okay. Did you -- let's take a look at --

Did you ever use the Bradford Hill

methodology in your reports?

A. Sounds like it's scientific methodology. So I think if I used it, I probably relied on one of the reports that already had it.

Q. Okay. So you did not independently use the Bradford Hill methodology?

A. I don't believe I ran it separately, no.

Q. Okay. Generally speaking, are you aware of the Bradford Hill -- what the Bradford Hill methodology is?

A. I'd have to look it up.

Q. Okay. That's okay.

Let's take a look at -- one of the studies you cite is Karami and Lan's 2012 meta-analysis, and I will pull up that exhibit momentarily.

This will be Exhibit 19.

(Document marked for identification as Exhibit 19.)

BY MR. WHITE:

Q. This is -- this study looks at occupational exposures, correct?

A. Yes.

Q. Okay. Do you know how this study quantified its exposures? What units it used?

MR. MANDELL: Objection.

THE WITNESS: How they quantified? I'm not sure I understand what they mean -- what you mean by quantification.

BY MR. WHITE:

Q. Sure.

When this study discusses exposures of the people that they examined, how do they measure exposures?

A. Should be in the materials.

(Reviews document.)

I'm not sure that they actually put down the measure, but they looked at the studies.

Q. Okay.

A. All the studies that had the question of interest.

Q. Okay. So my understanding of this study is that it's a meta-analysis and looking at other prior studies and taking a bigger picture view of them together; is that correct?

A. Yes.

Q. Okay. So this study wouldn't have like -- so would this study have a specific calculation of exposure for anybody in the units of, say, micrograms per liter month?

A. No. They just take the existing studies.

Q. Okay. Okay. Then you also cited the Purdue 2017 study.

A. Are we done with this one?

Q. Yes, we are.

A. Okay. You don't want to ask about the confidence intervals? These are actually good.

Q. If you -- I'm going to ask you about Purdue 2017 study. I can show it to you, but I'm going to ask. If we can save time.

Do you independently recall whether or not Purdue 2017 studied occupational exposures?

A. I don't remember. I have to look.

Q. Okay.

A. Oh, it is. It is occupational exposure.

Q. Okay. Okay. The Ruder 2001 study. Do you recall if that was occupational exposures?

And if you can tell by looking at your references, great. If you need to look at the study, I have a copy here.

A. I probably have to look at the study. I'm not seeing it.

Q. Sure. Sure. This will be --

A. Ruder. Yes, Ruder. I found it. Dry-cleaning workers.

Q. Okay.

A. Yes, occupational.

Q. Okay. Okay. I'm going -- I've heard this name pronounced a dozen different ways and I may pronounce it 13th different way today, but the Saeed Salahi 2024 study that looked at vinyl chloride and benzene.

Do you recall whether or not that study was of occupational exposures?

A. It is.

Q. Okay. The Hu 2002 study that also looked at benzene and vinyl chloride.

Do you recall whether that looked at occupational exposures?

A. Yes.

Q. Okay.

A. Can I just make a quick note?

I mean, the reason there's so many occupational studies, it's because it's easier to do the quantification in these -- in these, like, cohorts.

Q. Uh-huh. Okay. Did you look at the -- tell you what. Let's go ahead.

You cited the Callahan study of 2019.

Do you recall whether or not this was an occupational study?

A. I think I'm going to presume any question you ask the answer is yes.

Yes, it is.

Q. Well, I did not intend that to be a trick question.

A. Dry cleaners.

MR. WHITE: I'm going to actually make it an exhibit if we could. All right. And this will be Exhibit 20.

(Document marked for identification as Exhibit 20.)

BY MR. WHITE:

Q. Let's take a look at the mortality

figures in Table 2 on the third page of this document.

The hazard -- the standardized mortality ratio for kidney cancer is not statistically significant, at least by using the 95 percent confidence intervals, including numbers below 1, correct?

A. Correct. The numbers of the, you know, study subjects were very low.

Q. Okay.

A. Yeah.

Q. Let's take a look at -- let's take a look at the table on the next page. Table 3.

A. Uh-huh.

Q. You look at the numbers for kidney cancer, and it has figures for no/low solvent exposure, medium solvent exposure, and high solvent exposure.

The no/low solvent exposure, the hazard ratios across there are 1.0, but I presume that that is probably due to the low numbers of study participants.

Is that your interpretation of that as well?

MR. MANDELL: Objection.

THE WITNESS: I'm sorry.

What was -- what was the question? I missed that.

BY MR. WHITE:

Q. Okay. Where it says kidney cancer in the middle of Table 3.

A. Yes.

Q. And no/low --

A. Uh-huh.

Q. -- solvent exposures.

All across there, it has hazard ratios of exactly 1.0.

My interpretation of that is that that's the best they could do given the low number of study participants.

Is that your interpretation as well?

A. No, no. That's wrong.

Q. Okay.

A. That's the reference point.

Q. The reference point.

Okay. So that's what the medium and high exposures are being compared to?

A. Yes.

Q. Okay. The -- the kidney cancer hazard ratios for no lag are not statistically significant for medium exposure, correct?

A. Yes. Strictly speaking, yes.

Q. Okay. Nor for the 10-year lag or 20-year lag for medium exposure, right?

A. Correct.

Q. Okay. When we get to high exposure, that's when the results become statistically significant, right?

MR. MANDELL: Objection.

You can answer.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. And to calculate exposure in this study, one of the factors they used was the years that the participants were in the dry cleaners union; is that correct?

MR. MANDELL: Objection.

BY MR. WHITE:

Q. I'm looking on page 2.

A. (Reviews document.)

MR. MANDELL: You mean 286?

MR. WHITE: Yes. Page 2 of

the document.

MR. MANDELL: Sure.

MR. WHITE: 286 in the paper.

THE WITNESS:

(Reviews document.)

Score? Yes. How they were assigned a score?

BY MR. WHITE:

Q. Yeah.

A. Okay.

Q. And one of the factors they used was job title, correct?

A. Time-weighted average, yes, that's the job titles. Uh-huh.

Q. Okay. And then let's take a look at, on this page where it talks about exposures, and I'm looking about halfway down the first column on the right or -- I'm sorry -- on the left, and it says:

"Mean trichloroethylene exposure levels reported in the published monitoring studies ranged from 25 to 280 parts per million."

Do you have a way of examining that figure and comparing it in the same units to

micrograms per liter month?

MR. MANDELL: Objection.

THE WITNESS: I would -- I would -- I would use parts per billion to extrapolate.

BY MR. WHITE:

Q. Okay. Including if you were going to extrapolate to micrograms per liter month?

A. Yes. It's the same as ppb.

Q. Okay. Do you know the monitoring -- how the monitoring studies calculated this -- calculated this 25 to 280 parts per million figure?

A. No, I don't recall.

Q. Okay. Are you aware of time -- 8-hour time-weighted averages for exposure modeling like this?

A. This is what they used, yes.

Q. Okay. Okay. So if using an 8-hour time-weighted average one of the study participants was exposed to between 25 parts per million to 280 parts per million, or, to put it into parts per billion, using an 8-hour time-weighted average, they would be exposed to

25,000 parts per billion or 280,000 parts per billion for an 8-hour workday, correct?

A. I -- I don't recall if this is per workday, the -- the published number that they're quoting.

Q. If they are using an 8-hour time-weighted average, would that be equivalent to an 8-hour workday?

A. Context limit.

Yes, sounds like it.

Q. Okay. Are you aware of any Camp Lejeune plaintiff who had between 25,000 parts per billion to 280,000 parts per billion of exposure in one day?

MR. MANDELL: Objection.

THE WITNESS: I mean, this is like comparing apples to oranges.

BY MR. WHITE:

Q. Okay.

A. You're comparing a workday to a living situation, and workday is like 8-hour exposure and living is 24-hour exposure.

Q. Okay.

A. So you can't really compare these

numbers.

Q. Okay. In your reports, you describe vinyl chloride and benzene risks as synergistic. And I can find you a number, page number for that real quickly.

Yeah, in the middle of page 11.

MR. MANDELL: Of which report?

MR. WHITE: I'm sorry. We're back on Tukes.

THE WITNESS: Tukes. Which page? I'm sorry. 11?

BY MR. WHITE:

Q. Page 11 in the middle.

A. Okay.

Q. Let me know when you're there.

You state that:

"Both compounds are linked to genotoxic effects but are less robustly associated with RCC than TCE. Synergistic effects with other carcinogens (e.g., PCE) amplify this risk."

What studies do you rely on to make the determination that vinyl chloride or benzene are synergistic with PCE?

A. I mean, it's mainly their mechanisms

of action because all of these compounds cause DNA damage.

Q. Uh-huh.

A. So it's logically they all cause DNA damage. So when you have multiple, then it's, you know, likely to be synergistic.

Q. Okay. Is it -- how do you determine if the cumulative effect is additive versus synergistic, or is that a determination that you're qualified to make?

A. I mean, you'd have to run a study, causative study probably on animals, to get that answer.

Q. Okay. Are you aware of any studies where that have tested whether or not these chemicals have synergistic versus additive effects?

A. I don't recall any of them.

Q. Okay. You state that -- and I'm looking at the last sentence of the paragraph under "Epidemiological Evidence" on page 11.

"There are other studies as well showing this causal relationship, including the Camp Lejeune studies."

And you cite footnotes 13 and 14.

MR. MANDELL: Where are you?

MR. WHITE: Middle of page 11 of the Tukes report.

MR. MANDELL: Got it.

BY MR. WHITE:

Q. And you cite for that proposition the two Dr. Bove studies from 2014.

A. Uh-huh.

Q. You state that there are other studies as well, including the Camp Lejeune studies.

Are you relying upon any other studies for this sentence beyond just the two Bove studies you cite in footnotes 13 and 14?

A. I mean, possibly these were the studies that were not cited but are included in the materials --

Q. Okay.

A. -- reviewed.

Q. Okay.

A. When would be a good time to take a break? I'm getting brain fatigue a little bit.

Q. You and me both. We can take -- we

can take a break right now.

A. Okay. Too much math statistics.

THE VIDEOGRAPHER: The time is 2:15 PM. We are now off the record.

(A recess was taken.)

THE VIDEOGRAPHER: The time is 2:24 PM. We are now on the record.

BY MR. WHITE:

Q. All right. Doctor, we're back after a short break.

Did you talk to anybody about the substance of your testimony while we were on break?

A. No.

Q. Okay. I'm winding down here a little bit.

If you could, in your report for Mrs. Tukes, you reference -- you reference the UNC Chapel Hill genetic testing, correct?

A. Yes.

Q. I'm trying to find where that is cited in here.

MR. MANDELL: You want some help?

MR. WHITE: If you got it.
MR. MANDELL: I don't know if this is what you're talking about.
THE WITNESS: Page 3.
MR. MANDELL: Page 3?
MR. WHITE: I don't think so. Where is it?
MR. MANDELL: Okay.
THE WITNESS: Page 3 on the bottom?
MR. WHITE: Yeah. Oh, yeah, there it is. I was looking for UNC Chapel Hill.

BY MR. WHITE:

Q. All right. The genetic testing that Mrs. Tukes had done, do you know how many genes it tested for?

A. I can't recall.

Q. Okay. Would it surprise you if it were 30 genes?

A. No.

Q. Okay. How many -- this is -- how many genes are there total in the human genome?

A. Thousands.

Q. Okay.
A. Maybe more.
Q. Okay. I think I saw a figure once 20,000.
Does that sound about right?
MR. MANDELL: Objection.
THE WITNESS: Probably.
BY MR. WHITE:
Q. Okay. Have all genes associated with kidney cancer been definitively identified?
MR. MANDELL: Objection.
THE WITNESS: I mean, science is always in motion. So.
I answered like a politician.
BY MR. WHITE:
Q. Do you think that the 30 genes tested for in Mrs. Tukes' genetic testing are the exclusive universe of genes related to kidney cancer?
MR. MANDELL: Objection.
THE WITNESS: I'm not sure.
I mean, these are the genes that we know of.
BY MR. WHITE:

Q. Okay. There may be genes that we don't know of that could be associated with kidney cancer, correct?

A. Possibly.

Q. Okay. Does the state of genetics today allow the kind of conclusion that these 30 genes and only these 30 genes are associated with kidney cancer?

MR. MANDELL: Objection.

THE WITNESS: I mean, these are the genes that we know.

BY MR. WHITE:

Q. Okay.

A. Beyond that, it's really hard to make any assumptions.

Q. Okay. Are these kinds of conclusions about genetics within the realm of your expertise?

A. I mean, partially.

Q. Okay.

A. I'm not a geneticist but...

Q. Okay. Are you aware of any studies that compare the risks of hypertension -- the kidney cancer risks associated with hypertension

versus the kidney cancer risks of any of the chemicals at issue in this litigation?

A. I can't recall a study that compares them head-to-head.

Q. Okay. How about a head-to-head comparison between obesity or BMI versus any of the chemicals at issue in this litigation with respect to kidney cancer?

A. Again, not head-to-head.

MR. MANDELL: Object.

BY MR. WHITE:

Q. Okay.

A. Some may control for it.

Q. Okay. Do you know what the SEER data are? S-E-E-R? It's an acronym.

A. Yes.

Q. Okay. And those are statistical data collected by, I believe, the Centers for Disease Control; is that correct?

A. One of the federal agencies, yes.

Q. Okay. Okay. If the SEER data indicated that over 22 percent of kidney cancer cases were diagnosed before the age of 54, would you have any reason to disagree with that?

A. I mean, just like any large database, there are a lot of omissions that are put in that data, but I have no reason to disagree with the statistics.

Q. Okay. If you could, let's go to --

Are you aware of any studies that compare the kidney cancer risks associated with smoking versus the kidney cancer risks associated with any of the chemicals at issue in this litigation?

MR. MANDELL: Objection.

THE WITNESS: Again, I don't think anything has been head-to-head comparison, but I think some -- some of that is accounted in the studies.

BY MR. WHITE:

Q. Okay. In layman's terms, hematuria is blood in the urine, right?

A. Correct.

Q. Okay. Can hematuria indicate inflammation in the genitourinary tract?

A. Yes.

Q. Okay. In fact, would you say it's a common sign of infection in the genitourinary --

genitourinary tract?

MR. MANDELL: Objection.

THE WITNESS: I wouldn't say common, but it's a sign.

BY MR. WHITE:

Q. Okay. Let's take a look at your rebuttal report. If my colleague can pull that out when he gets a chance. Oh, it's already marked.

A. I have it.

MR. MANDELL: Yeah. Exhibit 4.

MR. WHITE: Exhibit 4. Thank you.

MR. MANDELL: Sure.

BY MR. WHITE:

Q. All right. In this study, if we look to page -- this will be internal paginated page number 1. Let me find it.

A. I'm sorry. What study? I thought we were looking at the rebuttal.

Q. Yes.

MR. MANDELL: Your rebuttal report.

MR. WHITE: Yes.
THE WITNESS: Oh, okay.
MR. WHITE: Yeah.
MR. MANDELL: You said the word "study."
MR. WHITE: Oh, did I? Force of habit. That's okay. That's my fault.

BY MR. WHITE:

Q. Looking at the rebuttal report, you state on internal paginated page 1 that -- you state that:

"Studies have demonstrated that environmental carcinogens, including TCE, can induce multiple synchronous or metachronous renal tumors without a genetic syndrome."

And I would like to know what -- what studies are you referring to to support that proposition?

A. What paragraph is this? I'm sorry.

Q. That is the second paragraph up from the bottom, the last sentence.

A. Okay.

(Reviews document.)

I mean, I'm trying to think. I'm

trying to recall. I'm sorry.

I don't think I can quote the study for this.

Q. Okay. If you had a study to support that proposition, would it be listed in your Materials Considered Lists?

MR. MANDELL: Objection.

THE WITNESS: Yes, most likely.

BY MR. WHITE:

Q. Okay. You state in here that:

"According to standard medical definitions, idiopathic conditions are those with no recognized or understood cause."

What is the standard --

MR. MANDELL: Where are you reading from?

MR. WHITE: I'm sorry. I did it again.

MR. MANDELL: That's okay.

MR. WHITE: About the middle of the page, second paragraph down, middle of that paragraph.

MR. MANDELL: Uh-huh.

BY MR. WHITE:

Q. "According to standard medical definitions, idiopathic conditions are those with no recognized or understood cause."

What definitions are you referring -- are you referring to a specific definition for that sentence?

A. I mean, this is kind of accepted kind of understanding. So I'm not really sure if there is such a written definition, but maybe there is.

Q. Okay. So you weren't relying on like a medical dictionary or medical textbook or something for that particular definition?

A. Probably not, but I'm sure if we put this in a search engine, that will show up.

Q. Okay. No recognized or understood cause is not the same thing as no cause at all, correct?

MR. MANDELL: Objection.

THE WITNESS: Yes.

BY MR. WHITE:

Q. Okay. It could very well be a cause that we haven't recognized or understood?

A. Correct.
Q. Or a cause we haven't identified?
A. Correct.
Q. Okay. An idiopathic cancer is -- is caused by something that we may not be able to state precisely what it was; is that correct?
MR. MANDELL: Objection.
THE WITNESS: Correct.
BY MR. WHITE:
Q. Okay. We don't know the full extent of what causes kidney cancer, correct?
MR. MANDELL: Objection.
THE WITNESS: I mean, we know it's mutations.
BY MR. WHITE:
Q. Okay. Genetic mutations can be caused by an exogenous factor like a carcinogen exposure, correct?
A. Yes.
Q. And they can also occur randomly or sporadically, correct?
A. Yes.
Q. And that's -- that refers to errors in the trillions of times that our cells multiply

throughout our lives, correct?
A. Very correct. Yes.
Q. Okay. And is that how people without risk factors develop cancer?
MR. MANDELL: Objection.
THE WITNESS: It's either mutations that are going unrepaired --
BY MR. WHITE:
Q. Okay.
A. -- or the presence of mutations.
Q. Okay. But that is one of this sort of random or sporadic genetic mutation can be a cause of cancer for someone who doesn't have any other identified risk factors, correct?
A. Correct.
Q. Okay.
A. That being said, you know, we have two strands of DNA. So both of these have to have the mutation to progress to -- to a disease.
Q. Okay.
A. And sometimes, you know, the genetics produce, like, have one faulty strand and then the other one has to get mutated to move on.
Q. Okay. The fact that someone has a

risk factor for cancer doesn't exclude the sort of random or sporadic mutations as a potential cause for their cancer, correct?

MR. MANDELL: Objection.

THE WITNESS: I mean, when we look at the kind of diagnosis to go down to sporadic, I mean, we check off everything else, and if there is a checkmark, it's no longer sporadic. If that makes sense.

BY MR. WHITE:

Q. Okay.

A. So if there's a risk factor already, that means it's not sporadic -- it's not idiopathic.

Q. Okay. So it's more or less operation of process of elimination?

A. Exactly.

Q. Okay.

THE COURT REPORTER: Can we go off the record.

THE VIDEOGRAPHER: Time is 2:38 PM. We are now off the record.

(A recess was taken.)

THE VIDEOGRAPHER: The time is 2:45 PM. We're now on the record.

BY MR. WHITE:

Q. All right, Doctor. We're back on the record after a short break.

Did you talk to anybody about the substance of your testimony during the break?

A. No.

Q. Okay. Have you ever treated a patient with hereditary renal -- with hereditary RCC?

A. Yes.

Q. Okay. How many times?

A. A lot.

Q. Okay. When was the last time you treated a patient with hereditary RCC?

A. Three months ago.

Q. Okay. How do you determine whether or not a patient has hereditary RCC?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I mean, having a high index of suspicion, referring them to a geneticist.

BY MR. WHITE:

Q. Okay. What kinds of things result in a high index of suspicion?

A. I mean, anybody under age of 46 usually is -- I mean, we have guidelines that direct us to send patients to genetic testing. So age less than 45, you know, multiple family members with cancer. Some of these, you know, additional things that I noticed -- I noted to you, like skin bumps, etc.

Q. Would bilateral tumors be one of those factors that increases the suspicion?

A. Yes.

Q. And is it, in fact, part of the guidelines that you referred to?

A. Probably, yes.

Q. Okay. And just for the record, are those the NCCN guidelines?

A. Yes.

Q. Okay. Are multifocal tumors one of the things that increase the index of suspicion?

A. Yes.

Q. Okay. Are multifocal tumors one of the factors on the NCCN guidelines?

A. Actually, I'd have to look at it to tell you. Probably.

Q. Okay. Okay. Have you ever treated a patient as if they had hereditary RCC based on the patient's clinical phenotype alone?

MR. MANDELL: Objection, but you can answer.

THE WITNESS: I don't think I would call it genetic RCC unless there was genetic kind of a -- something showing that genes were mutated.

BY MR. WHITE:

Q. Okay. Particular genes?

A. Yes, the particular known genes.

Q. Okay. If a patient had genetic testing that indicated -- that did not indicate any known gene mutations associated with kidney cancer, but they otherwise fit the guidelines of hereditary RCC, would you still treat them as if they had hereditary RCC?

MR. MANDELL: Objection.

THE WITNESS: Probably -- probably not, you know, depending on my index of suspicion.

BY MR. WHITE:

Q. Uh-huh.

A. I mean, I see plenty of people who have multiple tumors and don't have genetic syndromes, and I don't treat them as genetic syndromes.

Q. Okay. If you had a patient with hereditary RCC and a patient who had a nonhereditary RCC, how would you treat them differently, if at all?

A. I think, you know, one -- are we talking about kidney cancer, right?

Q. Yes.

A. Okay. So I'll give you an example.

So if I had a patient with a large renal tumor who has hereditary predisposition, I would be more likely to try to conserve that kidney, knowing that they may develop further tumors in the future.

Q. Okay.

A. I would monitor them lifelong. You know, a lot of these genetic syndromes have other systems involved. So let's say for the NHL gene, they would have to have brain imaging, you know,

things like that.

Q. Okay. So you would have -- one of the things you would do would be to increase their monitoring for newly-developed cancers, correct?

A. Extended --

Q. Yeah.

A. -- or kind of expand, yes.

Q. Okay. Would you do that for -- would you have similar expanded monitoring if a patient had multiple metachronous -- metachronous tumors that were bilateral and multifocal? Would you recommend for that patient the expanded monitoring that you described?

MR. MANDELL: Objection.

THE WITNESS: I may monitor them longer, but that would be the only thing.

BY MR. WHITE:

Q. Okay. So you would monitor them longer based upon that clinical presentation?

A. Yes.

MR. MANDELL: Objection.

THE WITNESS: Not because I would think they have genetic

predisposition, but because they had more than one tumor. So I would just follow them.

MR. WHITE: Okay. If we could -- we are winding down here. If you could get me, Josh, the errata sheet, let me know which number that was.

MR. CARPENITO: 5.

BY MR. WHITE:

Q. Let's take a look at Exhibit 5.

A. Uh-huh.

Q. Am I correct that this errata sheet corrects some units that were used in your initial reports in this case?

A. Yes.

Q. Okay. When did you determine the need to adjust these units?

MR. MANDELL: Objection.

THE WITNESS: I was looking over the reports and came to my attention that these were misspelled.

BY MR. WHITE:

Q. Okay.

A. Or miswritten.

Q. Okay. Did anyone bring this to your -- this -- this unit issue to your attention, or did you independently find it yourself?

MR. MANDELL: And I'm going to object and just instruct you not to answer as to communications between counsel.

THE WITNESS: I'm not going to answer.

BY MR. WHITE:

Q. Okay. Is it fair to say that -- did you come to this conclusion that these units needed to be corrected independently?

MR. MANDELL: And I'm going to have the same instruction, but you can answer.

THE WITNESS: Yes.

MR. WHITE: Okay. Let me take a very quick break with my colleagues, make sure I didn't miss anything, but we are reaching the end here.

MR. MANDELL: Great.

THE WITNESS: Okay.

MR. MANDELL: Are we off the

record?

MR. WHITE: Yes, please.

THE VIDEOGRAPHER: Time is 2:53 PM. We're now off the record.

(A recess was taken.)

THE VIDEOGRAPHER: The time is 3:00 PM. We are now on the record.

BY MR. WHITE:

Q. Doctor, we're back after a short break and I have what is, hopefully, one last question for you.

Did you talk to anybody about the substance of your testimony during the break?

A. No.

MR. WHITE: All right. With that, I pass the witness who may have some questions for you.

MR. MANDELL: Thank you. Yeah, just a couple.

EXAMINATION

BY MR. MANDELL:

Q. Dr. Smith, you were asked a whole bunch of questions today. I just want to ask you a couple of clarifying questions.

The first one is: You were asked some questions at the very beginning about whether or not the ATSDR water modeling was based off of averages or was taken by a particular day or something like that.

A. Uh-huh.

Q. Do you remember that question generally?

A. Yes, I think so.

Q. And I know -- I'm sorry.

You've looked at a whole bunch of documents, but the easiest way I can think to do it, just because it's already marked, is if you look at Exhibit 17, the second page or page 3 -- I'm sorry -- on the bottom left-hand corner.

The last sentence on there says: "Estimated monthly mean concentrations of PCE."

Do you see that?

A. Yes.

Q. So, and you've obviously -- strike that.

You have read this study before, right?

A. Yes.
Q. And so is it fair to say that it was monthly mean concentrations that you understood?
A. Yes, based on this study.
Q. Yeah.
You were asked some questions about units of measurement several different times during the day and, for example, I think you were asked about part per billion; right?
A. Yes.
Q. And you had said that you believed that that was equivalent for the purposes of the discussion today -- I think the question was with regard to some type of liquid -- that that's the same as microgram per liter, right?
A. Yes.
Q. And you were asked some questions about microgram per liter months, true?
A. Yes.
Q. And I believe you had said that that months part adds the cumulative nature of the microgram per liter; is that right?
A. Yes.
MR. WHITE: Objection. Form.

BY MR. MANDELL:

Q. So you were asked some questions about a couple different studies, but I think the first one was Aschengrau, and it was you were shown your report in Tukes and asked about.

And the report in Tukes is Exhibit 1, and I put these in order so we're good.

A. Yes.

Q. And you were asked some questions about on page 6 there was a number 82.85 and the fact that that was microgram per liter months, and you were asked about Aschengrau and the 27 to 44 milligrams.

Do you remember those questions?

A. I think so, yes.

Q. Generally speaking?

A. Uh-huh.

Q. And I think I want to just make sure it's clear.

You were asked some questions about the fact that in the Aschengrau number, it didn't account for duration or the amount consumed or something to that effect.

Do you remember those questions?

MR. WHITE: Objection. Form.

THE WITNESS: Yes.

BY MR. MANDELL:

Q. Okay. And when you -- when you were asking -- when you were asked about those questions, you weren't saying that you could go directly from microgram per liter months to a unit of milligrams directly, true?

MR. WHITE: Objection. Form.

THE WITNESS: Correct. You go from milligrams to micrograms directly.

BY MR. MANDELL:

Q. Right.

Meaning you were saying -- there was some questions about, well, you just have to multiply by a thousand.

You were talking about going from a unit of milligrams to a unit of micrograms, right?

A. Correct.

Q. Okay. And I think a similar thing came up a little later on when you were asked about Callahan and that was in part per million.

And you were asked some questions about, well, your charts in -- the charts from

Dr. Reynolds in microgram per liter months and converting that to part per million.

And you were saying, "Well, I would use part per billion to convert to part per million," fair?

A. Yes.

MR. WHITE: Objection.

BY MR. MANDELL:

Q. And same general concept.

Is it fair to say that when -- that you would -- strike that.

You wouldn't compare directly from microgram per liter months to part per million, true?

MR. WHITE: Objection.

THE WITNESS: Correct.

BY MR. MANDELL:

Q. Okay. In your Exhibit 1 -- again, I think that this is just a clarification, but you on page 6, you were asked some questions about this first box up here for January of '86 and it said .8 -- excuse me -- .18.

Do you remember that?

A. Yes.

Q. And I believe you had said at the time that that was in micrograms per liter that that was a concentration.

Do you remember that?

A. Is that what I said? Yes, probably.

Q. Okay. Okay. So, and then you were asked about a number in the chart, the second chart under the Hadnot Point chart, and it was like one of the number 3s.

Do you remember that?

A. Yes.

Q. I think you had said, but I could be wrong. I think you had said that the 3 represented a microgram per liter month.

But would you agree that that number would be the same concentration, it's the same general concentration as you were talking about above in terms of microgram per liter?

A. Yes, it's --

MR. WHITE: Objection. Form.

THE WITNESS: -- the same -- same units, yes.

BY MR. MANDELL:

Q. Okay. You were asked some questions

about maximum contaminant levels like the MCLs that you put in your report.

A. Yes.

Q. And some questions about different areas of your report where you cited to the MCLs.

Is it fair to say you're not relying on the MCLs solely for any opinions in terms of what level would be causative of kidney cancer, fair?

MR. WHITE: Objection.

THE WITNESS: That's fair, yes.

BY MR. MANDELL:

Q. Okay. You're -- you're saying it's -- it's -- you looked at it and it has some level involved in it, fair?

MR. WHITE: Objection.

THE WITNESS: Yes.

BY MR. MANDELL:

Q. Okay. You were asked some questions about in your report you used the word "substantial" exposure, and you were asked some questions about some particular studies and whether those studies show substantial exposure.

Do you remember that?

A. Yes.

Q. Okay. And in particular, I think you were asked about some of the particular bullet points on page 13.

Do you remember that?

I'm looking at Exhibit 1, Tukes, the same --

A. Yes.

Q. -- chart.

And you were asked about these ranges of, like, 1 to 3700 -- excuse me -- 1 to 3100. It's like the fourth bullet point down.

Do you see that?

A. Yes.

Q. Okay. And I think at one point you were asked something along the lines of, well, for in this study, from 1 to 3100, would you consider 2 or 1 microgram per liter month to be "substantial."

Do you remember that?

MR. WHITE: Objection.

THE WITNESS: I remember, yes.

BY MR. MANDELL:

Q. Okay. And the question that I have is: Is it true that what you were saying was, you were relating that the study had an increased hazard ratio in those exposure ranges?

MR. WHITE: Objection. Form.

THE WITNESS: That's correct.

BY MR. MANDELL:

Q. Okay. You weren't saying that -- strike that.

Is it fair to say that when you are considering "substantial" exposure for an individual plaintiff, you need to look at the actual plaintiff to determine whether there's substantial exposure for that person?

MR. WHITE: Objection. Form.

THE WITNESS: Yes.

BY MR. MANDELL:

Q. Okay. The last thing I wanted to ask you about -- and I know you were asked about this before, but I want to just make sure that I'm clear.

When you were asked about the Aschengrau study, which was Exhibit 14.

A. Okay.
Q. And they're in order. So you should be able to get at it pretty quickly.
If you could turn to the internal page number 290. Again, it's Exhibit 14.
MR. WHITE: Yeah.
BY MR. MANDELL:
Q. Under the Discussion section, I just want to make sure it wasn't -- the wording came out correctly, but the last sentence of Exhibit 14, the -- strike that.
The last sentence of the first paragraph under the Discussion section in Exhibit 14 says:
"No kidney cancer cases were considered exposed when latency was taken into account, and no meaningful increases in the risk of kidney cancer were detected without latency."
That -- did I read that correctly?
A. Yes.
Q. Okay. And then on the top right, the first full paragraph on the top right of the next page, the latent -- the average latent periods that were used in the study were 15 years

for solid tumors, true?
A. Yes.
Q. Okay. And is it fair to say that that would be applicable to kidney cancer?
MR. WHITE: Objection. Form.
THE WITNESS: I'm sorry. I didn't understand.
BY MR. MANDELL:
Q. Okay.
A. What do you mean "applicable"?
Q. The solid tumors meaning the latency --
A. Oh, yes.
Q. -- they had solid tumors versus when they have one for leukemia?
A. Yes. Solid tumors is kidney cancer.
Q. Okay.
A. Yes.
MR. MANDELL: Okay. All right. That's all the questions I have. Thank you so much.
MR. WHITE: I have just a couple.

FURTHER EXAMINATION

BY MR. WHITE:

Q. Is it your testimony, Doctor, that exposure to TCE, PCE, vinyl chloride, or benzene above the EPA's MCL level is substantial exposure sufficient to meet the causal standards you used in these reports?

MR. MANDELL: Objection.

THE WITNESS: I would call it significant. I don't know if I would call it substantial.

BY MR. WHITE:

Q. Okay. If the evidence showed that the exposure levels of Mrs. Tukes, or Mr. Howard or Mr. Mousser, showed that her exposure was above the MCL for any of these applicable chemicals and you did not have the benefit of, say, the other bullet points cited studies on page 13 of the Tukes report, would your opinions still be that Camp Lejeune water "as likely as not" caused kidney cancer or UTC -- UTUC in these plaintiffs?

MR. MANDELL: Objection. Form and asked and answered, but you can answer.

THE WITNESS: I mean, I don't think it's a fair question because now I know this literature. So it's kind of hard for me to answer this.

BY MR. WHITE:

Q. If all you had to go on was the MCLs, would that be sufficient?

MR. MANDELL: Objection.

THE WITNESS: Just the MCLs? Probably would not be sufficient.

BY MR. WHITE:

Q. Okay. Let's take a look at Exhibit 1, again. This is the Tukes report.

And if we look on page 4 and it says "tetrachloroethylene (PCE) 82.85 micrograms per liter."

And per your errata sheet, that should read "micrograms per liter --

A. Month.

Q. -- month," correct?

A. Uh-huh.

Q. Okay. That figure 82.85 micrograms per liter month for PCE, if I wanted to compare that to, for instance, the first bullet point on

page 13, the Aschengrau figure of 27.1 to 44.1 milligrams of PCE.

If I wanted to compare those numbers and I wanted to make sure that I was comparing apples to apples, how would I do that?

A. You would probably have to have the duration of the exposure as well, just because milligrams and micrograms per liter is just I think it gives the incomplete kind of the answer.

Q. And that's because there is a time component to the unit microgram per liter month, correct?

A. Yes.

Q. Okay. And there's also a unit for concentration, i.e., the liter part of the micrograms per liter month, correct?

A. Yes.

MR. WHITE: Okay. All right. I'll try passing the witness one more time.

MR. MANDELL: No, I have no more questions.

MR. WHITE: Cool.

MR. MANDELL: But -- and we

can go off the record.

THE VIDEOGRAPHER: This concludes for today's deposition this is dated July 2, 2025. The time is 3:13 PM.

(Signature not waived, the deposition concluded at 3:13 PM.)

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DECLARATION UNDER PENALTY OF PERJURY

I declare under penalty of perjury that I have read the entire transcript of my Deposition taken in the captioned matter or the same has been read to me, and the same is true and accurate, save and except for changes and/or corrections, if any, as indicated by me on the DEPOSITION ERRATA SHEET hereof, with the understanding that I offer these changes as if still under oath.

Signed on the _____ day of _____, 2025.

_____

ARMINE K. SMITH, MD

CERTIFICATE OF REPORTER

DISTRICT OF COLUMBIA)

I, Denise Dobner Vickery, a Registered Court Reporter and Notary Public of the District of Columbia, do hereby certify that the witness was first duly sworn by me.

I do further certify that the foregoing is a verbatim transcript of the testimony as taken stenographically by me at the time, place and on the date herein set forth, to the best of my ability.

I do further certify that I am neither a relative nor employee nor counsel of any of the parties to this action, and that I am neither a relative nor employee of such counsel, and that I am not financially interested in the outcome of this action.

Denise D. Vickery

DENISE DOBNER VICKERY, CRR,RMR
Notary Public in and for the

District of Columbia

My Commission expires: March 14, 2028

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