Exhibit 583

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF NORTH CAROLINA

IN RE:	)	
CAMP LEJEUNE WATER	)	Case No:
LITIGATION	)	7:23-cv-00897
	)	
This Document Relates to:	)	
ALL CASES	)	

The video-recorded and videoconferenced deposition of BENJAMIN WALTER HATTEN, M.D., MPH, taken pursuant to the Federal Rules of Civil Procedure of the United States District Courts pertaining to the taking of depositions, reported by Pauline Vargo, Certified Shorthand Reporter, Registered Professional Reporter and Certified Realtime Reporter, at Suite 100, 26 West Dry Creek Circle, Littleton, Colorado, on July 7, 2025, commencing at 8:58 a.m. Mountain Time.

A P P E A R A N C E S

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A P P P E A R A N C E S
Continued

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Golkow, A Veritext Division

I N D E X

Monday, July 7, 2025

E X H I B I T S

E X H I B I T S
Continued

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E X H I B I T S
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THE VIDEOGRAPHER: Good morning. We are now on the record.

My name is Julie Butcher. I'm the videographer with Golkow. Today is July 7, 2025, and the time on the record is 8:58 a.m. Mountain Time.

This video deposition is being held in Littleton, Colorado, in regards to Camp Lejeune Water Litigation, being heard before the United States District Court for the Eastern District of North Carolina.

The deponent is Benjamin Hatten, M.D.

Counsel, will you please identify yourselves for the record.

MR. RUZICKA: Ted Ruzicka for the PLG.

MR. ORTIZ: David Ortiz and Haroon Anwar for DOJ.

THE VIDEOGRAPHER: Our court reporter is Pauline Vargo, and she will now swear in the witness.

THE REPORTER: Would you raise your right hand, please, to be sworn.

(The witness was duly sworn.)

BENJAMIN WALTER HATTEN, M.D., MPH, called as a witness herein, having been first duly sworn, was examined and testified as follows:

EXAMINATION

BY MR. ORTIZ:

Q. Dr. Hatten, we met off the record, but again, my name is David Ortiz, and I will be representing United States in today's deposition.

I know that you have been deposed before, including in this litigation, so I will just kind of briefly recap the main rules of the road.

You are under oath, and that means that you need to answer all my questions truthfully and completely as if you were in a court before a judge or jury. If you don't understand my question, just ask me to repeat, and I will be happy to do that. And I will assume that you understood my question if you don't ask me to do that.

We can take a break at any time you want so long as you answer any pending question. I will try not to talk over you. Please try not to talk over me, and likewise, I will try not to interrupt you if you are answering a question.

Does all that sound good to you?

A. Yes. That's fine.
Q. Is there any reason we can't proceed today? Any medications you are on that would prevent you from understanding and answering my questions?
A. No.
Q. Did you bring anything to this deposition?
A. No.
MR. ORTIZ: I'm going to hand you a copy of the first exhibit, and Ted, we are going to go in order. I think we ended last time or they ended last time on 36. So this will be Hatten Exhibit 37.
(Exhibit 37 was marked for identification and is attached to the transcript.)
BY MR. ORTIZ:
Q. And do you recognize Exhibit 37 as a copy of the Notice of Deposition and Subpoena that was served on June 9th, 2025?
A. Yeah, it appears to be that.
Q. You have seen that document before?
A. I believe so.
Q. Okay. I'm going to hand you Hatten

Exhibit 38.

(Exhibit 38 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. All right. And do you recognize Hatten Exhibit 38 as a copy of the Objections and Responses to Defendant's Notice of Videotaped Deposition of Dr. Benjamin Hatten that was served on June 27, 2025?

A. I don't know if I've actually seen this document before or not, but...

Q. Okay, okay. No problem. I will represent to you that's what it is.

You haven't submitted any invoices to PLG after April 17th of 2025. Is that correct?

A. I don't know if I've submitted any after that or not. I have some invoices for preparation for this deposition, but I don't know if they have been submitted. And I'm not sure if there are any additional ones between April and then, so...

Q. Okay. Well, let me ask you this: You said you submitted invoices for preparation for this deposition, correct?

MR. RUZICKA: Objection, form.

A. I don't know that I've submitted those yet. My -- my assistant -- I prepared invoices or my assistant is preparing invoices. I don't know if they have been submitted or not, though.

Q. And would that be for time that was after April 17th of 2025?

A. Yes, that would be for time after that.

Q. And you will be submitting those invoices in the future?

A. Yes, if they haven't been submitted already.

Q. Okay. And going back to Hatten Exhibit 37, do you agree that the subpoena asks for certain documents and communications to be produced?

A. Likely. I don't recall the specific language, but...

Q. Sure. If you turn to Attachment A, and do you see in Attachment A that there are certain categories of documents or communications that are requested?

A. Yes.

Q. And you searched for any responsive documents or communications in response to that request, correct?

A. Yes. I haven't had any communications

other than direct conversations with the attorneys.

Q. Okay. And what steps did you take to conduct that search for any responsive documents or communications?

A. I haven't communicated with anybody, so there is -- I don't know what the -- I'm not really sure how to answer that because I haven't had any communications outside of a direct conversation with my attorneys.

Q. Sure. Did you search, you know, your email inbox or anywhere else to confirm whether or not you had those communications, or is it fair to say you just knew that you didn't have those communications?

A. I just knew that I didn't have those communications.

Q. Okay. So you didn't take a separate search for those; you just knew that they weren't there?

A. Correct.

Q. All right. You can put those to the side. I'm going to hand you Hatten Exhibit 39.

Whoops, sorry. Let me take that one back, actually. My apologies.

(Exhibit 39 was marked for

identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. I hand you Exhibit 39. We will get to that one.

(Exhibits 40, 41, 42 and 43 were marked for identification and are attached to the transcript.

BY MR. ORTIZ:

Q. I hand you Hatten Exhibit 40 and Hatten Exhibit 41, Hatten Exhibit 42 and Hatten Exhibit 43.

MR. RUZICKA: I don't know if you handed me the wrong copy, but I have now got two Cagiano's. What's 41 that you just marked?

MR. ORTIZ: 39 should be Criswell, 40 should be Raymond, 41 should be Cagiano, 42 should be Laramore and 43 should be Dyer.

MR. RUZICKA: Do you have 42, Laramore?

THE WITNESS: Yes. That's what I have.

MR. RUZICKA: I didn't get a copy of Laramore. Thank you.

BY MR. ORTIZ:

Q. All right. Do you recognize Exhibits 39 through 43 as the Phase III reports that you disclosed in the cases of Criswell v. United States, Raymond v. United States, Cagiano v. United States, Laramore v. United and Dyer v. United States?

A. Yes, those appear to be in my reports.

Q. And you prepared and signed all five of those reports?

A. Yes.

Q. They are all dated February 7, 2025?

A. I believe so.

Q. And each of them contains a complete statement of your opinions in that case?

A. For the specific purpose of these reports, yes, a complete statement of the opinions I have with respect to these reports.

Q. And each of them contains all the bases and reasons for your opinions in each case?

A. I believe so. I think it's hard to -- I discuss each one in isolation. I also submitted a much larger general causation report, and these are related --

Q. Sure.

A. -- naturally related to that, so...
Q. Sure, sure. And each one of these five Plaintiffs have bladder cancer. Is that correct?
A. That's my understanding, although I don't have -- I haven't reviewed medical records for any patients or anything like that or any of the Plaintiffs.
Q. So you haven't reviewed any medical records for any of these five Plaintiffs, correct?
A. Correct.
Q. And as you just mentioned a moment ago, in Phase II you disclosed a general causation report on bladder cancer?
A. Yes, that's correct.
Q. And then a general causation on kidney cancer as well?
A. Yes, that's correct.
Q. And you were deposed on May 12, 2025, about your opinions in those reports?
A. I don't recall that date, but it is somewhere around then, yes.
Q. And other than those opinions in your general causation reports and those opinions in those five exhibits, 39 through 43, you have no other opinions in this litigation, correct?

A. Not at this time.

(Exhibit 44 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. Okay. I'm going to hand you Hatten Exhibit 44.

A. Sorry. Could I modify what --

Q. Of course.

A. So there was one study that came out after this was published that I think is on my materials considered list or after these reports were submitted that I believe is on my materials considered list. I don't know if that was for the deposition, but it was a preprint sometime around that time. It doesn't change my opinions, but I would have included it in these reports had it been available.

Q. And are you referring to the Yu study?

A. Yes, that's correct.

Q. Okay. And do you recall giving some testimony about the Yu study at your last deposition?

A. I believe we discussed it during the deposition.

Q. Okay. And you reviewed that preprint of that study after preparing your general causation report but before preparing these five Phase III reports?

A. It was around the same time that I prepared these. It didn't substantially change my opinion, and I don't believe it had been published in its final form yet, so I didn't include it as a reference in here. I think at this point it's now been published in its final form, so I would have included it as a reference here.

Q. And have you reviewed it in its final form?

A. Yes, I have.

Q. Okay. And do you recall roughly when you reviewed that document in its final form?

A. Sometime within the last month, but I don't recall the exact dates.

Q. Okay. And are you aware of whether or not there has been a supplemental materials considered list identifying final form of the Yu study?

A. I don't know if there has, sir, or not.

Q. And were there any differences in the final form of the Yu study compared to the preprint

that would change any of the testimony that you gave about the preprint at your last deposition?

A. Not that I'm -- nothing that would contravene any testimony. I think some of the supplemental files in the final form are -- potentially are informative in the dose-response curve for benzene that was modeled in that final form. It was for all cancers, though, and not specific for bladder cancer, so I don't think it would substantially change any opinions.

Q. Okay. Do you recognize Hatten Exhibit 44 as a copy of the materials considered list dated February 14th of 2025?

A. Yes.

Q. And it lists all the facts and data that you considered in forming your opinions in your Phase III reports, correct?

A. I think in addition to all the material I reviewed for my general causation report.

(Exhibit 45 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. Okay. And I'm going to hand you Hatten Exhibit 45, and Hatten Exhibit 45 -- well, do you

agree that it's a supplemental materials considered list that was served this morning?

A. Yes.

Q. And it identifies the rough draft of the transcript of the deposition of Dr. Kelly Reynolds dated June 25, 2025?

A. Yes, that's correct.

Q. Okay. And is this the only supplement to Hatten Exhibit 44 that you are aware of?

A. Yes, that's the only one that I'm aware of.

Q. Okay. Going back to Hatten Exhibit 44, some of the records that are listed are military records. Is that correct?

A. I believe so. I had -- I was provided scanned copies of some military records.

Q. Do you have any training or experience reviewing military records?

A. Not specific to military records. I don't recall whether I reviewed military records in the past or not. I generally will review employment records for patients who have occupational exposures. I don't recall if some of those were military records or not.

Q. As you sit here today, do you have a

present recollection of reviewing military records in the past?

A. Not separately. Like I said, I review occupational records, and some of those may have been military, but I don't recall specifically on a case where that occurred.

Q. So it's specific but -- it's possible but you don't have a specific recollection?

A. I think that's fair, a fair consideration.

Q. And did you review the records that are listed in Hatten Exhibit 44 yourself?

A. Yes.

Q. Dr. Hatten, what was your assignment in Hatten Exhibit 39 through 43?

MR. RUZICKA: Objection just to the extent that it asks for -- your answer would entail any communications you had with counsel. That's protected and shouldn't be disclosed, but you can answer that question with that caveat. Okay?

THE WITNESS: Sure.

BY THE WITNESS:

A. I think the intent of each of these reports was to provide an explicit assessment of

their -- their -- the best estimate of each Plaintiffs' exposures at Camp Lejeune and to put that in context with what we know about bladder cancer as an outcome based on the epidemiologic literature.

BY MR. ORTIZ:

Q. Do you know what a differential etiology or differential diagnosis is?

A. Yes.

Q. What's your understanding of what a differential etiology or differential diagnosis is?

A. It's something I employ every day as a physician, a practicing physician where you consider possible causes of a health condition or a diagnosis and factors that make one more or less likely. It typically includes plausible or possible causes when you are working up a patient. So it's not the entire landscape of possible causes. It's ones that are plausible or possible for a specific patient.

Q. And do you understand those terms, "differential etiology" and "differential diagnosis," to be synonymous?

A. I think colloquially they are used synonymously. I think they are slightly different

in that "etiology" is a causal term. It's the -- it refers to the potential causes, whereas a diagnosis is the possible, like, medical diagnosis that is responsible for someone's symptoms, so.... But, however, they are used, frequently used interchangeably in, like, common speech.

Q. And your testimony is that you perform both of those or one of those every day in your clinical practice?

A. I perform both in my clinical practice. Sometimes it's combined and sometimes they are separate.

Q. Does it tend to be more -- one over the other more often?

A. I think it just depends on the reason I'm seeing a patient and what their presentation is, so I wouldn't say that one is more common than the other. They're -- I use both fairly frequently.

Q. And you did not perform a differential etiology or diagnosis in your Phase III reports, correct?

A. Not an explicit one. I think I referenced that the -- my conclusion, at least in these reports, and I think I state it explicitly,

is, "I would consider exposures of this magnitude in a differential diagnosis for a patient presenting to my practice with suspected bladder cancer." I think that's used -- as I said, it's often used interchangeably. It probably would be more precise to say "differential etiology" in the printed report, but it was used in a kind of interchangeable fashion.

Q. So, Dr. Hatten, you just referred to a portion of your report, and I'm looking at Exhibit 39, which is the Criswell report that you just read from on page 4; and it states, just to reread it, quote, "Additionally, I would consider exposures of this magnitude in a differential diagnosis for a patient presenting in my practice with suspended bladder cancer," end quote.

Did I read that correctly?

A. Yes, you read that correctly.

Q. And does the term "would" signify that you did not actually conduct a differential diagnosis in these Phase III reports?

A. Correct. I did not have -- I did not review, like I said, full medical records or anything like that. It's -- it was really just a consideration of whether this exposure is at the

magnitude that it's plausible or reasonable to consider this within a differential etiology or differential diagnosis.

Q. Sure. And you don't opine that any of these Plaintiffs' exposures at Camp Lejeune in fact caused their bladder cancer, correct?

A. Correct. That's not an opinion I've expressed.

Q. And just for the record, you agree that the chemicals at issue are trichloroethylene or TCE; perchloroethylene or tetrachloroethylene or PCE; vinyl chloride; and benzene?

A. Yes. Those -- those are the causative or potential culprit exposures at Camp Lejeune. There is also DCE, which was measured in some context, but I have not ever expressed an opinion that I think DCE is a possible cause of bladder cancer, or DCE exposure at Camp Lejeune as a possible cause of bladder cancer.

Q. And just to be clear, so you would agree that you have never expressed in your reports any opinion that DCE can cause bladder cancer, the DCE exposure at Camp Lejeune can cause bladder cancer, correct?

A. I have not expressed that opinion.

There is a marker of exposure that Dr. Bove employed in some of his studies that is total volatile organics compounds that includes DCE, but I don't -- I have never expressed the opinion that DCE can cause bladder cancer.

Q. Dr. Hatten, I want to talk a little bit about your methodology in the Phase III reports. Does that sound good to you?

A. Yeah, that's fine.

Q. Is it fair to say that first you reviewed Dr. Kelly Reynolds' report as to each of these Plaintiffs?

A. I don't know if that the first thing, but I did review her -- I don't even know that I reviewed her entire report. I reviewed a kind of summary of estimated exposures that she generated, but I don't know that I reviewed her entire report.

Q. Sure, and we will look at it later, just to give you a preview. But her report was a sort of summary section and then separate appendices for each one of the Plaintiffs in this litigation, correct? Is that what you recall?

A. I don't recall if I reviewed an entire report or just the -- just summary tables of exposures. I just can't recall at the moment.

Q. Sure, sure, sure. We will look at it a little bit later. But you agree that Dr. Reynolds is a exposure expert retained by Plaintiffs in this litigation?

A. That's my understanding, but I have never had any direct communication with her or -- and I don't know her professionally.

Q. Okay. And you anticipated my next question, which was, did you ever meet with Dr. Reynolds?

A. As I just said, no.

Q. Dr. Reynolds calculated the exposure doses of TCE, PCE, vinyl chloride and benzene from Camp Lejeune for each Plaintiff, correct?

A. Correct.

Q. And in doing that, she used a unit of micrograms per liter per month and a unit of total mass and total micrograms, correct?

A. I think depending on the Plaintiff, but in general, those were the exposure metrics she used.

Q. And can you tell me what an exposure dose is?

A. It's the amount of a substance that someone is exposed to. I don't know that there is

a more specific way to express that.

Q. Is that different from an absorbed dose?

A. It can be if there is not full absorption of a -- of an exposure, or it really depends on the compound you are talking about, but it can be different.

Q. What factors would drive those differences?

A. It would depend on the properties of the compound itself and the -- you can have individual patient factors that influence absorption. So it's both properties of the patient or the person who is exposed and the properties of the compound itself.

There are additional factors such as personal protective equipment or barriers that may change the amount, but those tend to affect the exposure rather than the absorption most often in a patient. But, again, it depends on the specific scenario.

Q. What would be an example of a patient-specific factor that would drive a difference between exposure dose and absorbed dose?

A. You sometimes have, for example, a different nutritional status may impact the amount you absorb, or co-ingestions or co-exposures may

impact the amount absorbed. Those are just two examples. It's not a comprehensive list.

Q. Sure. Would body weight be another example?

A. Depending on the exposure. It's not for every exposure, though.

Q. For some exposures it could be?

A. It could be, but we would have to talk about the specific exposure and the properties.

Q. How about alcohol, for example?

A. Not necessarily for the absorbed dose. Your body weight tends to, and in addition to gender, it affects the -- your kind of peak blood alcohol. But the amount, the total amount of alcohol you absorb is not necessarily affected by your body weight.

Q. And in your practice as a medical toxicologist, do you focus more on exposure dose or absorbed dose in trying to understand the possible health effects of an agent on an individual?

MR. RUZICKA: Objection to form.

BY MR. ORTIZ:

Q. You can answer.

A. It really depends on the particular compound or toxin we are considering.

Q. So for some compounds or toxins you would focus more on absorbed dose; is that correct?

A. Sometimes, although I think we think of it less in absorbed, less in the context of absorbed dose and more in the context of your total exposure or total bioavailability, like the total amount of the compound that's available in your body to affect you, because sometimes you absorb something and it is -- there are various factors that impact whether the absorbed dose is kind of the key metric for whether -- whether that's a toxic exposure or not.

Q. Is it your understanding that Dr. Reynolds' calculations account for all routes of exposures: ingestion, inhalational and dermal?

A. My understanding was that it's primarily ingestion, was the way she said it, set up her calculations, particularly when discussing the total amount absorbed or the total amount exposed, like her cumulative exposure metrics.

Q. And she relied on ATSDR's water modeling for Hadnot Point and Holcomb Boulevard and Tarawa Terrace, correct?

A. That's my understanding.

Q. And when I say "ATSDR," you understand

that I'm referring to the Agency for Toxic Substances and Disease Registry, correct?

A. Yes.

Q. And you understand that Hadnot Point, Holcomb Boulevard and Tarawa Terrace are three locations within Camp Lejeune?

A. Yes, that's my understanding.

Q. And you understand that no other water distribution systems at Camp Lejeune were contaminated, correct?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. You can answer.

A. My understanding is that those three are the only ones that have been recognized to be contaminated. I don't know if testing has been completely comprehensive for all the other water systems to fully rule out exposures in other water systems, but my understanding is those three are the only ones that have had confirmation of contamination.

Q. And those three are the only ones that ATSDR performed water modeling for, correct?

A. That's my understanding.

Q. And if a Plaintiff spent time at Camp

Geiger or Camp Johnson, did you include that time your exposure calculations in your Phase III reports?

A. I did not, and I believe I have some assumptions where I -- where I discussed them. I'm using the modeling --

Q. Right.

A. -- as presented by ATSDR, and that's what Kelly Reynolds used.

Q. And you agree that there is no sampling data available for Hadnot Point or Tarawa Terrace from before the 1980s, correct?

A. I don't recall the exact date, but it's roughly 1980 was the first one, or roughly 1980. I just don't recall if there were any in the late '70s or not.

Q. And that's why ATSDR or why ATSDR had to do the water modeling?

MR. RUZICKA: Objection to form.

A. I believe that is, or my understanding is that was their motivation, but I was not involved in any of the original discussions around water modeling or how they set up their -- the water modeling.

Q. And ATSDR modeled the mean monthly

concentrations of the chemicals at issue measured in units of micrograms per liter, correct?

A. Correct.

Q. And in water, you would agree with me that 1 microgram per liter is equivalent to 1 part per billion, correct?

A. I believe that's correct.

Q. And both of those units describe concentration of a chemical within water, correct?

A. Yes, yes. They both described that. It's not necessarily exclusive to water, but they are describing a concentration.

Q. Within a solution?

A. Correct.

Q. As opposed to a total mass?

A. Correct. It doesn't have to be in a solution because, for example, air pollution is sometimes expressed as parts per billion. Usually it's micrograms per meters cubed or something equivalent for -- for inhaled exposures, so it's not exclusive to a solution that those concentrations are expressed.

Q. And is it fair to say then that in your Phase III reports you rely on Dr. Reynolds' calculations?

A. For the most part. There are occasional times I performed my own, but in general I relied on her calculations.

Q. And then we will discuss some of that, but did you use those as a starting point?

MR. RUZICKA: Objection, form.

A. In general, yes.

Q. And do you agree that Dr. Reynolds' calculations rely on ATSDR's water modeling?

A. That's my understanding.

Q. And do you agree that if ATSDR's water modeling is inaccurate, then Dr. Reynolds' calculations also would be inaccurate?

MR. RUZICKA: Objection, form.

A. Well, it is a model, so no model is completely accurate. So I'm not sure how to answer that other than there is always uncertainty in any model, and so it doesn't necessarily mean the calculations are inaccurate. It just means there is uncertainty built in to every model.

Q. And if Dr. Reynolds' calculations are inaccurate, would you agree that your calculations in your Phase III reports would also be inaccurate?

MR. RUZICKA: Objection, form.

A. That may or may not be the case,

depending on how you are asking that question. If you are asking is the final exact number that is written down is, if she made a mathematical error, then that number would be different than what is accurate based on arithmetic.

If the question is are the conclusions still valid although the final number should have -- would have been 5 micrograms per liter month. One way or another, that may not be the case. It may still be -- mean that the conclusions was the same even if the number, the specific number is slightly different or it need to be revised.

Q. Sure. It would depend on the degree of inaccuracy, correct?

A. Correct.

Q. Have you reviewed ATSDR's water modeling reports?

A. Yes, at least the -- I've reviewed some of the reports. I don't know whether that's a comprehensive set of the water modeling reports.

Q. It would probably be listed in one of your materials considered list or supplement to those?

A. Yes. It should be in one of the materials considered lists.

Q. And you mentioned you made some changes to Dr. Reynolds' calculations but that you used -- in some instances, but that you used them as a starting point. Is that a fair summary?

A. I don't know that I made changes. It was more if there was a situation where her calculation was not available, for the purposes of my opinion I -- in some instances I think I performed my own calculations.

Q. Okay. And regardless, that yielded an estimated amount of exposure for each Plaintiff for the chemicals at issue, correct?

A. Correct, from an ingestion source, like these are based on estimates of ingestion and don't, I think, fully take into account other routes of exposure.

Q. Right. Inhalation or dermal exposures?

A. Correct.

Q. And then you took those estimates and compared them to data from some studies to see if those Plaintiffs were exposed to sufficient levels of the chemicals at issue to increase their bladder cancer risk. Is that a fair statement?

A. I think the most accurate way is that I compared their estimates of exposure to exposures

that have demonstrated to be -- to have demonstrated an elevated measure of association with bladder cancer in various studies, in particular studies that evaluated water system contamination. Most of those are Camp Lejeune studies, although I reference another non-Camp Lejeune water system contamination study.

Q. That would be the Aschengrau 1993 study?

A. Correct.

Q. And just to go through those studies in your Phase III reports, those studies included Bove 2024, the cancer incidence study, correct?

A. Yes.

Q. And they included Bove 2014, the Marines mortality study?

A. Yes.

Q. And they included ATSDR 2018, the morbidity study?

A. Yes.

Q. And they included Aschengrau 1993, as we just mentioned?

A. Yes.

Q. And they included Hadekhale 2017?

A. Yes, although I -- I'd separate studies that are primarily inhalational from the -- the

ones we just discussed are ones that have primarily ingestion or water system contamination. Hadkhale is primarily an inhalational study.

Q. Correct, and another inhalational study was Lynge 2006?

A. Correct.

Q. And then if you turn to page -- I will just use Criswell. It's page 4 of Hatten Exhibit 39. You see under Inhalational Studies, and if you go to the last sentence, it reads, quote, "Finally, an Italian air pollution study of exclusively inhalational exposures indicated an association only in the medium tertile of geographically segmented estimates, 1.1 to 1.8 micrograms per meter cubed equals HR 1.16 of benzene air pollution. Hadkhale 2017."

Did I read that correctly?

A. I think you read that correctly, although that may be an incorrect reference to this study. I would have to look at my general causation report to refresh my memory on what the actual study name was.

Q. Was there any chance it was -- and I'm not going to pronounce this correctly, but Collarile 2017, C-o-l-l-a-r-i-l-e?

A. I don't recall. I would have to look at my general causation report. I believe I discussed the study in that.

Q. Okay. You agree that's just a typo there?

A. Correct. I don't think that is the appropriate study that's referenced. There is one I discuss in my general causation report that is the appropriate reference.

THE VIDEOGRAPHER: I'm sorry to interrupt. The Zoom dropped. I don't know how relevant that is. It is trying to reconnect.

MR. ORTIZ: Why don't we just go off the record for a second.

THE VIDEOGRAPHER: The time is 9:36. We are off the record.

(Discussion was had off the record.)

THE VIDEOGRAPHER: The time is 9:41 a.m. We are back on the record.

BY MR. ORTIZ:

Q. Dr. Hatten, sticking with Criswell, which is Hatten Exhibit 39, on pages 4 to 5. Do you see the last paragraph there?

A. Yes. Can I go back to your last --
Q. Yes, yes.
A. -- question though. I think we spoke earlier about the Yu study. This is where the Yu study would also be informative in these reports. It's a study of primarily low-dose inhalational exposures of benzene in addition to other, a few other compounds that demonstrated a statistically significant increase in bladder cancer with interquartile range, 0.05 parts per billion.
Q. Okay. So you would put the Yu study in that inhalational studies paragraph if you had it available to you when you were doing this report; is that your testimony?
A. Yes, that is correct.
Q. Okay. Going back --
A. Sorry. And the same for each, each of the Plaintiff reports.
Q. Okay. Going back to pages 4 to 5, the final paragraph, you agree that there are references to EPA 2011, the toxicological profile for TCE, and EPA 2024, the ban on TCE and PCE, correct?
A. Yes, there are references.
Q. But you don't pull data from those

documents like you do the other documents we have mentioned so far?

A. The other documents we have discussed are all epidemiologic studies, and these are government, governmental regulatory statements.

Q. And aside from the studies that we've discussed, your Phase III reports do not expressly cite any other studies, correct?

A. Correct.

Q. How did you select these specific studies to use in your Phase III reports?

A. These were studies of exposures to the compounds of interest that demonstrated associations with bladder cancer as an outcome, elevated measures of association with bladder cancer as an outcome.

Q. So is it fair to say that you were looking for exposures to TCE, PCE, vinyl chloride or benzene where there were elevated measures of association? Is that -- have I recapped that correctly?

A. Where there is also a specific exposure metric within the study, just a qualitative yes, there was an exposure or no, there was not.

Q. So something, some sort of exposure

metric that you can compare to your calculations in your reports?

A. Yes, that's correct.

Q. And you used Bove 2024, the cancer incidence study, correct?

A. That's one of the studies, yes.

Q. And you are aware of Bove 2024, the mortality study?

A. Yes, I've reviewed that study as well.

Q. Why didn't you use that study?

A. I think I just explained that I looked at the studies where there was a elevated measure of association with bladder cancer. I don't believe in that study there was one demonstrated.

Q. And you reviewed the United States expert Dr. Julie Goodman's general causation report on bladder cancer, correct?

A. Yes, I've reviewed that report.

Q. And you agree that she reviewed a large number of studies concerning the relationship, if any, between these chemicals at issue and bladder cancer?

MR. RUZICKA: Objection to form.

Q. You can answer.

A. She reviewed a large number of studies,

that she and her team reviewed a large number of studies in constructing her report, is my understanding. But I've read her report and read her deposition, I think, and those are -- that's all the direct knowledge I have of her opinions.

Q. Okay. And you, yourself, cited a lot more studies in your own general causation report on bladder cancer than you cited in your Phase III reports, correct?

A. Correct. I think I've explained why I chose these studies. The focus of these reports is on examining a Plaintiff, Plaintiff's estimated exposure in the context of reported exposures in the epidemiologic literature that have an elevated measure of association with bladder cancer.

Q. And so is it fair to say if there was a report, that even if it had an exposure metric, if there was not a causal association with bladder cancer, you omitted that from your Phase III reports, correct?

A. It is not omitted. It's just a -- that was not the focus of these reports. These reports were focused on comparing reported measures of association that are elevated measures of association with bladder cancer and Plaintiffs'

specific exposures. I discuss, I think, the total body of literature in my general causation report.

Q. Sure. I understand that you discussed more studies in your general causation report, but in your Phase III reports you would agree that you don't cite studies even if they had exposure metrics that did not have positive associations with bladder cancer; isn't that correct?

A. Yeah, I think that's correct, and I have been pretty transparent about that.

Q. And then based on those comparisons, you opined about whether each Plaintiff was exposed to exposed to levels recognized to be hazardous to humans, correct --

A. Correct.

Q. -- or human health?

A. Correct.

Q. And then you also opine about whether Dr. Reynolds' exposure calculations for each Plaintiff are substantial or de minimis?

A. Correct.

Q. And is there a difference between those two categories?

A. I think they represent different considerations. One is saying that there is

published literature that -- and that's levels of exposures that are recognized to be hazardous to human health. There is published literature with an exposure of this magnitude that has an association with bladder cancer as an outcome.

The other is saying it's a question of whether these exposures are -- are large enough to be a consideration when evaluating a patient or would be large enough to be a consideration when evaluating a patient.

Q. And what would be a de minimis exposure as opposed to a substantial exposure?

A. I think there is a high degree of correlation between the two. Hypothetically, and I'm not speaking specifically here, if you had an exposure that was a -- for example, thought to be primarily inhalational but we don't have good modeling for it, that it becomes a qualitative decision whether that is a substantial exposure or de minimis exposure. In practicality, for all of these Plaintiffs, the ingestion routes and estimations met the level of a substantial exposure.

Q. So you just refer to it being in some cases a qualitative decision. By "qualitative," do

you mean that it would not be defined by the numbers?

A. It would mean you would have to take into account what the estimates for ingestion exposure are and consider if it's possible to translate those into -- this is just a hypothetical example for -- that I referred to before, to say is there enough -- is there a way to translate that into a presumed inhalational exposure and whether that is a de minimis or a substantial exposure.

In all of these cases, speaking concretely about the reports I've submitted, I think the ingestion exposure estimates are sufficient to meet a substantial exposure.

Q. Would -- in a situation where it became a qualitative decision, would it require subjective judgment to determine whether it was a de minimis or substantial exposure?

MR. RUZICKA: Objection, form.

A. I don't think it would be completely subjective. There are -- it would depend on the specific facts of the exposure you are evaluating and how much evidence there is surrounding -- again, if we are talking about the same hypothetical evidence surrounding translation of a

inhalational dose to a -- or an oral or water system exposure to a presumed inhalational dose and the confidence you have in that translation.

Q. Can you define the point at which an exposure becomes substantial as opposed to de minimis?

A. I think for a ingestion exposure -- for an ingestion exposure, I think it's easier to define what is substantial as the starting point and say we definitely know that exposures that have been expressed as levels hazardous to human health are substantial. Ones below that are -- would have to be taken on a case-by-case basis to determine whether those are substantial or not.

I don't -- and it would depend on the specific facts that we are discussing.

Q. Where do those, this language, "levels recognized to be hazardous to humans in substantial exposure," where did that language come from?

A. I don't know. I think it was just as part of the drafting of my report and in conversation with the attorney team, but I don't know. I don't recall the exact -- how we -- how I arrived at that specific language.

Q. And you referenced earlier you made

three assumptions in your Phase III reports, correct?

A. Yes. I think they are on page 2 of the reports.

Q. Correct, and the first one is that you assume that the modeling generated by the ATSDR are reasonable estimates of the monthly exposures in the Hadnot Point and Tarawa Terrace water systems at Camp Lejeune, right?

A. Yes.

Q. And you would agree that, and I mean no offense by this, but you lack expertise to evaluate that assumption, correct?

A. In some sense, yes, in the sense that I am not a -- I don't do my own water modeling when I'm evaluating a modeled exposure. However, I would not say that I lack expertise. I am a practicing toxicologist and I evaluate water modeling regularly.

I also have a MPH in epidemiology and biostatistics and included in that, the coursework for that I did environmental health classes and environmental toxicology classes; and so I have experience outside of these cases evaluating water modeling. That said, I don't perform my own water

modeling, and so I wouldn't -- I wouldn't redo water modeling myself or anything like that.

Q. You are not an engineer, correct?

A. No, I'm not an engineer.

Q. You are not a groundwater hydrologist, correct?

A. No, I'm not a groundwater hydrologist.

Q. You are not an environmental modeling expert, correct?

A. I'm an expert who evaluates environmental models and utilizes those in my practice. However, I do not perform my own environmental modeling.

Q. You don't construct the modeling?

A. Correct.

Q. And you said you evaluate water modeling regularly. How many times have you done that outside of this litigation?

A. I would guess, or this is a very rough estimate, but upwards of 20 times, but I don't know. I don't have a specific number for you.

Q. And what kind of occasions call for you to evaluate water modeling?

A. There are times when a patient will have an exposure or reported exposure and there has been

modeling of that exposure; and the question is whether this patient's -- whether that exposure is the cause of the patient's current symptoms, if there is any remediation that's required, if there is -- if there is any patient-specific treatment that is required based on that exposure and if there is any future surveillance or medical surveillance or followup that's required based on the estimated exposure. And so I evaluate and utilize water modeling reports in that context. That's probably the most common scenario where I use or evaluate water modeling.

Q. Have you evaluated water modeling of groundwater distribution systems?

A. Not for public utilities, but I have for smaller water systems and wells, and I'm trying to think if there are other scenarios for specific employers who have a specific water system. I can't recall a time I've evaluated for a water utility, though.

Q. And you didn't review the United States experts' opinions in Phase I of expert discovery in this litigation, which concerned the water modeling done by ATSDR, correct?

A. I'm not sure if I did or not. If so, it

would have been in my materials considered.

Q. Did you -- going back to your discussion of your evaluation of water models, did you review those other models in the context of personal injury litigation?

A. I have in some cases where I've seen a patient originally as a -- in my toxicology practice, and then there are times those -- they end up filing a suit later. But the majority, if not exclusively, it's always been a physician-patient relationship initially, not an appointment with the express intent of litigation. In those situations I will typically perform an IME if it's a -- or an independent medical examination if the concern is litigation-oriented initially.

Q. And who developed those other water models?

A. Various exposure scientists. I don't recall the names, the specific names of people, or industrial -- sometimes a industrial hygienist, depending on their comfort level with modeling and how complex the modeling is, but typically it's an exposure scientist.

Q. What does it mean for a chemical to volatilize?

A. It goes from a -- typically a liquid. It can be a solid, although that's sublimation typically, but into a gas state.

Q. And do you know as a top medical toxicologist whether TCE, PCE, benzene or vinyl chloride readily volatilize or not?

A. I think all of them volatilize or are volatile. I don't know. I think it depends on what you define as readily to determine whether they are -- they readily volatilize or become volatile. They are all capable of transforming into or transferring into a gas state, though.

Q. And they are all classified as volatile organic compounds or VOCs, correct?

A. Correct.

Q. And are you aware that ATSDR's water modeling did not take account of the possible volatilization of TCE, PCE, benzene or vinyl chloride?

A. My understanding is that the modeling is modeling for concentrations in the water system itself, and so it's just looking at the water system itself in isolation.

Q. Your second assumption, you assumed that deposition testimony and available records

accurately reflect times and locations on base for an individual plaintiff, correct?

A. Correct.

Q. And you agree that time and location on base are important variables to exposure?

A. Those are factors that I think play into eval- -- or estimating an exposure.

Q. And you may recall testifying at your last deposition, but the levels of contaminants varied over time at Camp Lejeune, correct?

A. That's my understanding.

Q. Would you agree that memories fade over time?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. You can go ahead and answer.

A. I'm not really sure how to answer that, but that may or may not be true depending on the specific memory in general. More recent events tend to be recalled more accurately, but that is a very general statement.

Q. And you agree that generally records may have errors or typos in them?

MR. RUZICKA: Objection to form.

A. That's correct. Records may have errors

or typos in them. I don't have a way of evaluating that, though.

Q. And your third assumption, you assume that Dr. Reynolds' exposure dose calculations are sufficiently reliable for purposes of your analyses in your Phase III reports, correct?

A. Yes.

Q. Did you do anything to investigate the accuracy of that assumption?

A. I looked at the estimated exposure tables she constructed to ensure that her calculations were similar or exactly the same as mine if I tried to reconstruct them; and I don't know, I don't recall if I kind of double-checked the work for every -- every patient, but I did it for a number of patients -- or a number of Plaintiffs.

Q. So am I understanding you correctly that you reconstructed Dr. Reynolds' calculations for each of these bladder cancer Plaintiffs or at least some of them?

A. I think I looked at the way she calculated it to make sure that it made sense and that the numbers were like the arithmetic was correct.

Q. And are those calculations contained in the appendices in your Phase III reports?

A. I think I list the -- I have a table with the cumulative report or cumulative exposure metrics, and those are the calculations I was discussing, so...

Q. Are there any other notes or documents that contain those calculations?

A. Not that I recall.

Q. Do you have any spreadsheets or anything like that that contain those calculations?

A. They were printed into a PDF and as just a -- for -- for the report.

Q. Correct, but are there native spreadsheets electronically existing on your computer with those calculations?

A. I don't -- I don't know if I retained those or not. They were draft, part of a draft report, and I don't typically keep old draft versions.

Q. Do you think you deleted those?

MR. RUZICKA: Objection to form.

A. Likely, but my typical practice is not to keep draft versions of my report, and so I likely deleted those, but I don't -- I don't

recall.

Q. So you are not sure if on your computer as it sits right now if there are electronic copies of any spreadsheets containing your calculations attempting to reconstruct Dr. Reynolds' calculations; is that a fair summary?

A. I don't know that that's completely fair in the sense that I wasn't trying to reconstruct her calculations. I was just evaluating the formula she used to arrive at her calculations.

I -- to the best of my knowledge, I do not have spreadsheets that contain those. I think they were printed off as or transformed into PDFs and printed off and scanned; and like I said, I don't typically keep draft versions of my report.

Q. Did you ever give those spreadsheets to your counsel, to Plaintiffs' counsel?

A. No.

Q. You just gave them the final PDF?

A. Correct, or a -- correct, yeah.

Q. And you reviewed the transcript, the rough draft transcript of the deposition of Dr. Reynolds?

A. Yes, I did.

Q. Did you review the reports of the United

States expert Julie Lekine [phonetic]?

A. Yes, I did.

Q. Is that on a materials considered list somewhere?

A. It should be. I don't know if it is or not.

Q. And did you review the reports of United States expert Dr. Lisa Bailey?

A. Yes.

Q. And is that on a materials considered list somewhere?

A. I don't know if it is or not, but it should be if it isn't.

Q. And these three assumptions, are these the only assumptions that you made in your Phase III reports?

A. I believe so. These are the explicit assumptions I had set out at the beginning.

Q. Did the attorneys tell you to make these three assumptions?

MR. RUZICKA: Objection, form. I am going to direct you not to answer that because that is a direct correspondence between attorneys and expert counsel protected by CMS 17.

MR. ORTIZ: I don't believe CMS 17 or Federal Rule of Civil Procedure 26 protects communications related to assumptions on which he relied. We can go off the record and discuss, but I think it's a fair question for me to ask and I'm entitled to that.

MR. RUZICKA: You can ask him about what assumptions he relied upon or were provided, but the question you asked is did we tell him, which would be a different question.

MR. ORTIZ: I think I'm entitled to communications about the assumptions that he made. If he was instructed to make those assumptions, I think I'm entitled to that under CMS 17.

MR. RUZICKA: I am fine with you asking the question if he received any instructions from counsel, but the way you asked the question was a little bit different. So if you want to rephrase it, we can probably get past it.

MR. ORTIZ: Okay. Did you -- let me try to do that.

BY MR. ORTIZ:

Q. Were you -- did you receive those

assumptions from counsel?

A. No.

Q. And do you agree that you calculated each Plaintiff's cumulative exposure?

A. In the majority of cases I relied on Dr. Reynolds' calculation of cumulative exposure.

Q. And the four categories were cumulative micrograms per liter per months, cumulative consumption of total micrograms, cumulative consumption and total micrograms based on ATSDR assumptions and cumulative consumption of total micrograms based on deposition; or it's abbreviated FM, but I believe it stands for field manual exposure assumptions. Correct?

A. I believe those were the cumulative estimates that Dr. Reynolds produced for the majority of these patients.

Q. And, yeah, you anticipated my next question. Those came from Dr. Reynolds?

A. Yes.

Q. Can you explain your understanding of the third category, the one referring to cumulative consumption in total micrograms based on ATSDR assumptions?

A. Sorry. Which column are you asking

about or which --

Q. Yeah, sure. For the Criswell report, Exhibit 39, if you go to the last page, you see it says -- in your version it says "Chart 2: ATSDR cumulative consumption." Can you explain what -- your understanding of that category?

A. My understanding was that Dr. Reynolds was utilizing the estimated water consumption contained in the ATSDR documents. I don't recall if that was in the public health assessment or which specific document it was, but it was published by the ATSDR for an assumption of water consumption or volume of water consumption.

Q. And same question as to the -- what I called the fourth category of this Chart 3. Do you see that in your Criswell report?

A. Yes.

Q. What's your understanding of that category?

A. My understanding is that that is Dr. Reynolds' estimation based on deposition report of volume of water consumed or, when that is not available, her best estimates from evaluating field manual -- military field manuals for expected -- or expected amounts of water to be consumed in various

settings.

Q. And in your opinion, is that a reliable way to represent an individual's exposure to a chemical?

A. That is a reliable way in my opinion. I think the exposures I used to evaluate whether it met levels that are hazardous to human health was the left-hand column here, which is the cumulative exposure, which is a much lower estimate than any of the other ones. I used in general the most conservative estimate or the -- when evaluating this.

Q. And do you rely on any scientific literature to support your opinion that that is a reliable way to represent an individual's exposure to a chemical?

A. Are you talking about column 3 or column 1 or column 4 or column 1?

Q. All the columns.

A. These are reconstructions of a -- various ways of -- sorry. These are various ways of estimating volume of exposure or volume of water ingested; and it is using that to then estimate a cumulative exposure.

There are various ways of estimating

your volume of exposure, and based on what I know about these Plaintiffs, these are all reasonable ways to estimate that. Your question may have been more about the scientific literature, though, or --

Q. That's correct. What scientific literature are you relying on to say that those are reasonable ways to estimate exposure?

A. These are individual patient or individual reported exposures or they are published estimates of exposure volume. Those -- I'm not aware that there is a large body of literature that evaluates the most reliable way to reconstruct volumes of exposure, and part of the reason you do it in different ways is to have a range of estimates. This is typical methodology that at least in my experience for evaluating exposure in a situation like this. I don't know if that answers your question or not.

Q. Let me ask you this: Can you identify as you sit here now a specific reference in the scientific literature that would support your opinion that these are reliable ways to reconstruct an individual's exposure to a chemical?

MR. RUZICKA: Object to form.

A. I couldn't provide you a specific

reference at the moment.

Q. And micrograms per liter per month, the first category, is a unit describing concentration and the other three are all units describing total mass; is that correct?

A. Correct.

Q. In your clinical practice as a medical toxicologist and emergency physician, have you ever applied the methodology that you are using in your Phase III reports?

A. Could you be more specific about what specific methodology you are asking about?

Q. Sure. Have you ever attempted to reconstruct an individual's ingestion exposures to chemicals from water in units of total micrograms?

A. I don't recall if I have or have not directly. As I said before, I typically will rely on an exposure assessment by another expert --

Q. Sure.

A. -- or -- or in the case of a treating -- a patient who is being treated and someone they have hired or their physician has consulted with.

Q. And you sort of anticipated my next question, which is in your clinical practice as a medical toxicologist, is it fair to say that you

are usually relying on exposure assessments by other experts?

A. It depends on the exposure. It's not always the case that an exposure assessment -- an independent exposure assessment is required or an exposure modeling. However, if there was a case where a exposure or modeling is necessary, I typically will have another expert do that work.

Q. And you don't have a degree in environmental science or engineering, correct?

A. Correct, I do not.

Q. You don't have a degree of chemistry, correct?

A. Correct, I do not.

Q. You don't have a degree in chemical engineering, correct?

A. Correct, I do not.

Q. You don't have a degree in industrial hygiene, correct?

A. Correct, I do not.

Q. And you performed a literature search when you prepared your general causation report on bladder cancer, correct?

A. Yes, I did.

Q. And did you conduct a new or updated

literature search when preparing your Phase III reports, or did you rely on that same prior literature search?

A. I primarily relied on that literature search. I do have a PubMed alert for these compounds, so I try to stay up-to-date, but I don't perform a comprehensive -- I didn't perform a fresh comprehensive search prior to formulating these reports.

Q. And is that something, that PubMed alert, is that something that comes passively to your email if certain search terms are hit upon?

A. Yes, that's correct.

Q. But you didn't actively go out and attempt to do a literature search since preparing your general causation report?

A. No. I mean, it was within a few months of the date of my, like roughly two months, right from the date of my general causation report. So that's not a -- I wouldn't consider that a large window of time.

Q. Yeah, no. I wasn't trying to imply that. I was just trying to confirm you didn't do anything else.

Are you aware that ATSDR stated that its

water modeling at Hadnot Point and Tawara Terrace is not specific enough to accurately estimate daily levels of volatile organic compounds or VOCs?

A. My understanding is it's they publish monthly estimates, estimates for the entire month.

Q. And I'm going to hand you Hatten Exhibit -- are we on 45?

A. 46.

Q. 46?

A. Yeah. 45 was the supplemental materials.

Q. Thank you.

(Exhibit 46 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. Thank you. And I'm handing you Hatten Exhibit 46. Have you ever seen this document before?

A. It appears to be part of the -- an appendix to the water modeling, although I don't have a way of verifying that.

Q. Okay. And you see the Bates numbers in the bottom right-hand corner that say CLJA_ WATERMODELING?

A. Yes.
Q. Can you turn to page -- it's A181, CLJA_WATERMODELING_01-000942783.
A. Yes.
Q. Are you on that page?
And about midway down the page it says, quote, "Can ATSDR water modeling results be used to determine the concentration of VOCs that my family and I were exposed to on a daily basis?"
And then the answer reads, "No. The available data are not specific enough to accurately estimate daily levels of VOCs (PCE, TCE, 1,2-tDCE, VC and benzene) at the Hadnot Point, Holcomb Boulevard study area. The modeling approach used by ATSDR provides a high level of detail to estimate monthly VOC concentrations in finished water at the Hadnot Point Water Treatment Plant and Holcomb Boulevard housing areas. It is assumed that simulated monthly concentrations of VOCs represent a typical day during a month. The actual level that a person may have been exposed to could have been higher or lower than the estimated average."
Did I read that correctly?
A. Yes, you did.

Q. And is it your understanding that Dr. Reynolds used ATSDR's water models to estimate daily exposure levels?

A. My understanding is that some of her modeling attempted to estimate at least partial month exposures. I don't know if it was individual days or not. It depends on kind of how you consider a proportional exposure as individual days or not.

Q. Sure. And if you go to page 6 of the Raymond report, which is Hatten Exhibit 40 -- and, I'm sorry, I know you have a lot of papers over there.

And do you see down at the bottom of that chart that says "Exposure Dates," do you see 12/1/65?

A. Yes.

Q. And then if you go to the next page, if you go down to the bottom it says -- of the chart on the left, it says, "Total days, 1. Exposure location, Hadnot Point," and then it gives an estimate for TCE. Correct?

A. Correct. My understanding of what you are talking about is this is an estimate for a total month, then there is a sensitivity analysis

that includes a proportion of the month that the Plaintiff reported being on base. So it's a proportional month analysis, is the sensitivity analysis, which, depending on how you interpret things, could or not be construed as an individual day versus a portion of a month.

Q. And are you aware that ATSDR stated that it shows conservative health protective data interpretation options that were estimates of exposure in the upper end of the range for recommended values?

A. Could you either repeat that or show me where you're -- the quote is from?

Q. Sure. Are you aware that ATSDR stated that it shows conservative health protective data interpretation options? I will make it shorter.

A. I don't recall their -- the specific considerations that they expressed.

My understanding is that this is the -- their modeling is the best estimate that we have of levels of contamination at Camp Lejeune, but I don't recall the considerations they may have expressed.

Q. In your practice as a medical toxicologist, do you typically express dose as the

weight of a chemical per unit of body weight?

A. It depends on the toxin we are discussing, so...

Q. Can you identify a toxin where you would not do it that way?

A. Yes.

Q. What?

A. So just as an example off the top of my head, for example, radiation is oftentimes expressed in grays or rads and doesn't take body weight into consideration.

Q. Can you think of a toxin where you would express dose as the weight of a chemical per unit of body weight?

A. Yes. I mean, there are a number of or there are a number of compounds that could potentially be expressed that way. It's -- are you asking for a specific example, or are you asking for a -- just whether that is something that is expressed that way?

Q. I'm just asking, is that a typical way of expressing dose?

A. It is a way of expressing dose, but again, it depends on the toxin.

Q. And can you identify a toxin that you

ingest where you would not express dose as a unit per body weight?

A. Yeah, there are a number of toxins. For example, asbestos is typically expressed as fibers. We will often as toxicologists evaluate a total dose in a poisoning situation without considering body weight. We have what we consider threshold doses for various exposures. It really is dependent on what -- the individual toxin you are discussing.

Q. In your practice as a medical toxicologist, have you ever had to express dose for TCE?

A. I don't recall if I have or have not had to express a specific dose outside of this litigation.

Q. Same question for PCE.

A. Again, I don't recall that I have or have not for specifically for PCE outside of this.

Q. Same question for benzene.

A. I don't recall whether I have had to express a dose specifically for benzene.

Q. Same question for vinyl chloride.

A. And I don't recall whether I've had to express a dose specifically for vinyl chloride.

Q. Do you agree that Dr. Reynolds did not express dose in terms of weight of chemical per unit of body weight?

A. I did not evaluate her entire report. I don't know if she expressed a dose differently in a different portion of the report. The calculations that -- of hers that I reviewed did not express exposures in a mass per unit of body weight.

Q. And she used units of total micrograms, correct, as we said before?

A. As one of her -- one of the ways she expressed an exposure.

Q. And those are units of total mass, correct?

A. You are saying is micrograms a unit of total mass?

Q. Correct.

A. Yes.

Q. And you agree that a unit of total mass alone does not count for a person's body weight?

A. If you are discussing a toxin, like a total mass of a toxin, that does not account for body weight. You can express a person's weight in micrograms, if you want.

Q. Right, right. I'm talking about a toxin

or an agent.

A. Correct. If you are just expressing the total mass of a toxin, that is not -- does not integrate a person's body weight into a calculation.

Q. And as a medical toxicologist, do you agree that a person's body weight is important to accurately determine that person's exposure to a chemical?

A. Again, it depends on the toxin you are discussing.

Q. We discussed that a little bit earlier? We discussed that a little bit earlier?

A. Yes. We at least had some similar questions about that.

Q. Let me ask you this way: Would you agree that a single beer would have a different effect on a person who ways a hundred pounds than on a person who weighed 300 pounds?

A. All else being equal, you will have a different peak serum alcohol concentration with different body weights. That does not necessarily mean that the clinical effects are going to be different. There are patient-specific factors such as tolerance, other medications they are taking

that greatly impact how the degree of clinical effects that a specific exposure may have.

Q. So is it your testimony that all things being equal, a person who weights 300 pounds and a person who weighs 100 pounds, they both drink one beer, the same alcohol content in that beer, the effects are not going to be -- are going to be the same. Is that your testimony?

MR. RUZICKA: Objection, form.

A. No, that wasn't at all my testimony.

Q. Okay. Then what was it?

A. The testimony was that if the exposure was the same, they drank the beer the same amount of time, it was the same beer, the peak serum alcohol concentration will likely be different between a 300-pound person and a 100-pound person. That is not the same as saying that their -- the clinical effects are going to be the same.

You can have a much higher peak serum alcohol concentration with minimal to no effects in somebody who has a lot of tolerance or in somebody who is also receiving IV fluids that dilutes things quickly. These are just examples. Or versus somebody who weighs a hundred pounds but drinks heavily every day, they may be very tolerant versus

a 300-pound person who is alcohol naive. There are patient-specific factors that greatly affect, greatly impact the clinical effects of an exposure.

Q. And would you agree that your calculations in your Phase III reports do not account for the body weight of any of these five Plaintiffs?

A. Correct, I do not have -- I'm not aware of the body weights of any of these Plaintiffs. I don't believe that's information I was -- that was available to me.

Q. That's just information that's not available so far as you know?

MR. RUZICKA: Objection, form.

A. At least to me. I don't know if it's available in other senses. As I said, I haven't reviewed medical records for any of these patients. This is strictly an exposure calculation.

MR. ORTIZ: Sure. Why don't we take a break now.

MR. RUZICKA: Sure.

THE VIDEOGRAPHER: The time is 10:32. We are off the record.

(Recess taken.)

THE VIDEOGRAPHER: The time is

10:44 a.m. We are back on the record.

BY MR. ORTIZ:

Q. Dr. Hatten, I want to go back to Hatten Exhibit 39, your Phase III report for Mr. Criswell and we are going to spend some time on -- probably the most time on this report and then hopefully less time on the others.

A. Okay.

Q. Do you agree that Mr. Criswell was at Camp Lejeune between January 1975 and March 1997 -- 1977?

A. That's my understanding.

Q. And are you aware that he would have had some departures from leave or deployments within that range?

A. I don't recall the details of that.

Q. But generally speaking?

A. Again, I just don't recall the details.

Q. And are you aware that he lived at Camp Geiger until 1965?

A. I don't recall the specific details of his placement on base or...

Q. Did you assume that he lived at Hadnot Point from January 1965 onwards?

A. I think I used whatever the assumptions

were.

Q. And you are looking at the appendix to the report, correct?

A. Correct.

Q. And do you see anywhere where it states the location that you assumed he was at?

A. I don't believe that I -- I believe this modeling includes both Hadnot Point and Tarawa Terrace. I remember there is a combined one. The bottom set of figures is combined for Hadnot point and Tarawa Terrace, and then I assumed that he spent 9.3 quarters on base.

Q. Okay. And you agree that there is no sampling data for Tarawa Terrace or Hadnot Point during the time that Mr. Criswell was at Camp Lejeune, correct?

A. Not that I'm aware of, but I think we discussed this earlier, that it was all roughly 1980 or later.

Q. Correct. So looking at Appendix A, that contains your analysis tables for Mr. Criswell; is that correct?

A. Correct.

Q. And is this a complete copy of your analysis tables for Mr. Criswell?

A. To the best of my knowledge, yes.
Q. And are these numbers originally taken from Dr. Reynolds' report concerning Mr. Criswell?
A. I believe so. I don't -- I don't believe I modified them, but I don't recall specifically.
Q. That was my next question, which was did you change the numbers at all. But I think before I ask that, I'm going to hand you Hatten exhibit -- is it 47?

MR. RUZICKA: Yeah.

(Exhibit 47 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:
Q. And do you recognize this document?
A. It appears to be a report of Dr. Reynolds. As I said before, I don't think I reviewed her entire report though.
Q. And for the record, this exhibit actually omits Dr. Reynolds' appendices for the non-bladder cancer Plaintiffs. I did not include that in this exhibit. But would you agree that it includes the appendices for all five bladder cancer Plaintiffs that you reviewed? And you can take a

minute to flip through it if you need to.

A. It appears to. I haven't -- if you are representing that, I will assume that that is correct.

Q. Okay. I am representing that to you.

Can you turn to page -- I apologize it is not numbered, but page 17 of the document.

A. Is that Appendix 2, the Criswell section?

Q. That's correct. It leads to the summed variables totals for Mr. Criswell.

A. Yes, I see that page.

Q. Are there differences between her numbers and your numbers?

A. The numbers appear to be slightly different for TCE and PCE at Tarawa Terrace. There is one microgram per liter month more of TCE on my table and one less for PCE on her table, and then one less vinyl chloride on her table for Tarawa Terrace, and those are then translated into the totals, that corresponding difference.

Q. Are there differences between her numbers in the other three columns and your numbers in those corresponding columns?

A. I don't -- of those -- those do appear

to be different.

Q. Can you explain why those are different?

A. I do not -- I'm not aware of why those are different. I don't recall making any changes. I don't know if she provided a preliminary version to me, but I don't recall any modifying these tables.

Q. And as you testified about earlier, your I guess, electronic copies of your calculations for Mr. Criswell you believe no longer exist on your computer. Is that correct?

A. I don't believe so. It's not my practice to keep those, so I would have deleted it at the time.

Q. Okay. So is there any other document I could look at to understand why these numbers may have changed, to your knowledge?

A. I mean, there may be an email from my attorneys or the attorneys that they would have forwarded Dr. Reynolds' table to me. I didn't directly correspond with her and am not aware of why there is a difference between these two.

Q. Okay.

A. One other thing is, I don't think her report has a cumulative total at the bottom,

whereas I inserted that in the tables I generated.

Q. Correct, and you are referring to the TVOC variable?

A. Correct.

Q. And that's something you calculated yourself by adding up each of the four chemicals at issue?

A. Correct.

Q. Okay. Thank you for clarifying that.

If you go back to your Criswell report on page 2, there is a section that's titled there Rationale and Methods, correct?

A. Correct.

Q. We have already discussed generally your methodology in the Phase III reports, correct?

A. Yes.

Q. And this section also sets it out?

A. Correct.

Q. And you state here that if a Plaintiff was exposed to a single water system that you performed a sensitivity analysis for partial months of exposure, correct?

A. Correct.

Q. Can you describe or what do you understand the term "sensitivity analysis" to mean?

A. That is calculating the same metric in a different manner to see if different ways of calculating it substantially change your conclusions.

Q. And how did you perform that sensitivity analysis?

A. I didn't in this case. In this case it was --

Q. Sure.

A. -- solely a -- or I rely on the numbers provided by Dr. Reynolds.

Q. But in cases -- and we will talk about some of those specific cases later -- where you did perform it, how did you perform it?

A. I think I say accounting for partial months of exposure, so I used just a proportion of the month multiplied by the -- the proportion of the month that was reported to be exposed to that water system times the monthly concentration for that month.

Q. And do you have any notes or files that reflect those calculations for that sensitivity analysis?

A. They would just be on the table I produced if I did that.

Q. Okay. And if I want to understand it -- well, scratch that.

If I wanted to understand your sensitivity analysis besides the tables and the appendices to your reports, are there any other documents to your knowledge that I could review to do that?

A. No. I mean, it's just a proportion, so it was a fractional portion of the exposure for the month was documented as the total exposure for that month.

Q. But you don't have like an Excel file or something like that that reflects that actual calculation, correct?

A. No. It would have been built into the table, and so it's published. If it was done for any individual plaintiff, it would be in the final table, but there is not a worksheet or something like that.

Q. Okay. And then you also state that if a Plaintiff was exposed to water for both Hadnot Point and Tarawa Terrace, you either relied on Dr. Reynolds' combined exposure table or a portion between Hadnot Point and Tarawa Terrace yourself, correct?

A. Correct.
Q. How did you decide which one to do?
A. If Dr. Reynolds' estimate was available, that was the one I used. If not -- and I don't even recall if I had to do that for any of them -- then I would have apportioned it.
Q. Do you know if you did that in Mr. Criswell's case?
A. In his case I relied on the estimates from Dr. Reynolds' calculations.
Q. Okay. And just to be clear, if Mr. -- if Dr. Reynolds' calculations for this apportionment were available, you just used that; you didn't disregard her calculations if they were available and use your own?
A. Correct. I relied on her calculations.
Q. And the next section of your Criswell report is titled Exposures, correct?
A. Yes.
Q. And then you go through different exposure metrics or categories which are time on base; TVOC, which stands for total volatile organic compounds; PCE; TCE; vinyl chloride; benzene; and inhalational studies. Is that correct?
A. Correct.

Q. And you follow the same structure for all of the reports, correct?
A. Correct.
Q. All right. I'm going to talk about each one of these with you. Okay?
A. Okay.
Q. Starting with time on base, you state that for military personnel there is increased risk of bladder cancer after seven quarters' duration at Camp Lejeune between 1975 and 1985, correct?
A. Correct.
Q. And to use your language, you actually -- you state it is an elevated measure of association, correct?
A. Correct.
Q. And then for civilians you state that a minimum exposure of 1 to 21 quarters at Camp Lejeune between October 1972 and December 1985 had an elevated measure of association with bladder cancer, correct?
A. Correct.
Q. And a quarter is equivalent to three months, correct?
A. Yes.
Q. And you are citing in support of that

Bove 2024, the cancer incident study, correct?

A. Correct.

Q. I'm going to hand you what was previously marked at your prior deposition as Exhibit 16, and we will just continue that just to avoid any confusion, but you recognize Hatten Exhibit 16 is a copy of Bove 2024, the cancer incidence study, correct?

A. Yes.

Q. If you turn to page 10, you will see Table 5, correct?

A. Yes, that's Table 5.

Q. And it sets out cancer outcomes by duration stationed at Camp Lejeune compared to Camp Pendleton between 1975 and 1985 for the Marines/Navy personnel subgroup. Is that correct?

A. Yes, correct.

Q. And if you go to page 11, you will see the note under the table, and it defines the medium duration group as 7 to 10 quarters, correct?

A. Correct.

Q. And for military personnel in the medium duration group for urinary bladder cancer, the hazard, the adjusted hazard ratio or HR was 1.18 with a confidence interval of .095 to 1.46,

correct? Excuse me. Yeah, 1.46.

A. Correct.

Q. And would you agree that that confidence interval includes 1.0?

A. Yes, that confidence interval includes 1.0.

Q. So would you include that that confidence interval or that finding is by traditional convention not statistically significant?

MR. RUZICKA: Objection, form.

A. I would say by traditional convention that's considered non-statistically significant.

Q. And do you determine statistical significance in any different way?

A. It's typically defined by the authors of the study and how they utilize it. There is not a -- there is not a rigid definition of statistical significance.

Q. But traditionally, if the confidence interval includes 1.0, it's considered not statistically significant, correct?

A. Traditionally, yes.

Q. If you go to page 12 of Hatten Exhibit 16, that has Table 6, which is cancer outcomes by

duration employed at Camp Lejeune compared to Camp Pendleton, October 1972 to December 1975, among civilian workers, correct?

A. Yes, that's correct.

Q. And in the note at the bottom of the table, it defines the low/medium duration group as 1 to 21 quarters, correct?

A. Correct.

Q. And for civilian personnel, the adjusted HR for bladder cancer was 1.18 with the confidence interval of 0.80 to 1.75, correct?

A. Yes, that's correct.

Q. And under traditional convention, that's not statistically significant either, correct?

MR. RUZICKA: Object to form.

A. Correct, under -- under the traditional definition of statistical significance.

Q. And the last sentence under the time on base paragraph on page 2 of your Criswell report reads, quote, "Of note, the population in this study is limited to civilian personnel who may have less intense exposures than military personnel." Did I read that correctly?

A. Yeah, you read that correctly. I mean, I was -- I think that statement is probably not

completely precise in the sense that I was referring to the second finding because they both come from the same study.

Q. Are you now disavowing that statement?

MR. RUZICKA: Objection, form.

A. No. I'm just clarifying that this is a reference -- they are both -- both military personnel and civilian personnel were included in the Bove 2024a study. I'm just saying that that last statement is referring to the civilian personnel finding that the language was not completely precise.

Q. Sure. But you are expressing in that sentence that civilian personnel may have had less intense exposures to the chemicals at issue than military personnel. Is that correct?

MR. RUZICKA: Objection, form.

A. Correct. That was -- that portion, the intensity of exposure, is accurate as written.

Q. And if that's the case, then why are civilian personnel who are at Camp Lejeune for one to six quarters at equivalent risk for bladder cancer as Marine personnel who have been at Camp Lejeune for seven quarters or more?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. You can answer my question.

A. Yeah, I think these are different populations in the sense that you have different groups of people who make up the two cohorts, one of military personnel and one of civilian personnel and their individual factors within those groups that may make susceptibility different to various exposures.

Q. But you agree that you state in the report that civilian personnel may have had less intense exposures than military personnel, correct?

MR. RUZICKA: Objection, form.

A. Correct, I state that.

Q. And if that's correct and Marine personnel are having more intense exposures, then why for Marine personnel who have been at Camp Lejeune for one to six quarters is there not an increased risk of bladder cancer?

MR. RUZICKA: Objection, form.

A. This is the finding based on the analysis of their data in that study. It's not a -- I don't think the study is sufficient to -- to determine the reason for a different -- it's not even a differential finding. It's just a

difference in the reported exposure metric in the study.

Q. And you didn't cite the confidence intervals that I read aloud in your Criswell report, correct?

A. I did not. I will also point out I was just referring to the differences in population. If you look at Table 1 and 2 that are on page 5 and 6, the military personnel are approximately 20 years younger than the civilian personnel.

We know -- this is just one example. We know age is a major factor in the development of bladder cancer; and so you may -- it may be much easier to pick up bladder cancer cases in civilian personnel, and so they are seeing -- they are seeing patients who have bladder cancer, but those haven't yet developed in the military personnel. This is just an example of a possible reason for that. It's not saying that the study clearly explains that difference.

Q. Sure. What is the concept of dose-response relationship?

A. It's typically that the more intense an exposure -- and that could be based on duration or amount or some combination -- the greater the

health effect.

Q. So would you agree that if there was a dose-response relationship, if Marines had more intense exposures than civilian personnel, we would expect more of a health effect for Marines?

MR. RUZICKA: Objection, form.

A. If the people making up the populations were identical, but that is dependent on the individual or the makeup of the individual populations. If you are talking about different populations, which it is pretty clear that the military and civilian populations are different, then that is not necessarily the case.

Q. Would you agree that 1.18 is not a strong positive association?

MR. RUZICKA: Objection, form.

A. I don't think it's traditionally considered a strong positive association. It is in the context of evaluating this. I think we discuss this at length in my prior deposition and my general causation report.

Q. Correct.

A. I used the framework that was set out by ATSDR with a -- that identified a elevated measure of association as greater than 1.1 and used that

consistently in evaluating the evidence.

Q. And you are referring to the statement of ATSDR in the assessment of the evidence published in 2017, correct?

A. I believe that was the document it was contained.

Q. And you recall testifying about that at your prior deposition?

A. Yes.

Q. Do you agree that the duration analyses in Hatten Exhibit 16, which is the Bove 2024 study, should be interpreted with caution?

MR. RUZICKA: Objection, form.

A. I mean, I'm not sure that -- what question are asking. I've made -- I represented my conclusions in this report. I don't think I would interpret anything that I represented here with caution.

Q. Let me direct you to page 11 of the Bove 2024 study, and just let me know when you are there.

A. Yes.

Q. And on the right-hand column you see the paragraph, the second full paragraph that begins "using base location." Do you see that?

A. Yes.

Q. And it says, "Duration stationed or employed at Camp Lejeune as a proxy for cumulative exposure assumed that monthly contamination levels did not fluctuate, but this was incorrect. Therefore, the duration analyses should be interpreted with caution."

Did I read that correctly?

A. You read that correctly.

Q. So that was the author's own statement?

A. That was the author's statement.

Q. I want to go to TVOC next and in your Criswell report. As you said earlier, Dr. Reynolds actually did not calculate an exposure metric or number for TVOC for these Plaintiffs, correct?

A. Correct, she did not.

Q. And you did that yourself?

A. Yes, although I think I make a caveat that, if you look on page 3, in the last sentence of that section, that Dr. Bove includes DCE in his TVOC calculation, so any estimate that I produced was an underestimate compared to what Dr. Bove estimated.

Q. And you testified earlier that you haven't expressed any opinion in your reports about

the possible health effects, if any, of DCE, correct?

A. I have not. I've never expressed the opinion that DCE exposure is a cause of bladder cancer that I'm aware of, but I did not specifically address that in my report outside of this.

Q. And Mr. Criswell fell into the medium exposure group for TVOC, correct?

A. Correct.

Q. And that medium exposure group was defined as cumulative exposures to more than 4,600 micrograms per liters per month, correct?

A. Correct.

Q. And that's a unit describing concentration, correct?

A. Correct.

Q. And you cite and support Bove 2014, the Marine mortality study, correct?

A. Correct.

Q. I'm going to hand you what was previously marked as Hatten Exhibit 12 at your prior deposition. And do you recognize Hatten Exhibit 12 as a copy of Bove 2014a?

A. It appears to be, although it does not

include the supplemental files.

MR. ORTIZ: I'm getting to that. Hatten Exhibit 49?

MR. RUZICKA: I will just confirm that. It might be 48.

THE WITNESS: I think the Reynolds was 47.

MR. ORTIZ: So 48. Thank you.

(Exhibit 48 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. And do you recognize Hatten Exhibit 48 as a copy of Additional File 2 to Bove 2014, the mortality study?

A. Yes.

Q. And for the record, I've added the highlighting of the bladder cancer results throughout. Do you see that?

A. Yes.

Q. And are you aware that Bove 2014 uses the sum of the mean monthly concentrations modeled by ATSDR for residents only?

A. That's my understanding of the methodology.

Q. And are you -- go ahead.
A. In expressing an exposure, a numerical exposure.
Q. And are you aware that Dr. Reynolds used the sum of the mean monthly concentrations modeled by ATSDR for residents and work locations, if applicable?
A. I think it...
Q. Would you need to review Dr. Reynolds' report to know?
A. I just can't recall if it was for every plaintiff that she evaluated that she did that.
Q. Sure. You think it was for some?
A. At least for some, yes.
Q. And do you agree that where she did that, her methodology differed from Bove 2014?
MR. RUZICKA: Objection, form.
A. It -- it could have, although I don't know if it did in every case.
Q. What do you mean by that?
A. In the sense that because this was only a study of military personnel, I don't know if her military -- every military person that she actually apportioned different work locations.
Q. And in your Phase III reports you relied

on Bove 2014 and an Additional File 2, correct?

A. I mean, this is part of this study, so it's not a separate --

Q. Right. I'm not implying that it is.

A. Yes, I relied on the study, including the additional files.

Q. Correct. And would you agree that many of the hazard ratio or HR estimates in Bove 2014 lacked precision as indicated by wide confidence intervals?

MR. RUZICKA: Objection, form.

A. I think the confidence intervals are what they are and it's up to the reader to interpret them.

Q. And do you agree that lack of precision in the HR estimates indicates uncertainty about the actual magnitude of the effects of the drinking water exposures on specific causes of death?

MR. RUZICKA: Objection, form.

A. No, I wouldn't agree with that. I would say it reflects the range of point estimates that may come from that population.

Q. I'm going to direct your attention to page 13 of Bove 2014. Would you tell me when you are there, please.

A. Yes.

Q. And starting from the bottom of the left-hand corner, it reads, quote, "Many HR estimates lack precision, as indicated by wide confidence intervals, due to small numbers of specific causes of death. Lack of precision in the HR estimates indicates uncertainty about the actual magnitude of the effects of the drinking water exposures on specific causes of death."

Did I read that correctly?

A. You read that correctly.

Q. And that is what the authors stated?

A. Correct, that's what the authors stated in this study.

Q. And do you agree that the total number of bladder cancer cases at Camp Lejeune for Bove 2014 was 11?

A. I would have to review the table to confirm that.

Q. If you review Additional File 2, do you see under the first page it says "bladder cancer" and in parentheses it says "N equal 11"?

A. Yes, that's correct.

Q. So the total number of bladder cancer cases at Camp Lejeune for Bove 2014 was 11?

A. I believe so. Yeah, per this table, I believe that's correct.

Q. Okay. And going back to your Criswell report, you state that the HR for medium TVOC exposure was 3.33, correct? And that's at the top of page 3 of your Criswell report.

A. Yes, that's correct.

Q. And you don't cite the confidence interval, correct?

A. No, I do not.

Q. And if you go to Additional File 2, you see the medium exposure category on page 1 for TVOC, the HR is 3.33; the lower confidence interval is 0.64; the upper confidence interval was 17.37. Do you see that?

A. Yes.

Q. Now, Dr. Hatten, do you recall in your prior deposition in this litigation that you testified you don't have a numerical standard that you apply to determine whether a confidence interval is wide or narrow?

A. I don't recall the exact language I use, but that sounds like an opinion I would express, and I'd still agree with that.

Q. And is it fair to say that your view is

that describing a confidence interval as wide or narrow is only meaningful when compared to another confidence interval? So, for example, you can say this confidence interval is wider than that confidence interval.

A. That -- that is something you can say. I don't know if that is the exclusive time using that terminology would be appropriate.

Q. Have you ever -- in prior litigation do you recall characterizing a confidence interval of 0.88 to 2.24 as very wide?

A. I don't recall if I used that specific language or not.

Q. I'm going to show you Hatten Exhibit 49.

(Exhibit 49 was marked for identification and is attached to the transcript.)

MR. ORTIZ: Sorry. Did you want a copy that's not banged up?

MR. RUZICKA: That's all right.

BY MR. ORTIZ:

Q. Do you recognize this document, Dr. Hatten?

A. Yeah. It appears to be a deposition transcript.

Q. Okay. And do you agree that on the first page it says Video-Recorded Deposition Benjamin Hatten, M.D., M.P.H., correct?
A. Yes.
Q. And this is in the Zantac litigation?
A. Yes.
Q. And your deposition was taken on May 17, 2022, correct?
A. That's what it appears to be.
Q. And this is a transcript of that deposition?
A. It appears to be.
Q. And you were retained in that litigation as an expert witness by the defendant, correct --
A. Correct.
Q. -- one of the defendants.
And defense counsel was present during this deposition, correct?
A. Yes.
Q. Would you please turn to page 146, and please tell me when you are there.
A. Yes, I'm here.
Q. All right. Starting at -- I'm going to read starting at line 19.
"Question: Okay. And you list the

hazard ratio with ranitidine and bladder cancer as 1.41; is that correct?

"Answer: Correct. That's the author's reported point estimate of the hazard ratio of 1.41 with again a similarly wide confidence interval that crosses the null. It's .88 to 2.24.

"Question: So is it fair to say that this Yoon study also demonstrates an increased risk of bladder cancer albeit non-statistically significantly?

"Answer: I would say that it demonstrates a point estimate that is higher than 1 but with a very wide confidence interval."

Did I read that correctly?

MR. RUZICKA: I'm going to object just to the extent that it didn't note the objection made by counsel at this deposition on line 3 of page 147.

MR. ORTIZ: Sure, that's fine.

BY MR. ORTIZ:

Q. Did I read that correctly?

A. I think you read that correctly, although I think I'm discussing it in the context of various findings since it's studies. I don't think a -- I think we would have to review the

actual studies to have a good context for it.

Q. And if you look down to the line 15 on page 147, do you see that? It reads -- I will read from there.

"Question: And the next study that you looked at is Kantor 2021; is that correct?

"Answer: Yes.

"Question: Is this a cohort study as well?

"Answer: Correct, that's a cohort study.

"Question: And comparing ranitidine users to non-users, there is an adjusted odds ratio of 1.22; is that correct?

"Answer: The authors report the point estimate 1.22 with again a wide confidence interval that crosses 1 that goes from .74 to 2.01."

Did I read that correctly?

A. Yes, you did, with the same caveats as the last answer.

Q. Would you agree that a confidence interval of 0.64 to 17.37 is wider than a confidence interval of 0.88 to 2.24?

A. Yes, that's a wider confidence interval.

Q. Okay. Going back to Additional File 2,

I want to direct your attention to the high exposure category for TVOC. Do you see that?

A. Yes.

Q. And the hazard ratio is 1.20 with a confidence interval of 0.17 to 8.61, correct?

A. Correct.

Q. And so the data indicates that the risks or the association, rather, with bladder cancer decreased from the medium exposure to the high exposure, correct?

A. The data indicates the point estimate is lower at the high exposure than the medium exposure.

Q. And that was based on two cases in the high exposure category, correct?

A. Correct.

Q. And just to be clear, 1.20 is lower than 3.33, correct?

A. Yes, that's correct.

Q. And the confidence interval of 0.17 to 8.61 is wider than the confidence interval of 0.88 to 2.24, correct?

A. Yes, that's correct. That's a wider confidence interval.

Q. Okay. I want to talk about PCE next,

and before we talk about the specifics in the Criswell report, you are aware that ATSDR used two models for PCE at Tarawa Terrace, the TechFlow MP model and the MT3DMS model, correct?

A. Yes, that's my understanding.

Q. And you only used the data from the TechFlow MP model, correct?

A. I believe I used the lower number as the more conservative one, and that was the TechFlow MP model.

Q. Can you tell me the difference between the two models?

A. Sitting here, I don't know the details of the difference between the two.

Q. And you put Mr. Criswell in the high exposure category for PCE, correct?

A. Correct.

Q. And you were citing ATSDR 2018, the morbidity study, correct?

A. Correct.

Q. Let me grab a copy of that.

And I'm handing you what's been previously marked as Hatten Exhibit 15 at your prior deposition. Do you recognize Hatten Exhibit 15 as ATSDR 2018, the morbidity study?

A. Yes.
Q. And do you recall testifying at your last deposition in May about the limitations of this study?
A. I don't recall the details of the testimony, but I presume we discussed that.
Q. Do you recall that this study has major limitations?
MR. RUZICKA: Objection, form.
A. The study has limitations. I don't recall specifically what the discussion that we had was.
Q. Sure. I will direct your attention to page 11 of Hatten Exhibit 15, please. Let me know when you are there. I'm sorry, page 12.
And it says, "Given the major limitations of this study, ATSDR is conducting additional research of the Camp Lejeune cohorts to help further evaluate the incidence of cancer in this population."
Did I read that correctly?
A. Yes, you did.
Q. And then going back to page 11, do you agree that they discuss that the study results could have been impacted by exposure

misclassification bias?

A. Yes.

Q. And at the top of the page they discuss that selection bias could have impacted analyses comparing Camp Lejeune to Camp Pendleton, likely biasing results away from the null and potentially overestimating the effects of the exposures.

Do you see that?

A. Yes, I see that.

Q. And that's because this study was based on participation in a health survey, correct?

MR. RUZICKA: Objection, form.

A. That was part of a case-finding mechanism, was a -- was a survey.

Q. And are you aware that this study assumed that all the participants at Camp Lejeune were exposed to elevated levels of VOCs?

A. I don't recall all the assumptions in the studies.

Q. Sure. And are you aware that this study was never submitted to a peer-reviewed journal?

A. My understanding is it was published directly by the ATSDR per their kind of internal review process.

Q. It was never externally peer reviewed,

correct?

A. Not that I'm aware of.

Q. And would you agree that peer review is a key part in determining whether a study is scientifically reliable?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. You can answer.

A. It's typically a portion or a key part of that. I will say the -- as scientists and toxicologists, we will frequently rely upon government-published reports that are not subject to external peer review with the assumption that the government is performing reliable work.

Q. And you also cite in the PCE paragraph in Mr. Criswell's report, you cite Bove 2014, correct?

A. Correct.

Q. And using Bove 2014, Mr. Criswell would be in the high exposure category for PCE, correct?

A. Yes.

Q. And you state the hazard ratio of 1.24, correct?

A. Correct.

Q. And if you turn to page 9 of Additional

File 2, please. Just let me know when you are there.

A. Yes, I'm on page 9.

Q. And do you see that the HR for the high exposure category for PCE is 1.24 with a confidence interval of 0.25 to 6.21 with three cases?

A. So are you on page 9 of the paper or page 9 of the document?

Q. Sorry. Page 9 of Additional File 2.

MR. RUZICKA: Exhibit 48.

MR. ORTIZ: Yes, correct. Thank you.

BY THE WITNESS:

A. All right. Could you repeat the question?

BY MR. ORTIZ:

Q. Yeah, no problem.

Do you see the high exposure category for PCE? Do you see that there?

A. Yes.

Q. And do you see the HR is 1.24 with a confidence interval of 0.25 to 6.21 with a total of three cases?

A. Yes, I see that.

Q. And you see the medium exposure category is 1.62 with a confidence interval of 0.23 to 8.10

based on three cases?

A. Yes, I see that.

Q. Do you agree these confidence intervals are wider than 0.88 to 2.24?

A. Yes, those confidence intervals are wider than that.

Q. And you didn't discuss those confidential intervals in your Criswell report, correct?

A. No. I think I was -- I think it's a step in all my reports with how I discuss elevated measures of association.

Q. Correct. And then you also discuss in your Criswell report Aschengrau 1993, correct?

A. Correct.

Q. And I'm going to hand you a copy of that, and I'm handing you what was previously marked as Exhibit 26 at your prior deposition. Do you recognize Hatten Exhibit 26 as a copy of Aschengrau 1993?

A. Yes.

Q. And in your Criswell report you state that in Aschengrau 1993 the 90th percentile dose of PCE was 27.1 milligrams with latency and 44.1 milligrams without latency. Is that correct?

A. Correct.

Q. And just for the record, to convert milligrams to micrograms you would just multiply by a thousand, correct?

A. Correct.

Q. And to convert micrograms to milligrams you would just divide by a thousand, correct?

A. Correct.

Q. Aschengrau 1993 only considered a single bladder cancer case to be exposed to PCE when considering latency, is that correct? And you can turn to Table 4 on page 289 of Aschengrau 1993.

A. Correct, with latency there is one case.

Q. And they were not able to calculate an any crude odds ratio for bladder cancer when considering latency as a result, correct?

A. Correct.

Q. And would you agree that considering latency is one way that a study might account for the possibility of a confounding variable or bias?

A. Yes. Specifically for a misclassification bias is typically how it is used, that this is a preexisting cancer that you are attributing to the exposure if you don't account for latency.

Q. And you are relying on the data in Aschengrau 1993, which is also on Table 4, that does not consider latency, correct?

A. Correct. That's the available data we have.

Q. And you put Mr. Criswell in the high exposure group for PCE when compared to Aschengrau 1993 because Dr. Reynolds calculated that his PCE dose ranged from 120.6 milligrams to 168.0 milligrams, correct?

A. Correct.

Q. Where are those numbers in Dr. Reynolds' report concerning Mr. Criswell?

A. I believe those are in -- under PCE the -- or if you look on my table, for PCE the TechFlow MP model has 120,572 micrograms, and using the ATSDR consumption -- assumptions for 168,032, using the deposition and field manual assumptions.

Q. Okay. So you used the ATSDR assumptions as the lower estimate, and then you used the deposition/field manual assumptions as the upper estimate. Is that correct?

A. As calculated by Dr. Reynolds or as transmitted to me as Dr. Reynolds' calculation.

Q. Did you use the ATSDR assumptions as the

lower boundary simply because that number was lower than the deposition/field manual assumptions?

A. I just used that as the range of the values that were expressed. Maybe I don't understand the question you are asking, but...

Q. I'm just trying to understand if there was anything to the nature of those assumptions that would have led you to use the ATSDR as the lower boundary other than just the fact that the numbers were lower?

A. No. I just expressed those as two alternate models for estimating exposure.

Q. Okay. And then going back to Aschengrau 1993, you state that the OR, odds ratio, for the high PCE exposure group was 6.04?

A. Correct.

Q. And if you look at Table 4 on page 289 of Aschengrau 1993, you see the crude odds ratio for bladder cancer when considered without latency is 6.04 with the confidence interval of 1.32 to 21.84. Do you see that?

A. Yes, I see that.

Q. And you didn't list that confidence interval in your Criswell report, correct?

A. No, I did not.

Q. And that was based on four cases, correct?
A. Correct.
Q. And there were a total of 13 bladder cancer cases when considered without latency in Aschengrau 1993, correct?
A. Correct.
Q. Okay. You can put that aside.
A. Sorry. There are four bladder cancer cases, yes, correct, in the high --
Q. Right, right.
A. -- high exposure category.
Q. And the PCE exposure category table, the result that says "any," you go down to without latency bladder cancer cases, the number there is 13?
A. Correct.
Q. Turning to TCE next, you put Mr. Criswell in the medium exposure group for TCE when compared to ATSDR 2018, correct?
A. Correct.
Q. And if you turn to page 76 of ATSDR 2018, let me know when you are there, the actual page numbered 76 in the document.
A. Sorry. Page 76 of the document or

the --

Q. Correct. And just let me know when you are there.

A. All right. I believe I'm there.

Q. And you see the results for bladder cancer? Well, first, let me ask you this: This is Table 7, setting out the odds ratios for cumulative TCE exposure in Marines at Camp Lejeune compared with those at Camp Pendleton, correct?

A. Correct.

Q. And you see the results for bladder cancer in about the middle of the table, correct?

A. Yes.

Q. And for low exposure, that's 1.28 with a confidence interval of 0.76 to 2.15, correct?

A. Correct.

Q. And then for medium exposure it's 1.68 with a confidence interval of 1.00, with a confidence interval of 1.00 to 2.82?

A. Correct. Or you read that correctly.

Q. And then in the high exposure it's 0.93 with a confidence interval of 0.43 to 2.01?

A. Yes, that's -- you read that correctly.

Q. And in your Criswell report you cited the odds ratio for only the medium exposures,

correct?

A. Correct. I think I consistently in these reports cited the odds ratio and exposure range for whatever the individual plaintiff fell into in each instance.

Q. But you omitted the results for the high exposure category, correct?

MR. RUZICKA: Objection, form.

A. I don't think Mr. Criswell fell into the high exposure category, so I didn't include it in this portion.

Q. And the OR, as I just read, decreased from the medium exposure to the high exposure category, correct?

A. Correct, and as you just read in this table.

Q. All right. And then you also put Mr. Criswell in the high exposure group of TCE compared to Bove 2014, correct?

A. Yes, that's correct.

Q. And if you turn to Additional File 2 for Bove 2014, if you go to page 7 of that document, please, and just let me know when you are there.

Are you there, sir?

A. Yes.

Q. And for the high cumulative exposure group TCE, the HR for high exposure is 0.92 with a confidence interval of 0.15 to 5.55, correct?
A. Correct.
Q. And that's based on two bladder cancer cases, correct?
A. Correct.
Q. And you didn't -- as you stated, you didn't include that confidence interval in your Criswell report, correct?
A. Correct. I have not included confidence intervals in any of my reports in this matter.
Q. Turning to vinyl chloride next, Mr. Criswell was in the medium exposure category for vinyl chloride compared to Bove 2014, correct?
A. Correct.
Q. And if you turn to page 5 of additional exhibit -- Additional File 2, excuse me, that sets out the cumulative exposure to vinyl chloride, and the medium OR is 2.59 with a confidence interval of 0.61 to 10.98, correct?
A. Correct.
Q. And that's based on five bladder cancer cases, correct?
A. Correct.

Q. And turning to the high exposure category, the HR decreases to 0.91 with a confidence interval of 0.15 to 5.52, correct?

A. I think you read the high exposure category correctly.

Q. And that's based on two bladder cancer cases?

A. Yes, that's correct.

Q. Would you agree that both of those confidence intervals are wider than 0.88 to 2.24?

A. Yes, both of those confidence intervals are wider than the other confidence interval you expressed.

Q. And both of those by including 1.0 traditionally would not be considered statistically significant, correct?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. Can you answer my question?

A. Correct, by a traditional definition of statistical significance.

Q. And that's been generally true all of the confidence intervals I've read, those that included 1.0 in their results, correct?

MR. RUZICKA: Object to form.

A. Generally that's the traditional assumption, that the confidence interval crosses 1.

Q. Let's discuss benzene now, and then maybe we will break after that.

A. Sure.

Q. So benzene, Mr. Criswell was in the medium exposure group for benzene, correct?

A. Correct.

Q. And if you turn to page 3 of Additional File 2, you see the cumulative exposure to benzene results, correct?

A. Yes.

Q. And the OR for medium exposure is 4.04 with a confidence interval of 0.77 to 21.18, correct?

A. Correct.

Q. And that's based on five bladder cancer cases?

A. Yes, that's correct.

Q. And for high exposure the HR decreases to 2.26 with a confidence interval of 0.37 to 13.78, correct?

A. Correct.

Q. And that's based on three bladder cancer cases?

A. Correct.
Q. And would you agree that both of those confidence intervals are wider than 0.88 to 2.24?
A. Both of those confidence intervals are wider than the confidence interval you reference.
Q. And both of those traditionally by including 1.0 would not be considered significantly statistically significant, correct?
MR. RUZICKA: Object to form.
A. Correct. I think I've answered the same thing a number of times.
MR. ORTIZ: We can go off the record.
THE VIDEOGRAPHER: The time is 11:43. We are off the record.
(Lunch recess taken.)
THE VIDEOGRAPHER: The time is 12:44 p.m. We are back on the record.
BY MR. ORTIZ:
Q. Dr. Hatten, did you talk about the substance of the -- of your testimony so far during the break?
A. No.
Q. And when we left off we were discussing the Criswell report, Hatten Exhibit 39, and we had just finished discussing benzene, so I want to move

to the inhalational studies on page 4 of your Criswell report. Do you see that?

A. Yes.

Q. And you cite -- the first one you cite is Hadkhale 2017. Is that right?

A. Correct.

Q. And before we talk about those studies, you state that it's unclear whether risk estimates from these studies are directly informative, correct?

A. Correct. Whether the -- I think they have implication, and I don't know if this was explicit in the report, is whether the exposure estimates related to risk are directly informative.

I think the overall question of, as explained in the general causation report, is that discussing whether these compounds caused bladder is informative but the risk estimates from exposures reported in these may or may not be.

Q. Sure, and thank you for that.

You said earlier that it was your understanding that Dr. Reynolds estimated ingestion exposures, correct?

A. Correct.

Q. And not inhalational or dermal

exposures?

A. Correct, that was my understanding.

Q. And you say here that it's unclear whether these risk estimates from these studies are directly informative because Mr. Criswell's exposures represent a combination of ingestion, dermal and inhalational routes, correct?

A. Correct.

Q. So if the risk estimates from these or the data from these studies are not directly informative because they don't consider the other two routes of exposure, then how are Dr. Reynolds' estimates informative if they only include ingestion?

A. They are representative of the estimates that were used by other authors in assessing risks, so the only -- such as Dr. Bove, who used micrograms per liter month as the exposure estimate or duration on base as exposure estimates, and those are directly correlated to the estimates that Dr. Reynolds developed.

In addition, the PCE exposure in Aschengrau was expressed in cumulative dose, and that's what Dr. Reynolds estimated in her cumulative dose estimate, and so that's comparing

the exact same thing. It would only be a higher risk than that, than those expressed if you had taken into account other routes of exposure beyond ingestion. So these are -- could be considered minimum risks, risk estimates.

Q. And given that Dr. Reynolds only estimated ingestion exposures, you don't have data on what inhalational or dermal exposures would be, correct?

A. I'm not aware that anyone has estimated with any degree of accuracy individual or exposure estimates for dermal or inhalational.

Q. In the Camp Lejeune Plaintiffs?

A. In the Camp Lejeune Plaintiffs, correct.

Q. I'm going to hand you what was marked as Hatten Exhibit 33 at your prior deposition, and do you recognize Hatten Exhibit 33 as a copy of Hadkhale 2017?

A. I believe this is correct. I may have referenced a couple of Hadkhale studies in my -- it's somewhere in my report. I believe this is the correct one, though. I would have to review it to confirm.

Q. Sure. And you recall testifying about this document, about this study at your deposition

in May, correct?

A. I don't recall the details of my testimony specifically about this, but it's an exhibit marked for my deposition, so I assume we talked about it.

Q. And you would agree that Hadkhale 2017 involves exposures measured in ppm years or part per million years?

And I would direct you to Table 3 on page 1740 of this exhibit.

A. Yes, I see Table 3.

Q. Do you see "Category," parentheses, "Unit Years"?

A. Correct, I see that.

Q. And then behind or after each agent it says, parentheses, "ppm" or "parts per million"?

A. Yes, I see that.

Q. So you agree that the exposures measured here are in ppm years?

A. I believe that is correct. I believe the individual numbers listed below are in parts per million years --

Q. Okay.

A. -- for the ranges listed below.

Q. Okay. And you agree that one part per

million is equal to a thousand parts per billion, correct?

A. Correct.

Q. And so on exposures in ppm years would be potentially thousands of times higher than exposures in parts per billion?

MR. RUZICKA: Objection, form.

A. It would depend on the number, the specific numbers. I mean, you could have a thousand parts per billion and that would be one part per million, so...

Q. You agree that four parts per billion -- parts per million would be thousands of times higher than 40 parts per billion, for example?

A. It would be hundreds of times. You said 40.

Q. Let's go 40 parts per million would be thousands of times higher, correct?

A. Than 40 parts per billion?

Q. Yes.

A. Yes, or a thousand times higher.

Q. And you agree that Hadkhale 2017 lacked direct information on smoking in the underlying cohort, correct?

A. I would have to review the details.

I don't recall all the facts included.

Q. Please turn to page 1745, and the paragraph about midway, on the left-hand column about midway down, it says, quote, "The confirmed association between smoking and bladder cancer makes it important to estimate the role of smoking as a potential confounder. We did not have direct information about smoking of the individuals of the NOCCA cohort, but the aggregate level information can be estimated, e.g., on the basis of lung cancer risk in each of the occupations."

Did I read that correctly?

A. Yes. You didn't read the next sentence, which just talks about how they considered that, the authors considered it. But I agree that they state that they did not have direct information from the individual members of the cohort.

Q. And if you go back to Table 3 on page 1740, would you agree that Hadkhale 2017 only found an elevated odds ratio for TC and bladder cancer at exposures above 129.50 ppm years?

A. So this is a situation where the only point estimate that was greater than 1.1, which was the consistent definition of an elevated measure of association that I've used throughout my testimony

and my reports and is consistent with ATSDR. The framework base ATSDR put out, the only one that is elevated above 1.1 is the greater than the 129.5.

For example, the risk estimate for an exposed less than 32.8 is 1.07, which is elevated, and it's elevated with a statistically significant -- at a statistically significant range, but I did not list that or discuss that because I have been consistent throughout how I have expressed an elevated measure of association.

Q. Sure, and as I understand, you testified earlier that you were drawing that 1.10 threshold from ATSDR's assessment of the evidence in 2017, correct?

MR. RUZICKA: Objection, form.

A. That was one of the factors, but that was the primary -- that was a primary driver of why I chose 1.1 as a -- as denoting an elevated measure of association.

Q. And ATSDR's assessment of the evidence stated that risk estimates above 1.10 were considered elevated but risk estimates below 1.10 were considered near the null. Isn't that correct?

A. I don't recall the exact language, but that was the essence of what they stated.

Q. Okay. And so just to be clear, that 1.07 in the two lower categories for TCE under ATSDR's threshold would be considered near the null and not elevated, correct?

A. Correct.

Q. Thank you. And for PCE, Hadkhale 2017 only found an elevated odds ratio for PCE and bladder cancer at exposures above 87 -- sorry -- exposures in the 13.6 to 87.55 ppm years category, correct?

A. Correct.

Q. And then in the higher exposure category, above 87.55, the HR decreased to 0.94 with a confidence interval of 0.73 to 1.22, correct?

A. Correct.

Q. And turning -- going down to benzene, lower on that page, Hadkhale 2017 only found an elevated odds ratio for benzene and bladder cancer at exposures above 15.04 ppm years, correct?

A. Correct.

Q. And again, that's -- when I say "elevated," I'm referring to that 1.10 threshold that you testified about, correct?

A. Yeah. I wouldn't call it a threshold,

but as a marker of an elevated measure of association.

Q. All right. You can put that aside.

(Exhibit 50 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. I'm going to hand you what's been marked as Hatten Exhibit 50, and do you recognize Hatten Exhibit 50 as Lynge 2006?

A. Yes.

Q. And Lynge 2006 analyzed bladder cancer incidence among Nordic dry cleaners, correct?

A. Yes.

Q. And it was based on a total of 168 total PCE measurements made in dry cleaning shops in the Nordic countries between 1964 and 1979, correct?

A. I would have to review the methods of the paper to confirm, but I don't have a reason to doubt what you are representing.

Q. Okay. And if you turn to page 214, in the right-hand column all the way on the right on the first full paragraph, the second full sentence says, "Only 168 tetrachloroethylene measurements were made in dry cleaning shops in the Nordic

countries between 1964 and 1969."

Did I read that correctly?

A. Okay. Sorry. You are talking about the third sentence in the first full paragraph, is that correct?

Q. The second sentence in the first full paragraph in the right-hand column.

A. The second sentence says, "In 1980 these limits were..."

Q. No, no. Are you on page 214?

A. Yes.

Q. The furthest right, the column all the way on the right?

A. Correct.

Q. The first full paragraph, it says, "Only 168 tetrachloroethylene measurements..." Do you see that?

A. Yes. That's the third full sentence, correct?

Q. Oh, you are right. So it is.

Did I read that correctly?

A. I don't recall what you read, but I would need you to repeat it.

Q. "Only 168 tetrachloroethylene measurements were made in dry cleaning shops in the

Nordic countries between 1964 and 1979." Did I read that correctly?

A. Yes.

Q. And do you agree that such limited numbers of air measurements did not allow subdivision of study subjects by exposure level?

A. I would have to review the methods to evaluate whether that statement is correct or not.

Q. Okay. So if that statement appears in the study, you wouldn't disagree with it?

A. I wouldn't necessarily -- I wouldn't disagree with the words you stated. I would have to review the entire study to determine whether the statement is -- accurately represents the others' findings and their methods.

Q. And you relied on this study, correct?

A. In part, correct.

Q. And did you cite this study in your general causation report?

A. I believe so.

Q. Do you recall?

A. I believe I did, but I would have to review the report to confirm.

Q. If you turn to Table 6 on page 217, please. You would agree that Table 6 sets out risk

ratios -- sorry. Let me know when you are there.

A. Yeah, I'm at Table 6.

Q. Table 6 sets out risk ratios for various cancers and dry cleaners in the Nordic countries by length of employment. Do you see that?

A. Yes.

Q. And for bladder cancer, the results are near the bottom, correct?

A. The second-from-the-last set of results.

Q. Correct. And would you agree that Lynge 2006 observed an increased incidence risk of bladder cancer among workers with two to four years employment but not among workers with five to nine years employment?

A. Correct.

Q. And Lynge 2006 admitted that the overall evidence for an association between PCE and bladder cancer was equivocal, correct?

A. I don't recall the specific language they use. I would have to review the manuscript.

Q. Okay. Turn to page 218, please.

In the last sentence of the document in the conclusion section it says, "The evidence for an association between exposure to tetrachloroethylene and risk of bladder cancer is

equivocal." Do you see that?

A. They are saying their assessment of the overall evidence 2006 is equivocal. If you look two sentences above, it says, "We found an elevated risk of bladder cancer among Nordic dry cleaners." That's the conclusion of their findings in this paper.

Q. Right, and then the next sentence, they say, "The international data together point to an excess risk of bladder cancer in dry cleaners of about 45 percent, but there is no pattern with exposure indices." Correct?

A. Correct, you read that correctly.

(Exhibit 51 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. And I'm going to hand you what's been marked as Hatten Exhibit 51, and do you recognize this document?

A. I recognize the document. I'm just going to confirm that this is the one I meant to cite in my paper.

Q. Sure. I think I can probably help that. You cited it on the Criswell report in

the sentence referring, I think, to the study; you cited a range of 1.1 to 1.8 micrograms per meter cubed, correct, and there is an HR of 1.16?

A. Correct.

Q. If you turn to page 7 of Hatten Exhibit 51, please. Let me know when you are at page 7.

A. Yes, I'm on page 7.

Q. And do you see that the first agent in this table, it's C6H6, which is benzene, correct?

A. Yes, that's correct, that's benzene.

Q. And you see the categories are under 1.1 micrograms per meter cubed, 1.1 to 1.8 micrograms per meter cubed and above 1.8 micrograms per meter cubed. Do you see that?

A. Yes.

Q. And you see the HR value for women of all ages in the medium category is 1.16?

A. Yes, I see that.

Q. So do you agree this is the study that you intended to cite in your Phase III reports?

A. I believe it is. I just need to review this for a moment.

MR. ORTIZ: We can go off the record for a second.

THE VIDEOGRAPHER: The time is

1:03 p.m. We are off the record.

(A short interruption.)

THE VIDEOGRAPHER: The time is 1:05 p.m. We are back on the record.

BY MR. ORTIZ:

Q. All right, Dr. Hatten. We took a few minutes for you to review this document. Have you confirmed this is the document you intended to cite in your Phase III reports?

A. I believe this is the correct document.

Q. Okay, thank you. And we were discussing the HR for women of all ages in the medium category for benzene exposure, and the HR is 1.16 with a confidence interval of 0.77 to 1.73, correct?

A. Correct.

Q. And do you agree that that confidence interval is not statistically significant by traditional conventions? Correct?

MR. RUZICKA: Objection, form.

A. Correct. By traditional conventions that wouldn't be considered statistically significant.

Q. And do you agree that you omitted that from your Phase III reports?

MR. RUZICKA: Objection, form.

A. Could you explain what you are referring to when you say "omitted"?

Q. You did not list the confidence interval, correct?

A. Correct, I didn't; and as I said before, I haven't listed the confidence interval anywhere in any of my reports that I'm aware of.

Q. Correct. And the findings for men under 75 years, do you see that all the way to the left on the table?

A. Yes, I do.

Q. And the OR in the middle tertile was 1.12 with a confidence interval of 0.86 to 1.47, correct?

A. Correct.

Q. And the OR in the highest tertile decreased to 0.95 with a confidence interval of 0.71 to 1.25, correct?

A. Yes, you read that correctly.

Q. Do you agree that information on smoking, an important confounder, was lacking in this study?

A. I don't recall if they included smoking data or not. I would have to review the methods.

Q. Okay. Please turn to page 8.

Do you see the paragraph in the middle of the page that begins "Secondly"?

A. Yes, I see this.

Q. It says, "Secondly, information on smoking, an important confounder, was lacking in this investigation." Did I read that correctly?

A. Correct, or you read that correctly.

Q. And do you agree, the last sentence says, "However, this indirect method cannot rule out a tobacco confounder residual effect in the results." Did I read that correctly?

A. Yes, you read that; you read that sentence correctly.

Q. And that's what the authors stated about this study?

A. They are saying that they used an indirect method with subgroups that had different proportions of smoking as an attempt to perform a crude adjustment that there may still be residual confounding. That's what that last sentence is referring to.

Q. Correct. And the next sentence in the next paragraph says, "Thirdly, no information was available about the daily time spent in each risk area with different levels of exposure."

Did I read that correctly?

A. Yes, you read that correctly.

Q. You can put that aside.

If we go back to your materials considered list, which I believe was Hatten Exhibit 44. Do you have that handy?

A. Yes.

Q. And turn to page 3. It gives the specific -- sorry -- page 2, excuse me, it gives the specific documents you reviewed for Mr. Criswell?

A. Correct.

Q. And that lists all the documents that you viewed -- you reviewed for Mr. Criswell's case?

A. I believe so. All the documents were provided to me by the attorney.

Q. Sure, that's fine. I'm just confirming those are the documents you reviewed in his case, correct?

A. Correct, correct, in addition to the exposure profile and chart or chart that Dr. Reynolds provided to me.

Q. Correct, okay. Going back to your report for Mr. Criswell, I want to scroll to or go to page 4, please. You see the section that says

"Levels recognized to be hazardous to human health"?

A. Yes.

Q. And you opine that Mr. Criswell experienced exposures at levels recognized to be hazardous to humans for the variables time on base, TCE, PCE, vinyl chloride and benzene, correct?

A. Correct.

Q. And then you opine in the next section under "Substantial Exposures" that the exposure estimates generated by Dr. Reynolds represents substantial exposures to TCE, PCE, vinyl chloride and benzene, correct?

A. Yes, with respect to bladder cancers, yeah.

Q. Correct, yeah. And those conclusions are based on the comparisons to the data from the studies which we have discussed today?

A. Yes, that's correct.

Q. All right. And then you discuss the two EPA documents that we mentioned earlier, and you state, "There is no safe level of exposure identified for either," and you are referring to TCE and PCE and the EPA ban of those chemicals, correct?

A. Correct.
Q. Do you recall testifying at your deposition in May that it is not your opinion that any amount of PCE can cause bladder cancer?
A. I don't recall the specific language that I used then.
Q. Okay. Let me get that for you.
(Exhibit 52 was marked for identification and is attached to the transcript.)
BY MR. ORTIZ:
Q. And Dr. Hatten, I'm handing you what's been marked as Hatten Exhibit 52, which is a copy of your transcript from your prior deposition in this litigation. Could you turn, please, to page 69.
A. Yes.
Q. And I want to direct your attention to line 13 or line 12.
"Question: And to be clear, I'm not asking about specific individuals. Is it your opinion that any amount of PCE is capable of causing kidney cancer or bladder cancer? Is that your opinion?
"Answer: I don't think that's an

opinion that's expressed in this report. I don't hold that opinion."

Did I read that correctly?

A. Yes, that -- you read that correctly.

Q. So having reviewed that, do you agree that you testified in May in your deposition in this litigation that it is not your opinion that any amount of PCE can cause bladder cancer?

MR. RUZICKA: Object to form.

A. Correct. I don't think that's different than the opinion I'm expressing today.

Q. And that was going to be my question. Are you now -- is it now your opinion that any amount of PCE can cause bladder cancer?

A. No, that's not my opinion.

Q. And the same question as to TCE. Is it your opinion that any amount of TCE can cause bladder cancer?

A. No, that's not my opinion. I think what I'm saying is that there is not an established safe level of exposure, which is different than saying that any exposure can be causative.

Q. And I'm just going to tick off the other two. Is it your opinion that any amount of benzene can cause bladder cancer?

A. No. Again, the same thing, that it's not my opinion that there is -- that any amount can cause it. It's just that there is not an estab- -- rather, it's that there is not an established safe level of benzene with respect to bladder cancer.

Q. And same response, I assume, as to vinyl chloride?

A. Yes, the same response with just considering vinyl chloride.

Q. Okay. Do you have any other opinions in Mr. Criswell's case that we haven't discussed?

A. Only we had discussed that the Yu study was published after this report was authored, and that would have informed the inhalational study section of the report.

Q. And I think you said earlier that Yu does not have data specific to bladder cancer. Is that correct?

A. Yu has data specific to bladder cancer. Just to clarify, it does have bladder cancer-specific data.

Q. Can you turn to your Raymond report, please. And my hope is that we can get through these ones a little bit quicker.

A. Okay.

Q. Dr. Hatten, Mr. Raymond was at Camp Lejeune between November of 1963 and November of 1965, correct?

A. Yes, that's what -- that's my understanding.

Q. And he was at Hadnot Point during that time?

A. Or I have listed November of 1963 to December 1965. I don't know if I was misinformed or if that is an incorrect.

Q. Correct, and if you go to -- just to clear it up, if you go to the exposure dates in the appendix...

A. Yes.

Q. Do you see at the bottom of that, as we alluded to earlier, that 12/1/1965 is listed?

A. Correct.

Q. So I assume that December 1st of 1965 was the only day in December 1965 that he was there?

A. That's my understanding, at least based on the information I was -- that was available to me.

Q. Okay. And you agree that Mr. Raymond was at Hadnot Point during that time, correct?

A. Yes, that's my understanding, that it was -- that he was at Hadnot Point.

Q. And you agree that there is no actual sampling data for Hadnot Point in the 1960s, correct?

A. Correct. I'm not aware of any sampling data from Hadnot Point in the 1960s.

Q. And if you look at Appendix A, you did not include the summed variable totals from Dr. Reynolds' report for Mr. Raymond; is that right?

A. With respect to the cumulative dose, is that correct?

Q. Correct.

A. Yes, that's correct.

Q. Why? Why is that?

A. The only place I was using those cumulative dose to assess an exposure was with respect to PCE, and there was no estimated PCE exposure during the period Mr. Reynolds was on base, so it was not a relevant portion of my analysis.

Q. Why did you only use it for PCE and not the other chemicals?

A. Because the Aschengrau study expresses

exposures in total amounts, whereas the other ones express it in micrograms per liter month, so a concentration for time. The Bove studies do when they look at individual compounds, and that is available without doing a cumulative exposure estimation using estimates of water ingestion.

Q. Did you state that anywhere in your report?

A. I don't know. I don't -- I'm not sure if I did or not. I don't think I stated that explicitly.

Q. Are there any other details about your methodology that are not explicitly stated in your report that come to mind?

MR. RUZICKA: Objection, form.

A. No, although that's not really a methodology question. It's just a -- not including a irrelevant portion of an analysis. So it's not as if the methodology is different for each Plaintiff I analyze. It's just what was included as relevant in the chart in the appendix.

Q. So just to be clear, you didn't necessarily include all the same data in the appendix for each Plaintiff, correct?

A. Correct or -- that is correct. Each

Plaintiff's report is individualized to the Plaintiff.

Q. You included what you thought was relevant?

A. Correct.

Q. Did you make any changes to Dr. Reynolds' calculations for Mr. Raymond?

A. Not that I'm aware of, although I did -- this is an example of a case where I think I performed the sensitivity analysis, and I list that.

Q. That was going to be my next question. So that listing there indicates that you performed a sensitivity analysis in this case?

A. Correct.

Q. But are there any actual calculations here where I can review what that sensitivity analysis consisted of?

A. I mean, I think I told you before. It's just a proportion of the months. So, for example, in -- the first month is November. I believe it is nine-thirtieths times 24 is -- is how I would have done that. I would have to double-check with a calculator.

Q. So then -- so just to make sure, I'm not

going to walk through it all, but just to make sure I understand, the data on the right-hand side of the sensitivity analysis is the data after you performed the sensitivity analysis; is that correct?

A. Correct. It's the estimate base using a proportional monthly exposure.

Q. I see. So the 24 micrograms per liter per month under TCE became 7 micrograms per liter per month accounting for the nine days. Is that correct?

A. Correct.

Q. And that was just a simple calculation that you performed?

A. Yes, I believe so.

Q. Could you turn to page 2 of your Raymond report, please, and starting with time on base, you would agree that ATSDR modeled lower contaminant levels at Camp Lejeune in the 1960s than later on, correct?

A. As a general statement, that is correct. I don't know that it's true for every month that was modeled.

Q. And you relied for time on base on Bove 2024, which looked at a Marine personnel cohort

between 1975 and 1985, correct?

A. It was both Marine and civilian personnel in that study.

Q. Right, but in both cohorts, that's both a time period after the 1960s, correct?

A. Correct.

Q. And that's why you say that even though Mr. Raymond was at Camp Lejeune for more than seven quarters, a lower exposure category for time on base is a more appropriate surrogate, correct?

A. Did I use that exact language somewhere?

Q. I will direct you to the bottom, end of the paragraph.

A. Okay. Yes, that -- I think you read that correctly.

Q. And so just to be clear, your opinion is that Mr. Raymond should be considered to be in the one to six quarters category for time on base?

A. I'm saying his exposure is based on estimated exposures. During that time period, his exposure is more similar to that, that range of duration. If you look at the modeled exposures for each contaminant during that time period and compare those to the modeled exposures during the period that was studied in the 2024a study.

Q. And exposures of one to six quarters for the Marine cohort did not reveal an elevated measure of association with bladder cancer diagnosis, correct?

A. Correct.

Q. All right. And do you have the Bove 2024 study handy?

A. Yes.

Q. Could you turn to page 10, please.

A. Yes, I'm on page 10.

Q. And looking at Table 5, which we referred to earlier, for low duration at Camp Lejeune, the OR for bladder cancer is 1.02 with a confidence interval of 0.87 to 1.20, correct?

A. Correct.

Q. All right. Then going back to your Raymond report, I want to go to the TVOC category. Are you there?

A. Yes.

Q. And Mr. Raymond was in the low exposure category to TVOC, correct?

A. Based on the -- he was in the low category based on the information that was available to me, which did not include DCE; and I don't know what proportion of total volatile

organic compounds DCE was when Dr. Bove estimated that.

Q. Sure. Could you go to Additional File 2, please.

A. For the 2014a study, correct?

Q. Correct.

I'm sorry. Did I forget to mention the TVOCs? The low TVOC exposure category compared to Bove 2014a, correct?

A. That is the -- that is where the estimate for TVOC came from.

Q. Right, thank you. I think I forgot to mention that.

Going to Additional File 2 for bladder cancer, the low exposure HR is 0.63 with a confidence interval of 0.06 to 6.93 based on one bladder cancer case, correct?

A. Correct.

Q. And 0.06 to 6.93 is wider than 0.88 to 2.24, correct?

A. Correct, that is a wider confidence interval.

Q. And going back to your Raymond report, as you said a minute ago, there was no PCE exposure while Mr. Raymond was at Hadnot Point, correct?

A. Correct.

Q. And then moving on to TCE, Mr. Raymond was in the low exposure group compared to Bove 2014, correct?

A. Correct.

Q. And if you turn to page 7 of Additional File 2, please. Do you agree that there was no OR calculated for the low exposure group for bladder cancer because there were zero cases?

A. Correct.

Q. And in your discussion of Mr. Raymond's TCE exposures, you also cite ATSDR 2018, correct?

A. Correct.

Q. And you discuss or you cite the low and medium TCE exposure data in ATSDR 2018, correct?

A. I cite the -- I discuss the medium.

Q. The medium, and we discussed that data earlier in relation to Mr. Criswell, correct?

A. I don't recall. We went through a bunch of numbers, so I don't recall specifically the numbers we had discussed at that point.

Q. Moving on to vinyl chloride, you agree that there was no vinyl chloride exposure at Hadnot Point while Mr. Raymond was there?

A. Correct.

Q. And then moving on to benzene, you put Mr. Raymond in the low exposure group, correct?
A. Yes, that is correct.
Q. And if you turn to Additional File 2, please, to page 3, the low exposure group for benzene and bladder cancer could not have an OR calculated because there were zero bladder cancer cases, correct?
A. Yes, that's correct.
Q. So that's no PCE while Mr. Raymond was there, no vinyl chloride while Mr. Raymond was there, no OR calculated for benzene and no OR calculated for TCE in Bove 2014, correct?
A. That's correct.
Q. And you opine that Mr. Raymond experienced exposures at levels recognized to be hazardous to humans for TCE and for time on base, correct?
A. Correct.
Q. And for that opinion, how do you reconcile your statement that he experienced exposures of levels recognized to be hazardous to humans for time on base with your statement earlier in the report that the one to six quarters category was a most -- more appropriate surrogate?

A. I was saying that his exposure fell -- if you parse it into 1 to 6 versus 7 to 10 versus how it was divided by in the military subgroup, he fell into the 1 to 6 quarters in that subgroup. If you look at civilian exposures, which in general are thought to be less than intense, he falls into the 1 to 21 quarters' duration.

Q. And so because he falls into the 1 to 21 quarters' duration for civilian, the civilian cohort, your opinion is that he has experienced an exposure at a level recognized to be hazardous to humans?

A. That's one factor.

Q. So is it your opinion that being at Camp Lejeune for as little as three months is sufficient to experience an exposure at levels recognized to be hazardous to humans?

MR. RUZICKA: Objection, form.

A. I think we have direct data from a study of people who were at Camp Lejeune for at least one quarter that had an elevated measure of association with bladder cancer.

Q. Is it your opinion that Mr. Raymond was not exposed to a sufficient level of benzene to increase his risk of bladder cancer?

MR. RUZICKA: Objection, form.

A. I think a fair way or the way I would express my opinion is that he is not exposed at a level that has demonstrated an elevated measure of association with bladder cancer. That does not mean that that level is not at all related to development of bladder cancer. It just has not been demonstrated to date by evaluation.

Q. So your testimony is that even though Mr. Raymond's level of benzene exposure is lower than or is not at a level sufficient to correlate to an associated risk of bladder cancer, that it could still be contributing; is that correct?

A. I'm saying I don't think we know one way or another. It's just there is not enough data to tell us currently. Based on the information we have from direct measurements at Camp -- or direct estimations from the cohort at Camp Lejeune, we have not seen an elevated measure of association.

If you look at, for example, the Yu study that is primarily inhalational but it uses very small exposures, like an increase of .05 parts per billion had a statistically significant increased risk or an elevated measure of association that was also statistically --

statistically significant by traditional metrics; and so that would potentially prompt additional investigation.

Based on current information, though, I do not -- he does not have an exposure that has been recognized as a level hazardous to human health with respect to bladder cancer following benzene exposure.

Q. And the Yu study was not available when you wrote this Phase III report, correct?

A. Correct.

Q. So you could not have been relying on it in the Phase III report, correct?

A. Correct. When I wrote this, I did not directly rely on it.

Q. And are you aware that Dr. Steven Bird wrote a Phase III report for Mr. Raymond?

A. I don't know what, other than the expert reports that -- the government's expert reports, I don't think I've read additional expert reports in this litigation.

Q. So I take it you haven't reviewed Dr. Bird's Phase III report for Mr. Raymond?

A. I have not.

Q. And you are aware that Dr. Bird is an

expert retained by Plaintiffs in this litigation?
A. I am aware that he has been retained by Plaintiffs.
Q. And so if he opined that Mr. Raymond was substantially exposed to benzene at Camp Lejeune, would you disagree with him?
MR. RUZICKA: Objection, form.
A. I don't have a way to agree or disagree with him without evaluating what he was basing his opinion upon.
Q. But at least in your report, based off the data for benzene that you evaluate in your report, Mr. Raymond was not exposed to a sufficient level of benzene that was correlated to associa- -- or an elevated measure of association with bladder cancer, correct?
MR. RUZICKA: Object to form.
A. Correct, based on the information we have available with respect to bladder cancer.
Q. Can you turn to the materials considered list, please.
A. I have to find it.
Q. That's fine.
A. Yes.
Q. With regard to Plaintiff Raymond, you

agree that you reviewed the deposition transcript and then the five documents that are identified there?

A. Yes, correct.

Q. You didn't review anything else that was specific to his case other than the, I understand, Dr. Reynolds' exposure calculations?

A. That's correct.

Q. Do you have any other opinions about Mr. Raymond's case that we haven't discussed?

A. Not that is not listed in my report.

MR. ORTIZ: Okay. Can we take a quick break?

MR. RUZICKA: Sure.

THE VIDEOGRAPHER: The time is 1:36. We are off the record.

(Recess taken.)

THE VIDEOGRAPHER: The time is 1:42 p.m. We are back on the record.

BY MR. ORTIZ:

Q. All right. Dr. Hatten, I want to turn to your Cagiano report, please.

A. Can I just clarify something on this?

Q. Yes, go ahead.

A. I do state on the last sentence of the

last full paragraph on page 4 and the last two sentences that while TCE has reached a level that is recognized to be hazardous to human health, there is a -- what I would consider a substantial exposure to benzene that when you consider in conjunction with TCE may be contributory to bladder cancer. That's recognizing that that benzene, as we discussed before, that benzene, estimated benzene concentration is below the level that has been recognized as hazardous to human health.

Q. Okay. Thank you for clarifying that.

Turning now to Cagiano. Just let me know when you have that report in front of you.

A. Yes, I have that.

Q. And Mr. Cagiano was at Hadnot Point for several periods of time, correct?

A. Yes.

Q. And I will just list them and then ask you if that's right. July 1976 to April 1977, November 1977 to March 1979, and November 1979 to May 1980, and then May 1987 to May 1990. Is that correct?

A. Sorry. The mid '70 -- the late '70s, sorry, you had, what was the interval?

Q. November 1979 to May 1980.

A. Correct, and what was the interval before that?
Q. November 1977 to March 1979.
A. Correct.
Q. And then the Appendix A of your Cagiano report ends December 31st of 1987, correct?
A. Correct.
Q. And that's the end of the statutory time period under the Camp Lejeune Justice Act, correct?
A. I don't know what the final date is for that.
Q. And are you aware that the contaminated wells were shut down in February of 1985?
A. I don't recall the exact date, but my understanding is it was roughly then.
Q. And did you include Mr. Cagiano's time from May to December of 1987 in your calculations?
A. I believe I included those listed as zeros for TCE, PCE and vinyl chloride. There was a persistent benzene estimated during that period.
Q. Where is that benzene estimate during that period of time coming from?
A. It came from Dr. Reynolds' estimates.
Q. And do you know where Dr. Reynolds got it?

A. I do not.
Q. And did this data come from Dr. Reynolds' report?
A. It came from a table that was provided to me, so...
Q. Was the table within Dr. Reynolds' report?
A. I don't know. As I said before, I haven't reviewed her full report. I was just provided a table from her.
Q. Was the table attached to her report?
A. I don't know.
Q. Okay. Why don't you pull out Reynolds, Dr. Reynolds' report. Can you get that in front of you, please.
And Appendix 1 is for Mr. Cagiano, correct?
A. Yes.
Q. And did it come from -- did the table you were referencing come from somewhere in this appendix?
A. I suspect it was the first one listed.
Q. Did you make any changes to her calculations?
A. Not -- no, not that I'm aware of, at

least on the first portion of that.

Q. Are you aware of any changes elsewhere?

A. I believe the second set is another sensitivity analysis. The label just was not included. I don't know if that came directly from hers or -- yeah, I think I did that sensitivity analysis.

Q. Okay. And you agree the words "sensitivity analysis" don't appear on your appendix in your Phase III report?

A. Correct. It may have dropped off because of formatting when I made it a PDF.

Q. Okay. And are you aware that Mr. Cagiano lived off base in August to December of 1976?

A. I don't recall if I was ever made aware of that or not.

Q. Did you account for his residency off base during that time period?

A. I don't know whether that is accounted for in the table that Dr. Reynolds produced and when I -- I explained how I did the sensitivity analyses, which is a proportional calculation, to set up that table.

Q. And when Mr. Cagiano was at Hadnot Point

in the 1970s, you would agree there is no sampling data for Hadnot Point during that time?

A. I don't recall the exact dates, but it was roughly 1980 when the first samples were obtained, is my understanding.

Q. All right. If you'll turn to page 2 of the Cagiano report, please. You state that Mr. Cagiano spent 11.3 quarters on base, correct?

A. Correct.

Q. And in calculating the 11.3 quarters, did you include the period of May to December 1987?

A. No. I state that's between 1975 and 1985.

Q. And the -- you are comparing that to data from Bove 2024, correct?

A. Correct.

Q. And the OR for the high time on base group was 1.2 with a confidence interval of 0.94 to 1.52, correct?

A. I have an adjusted hazard ratio listed. I'm just confirming that that was the correct --

Q. That's fine. We can turn to it. It's page 10 of Bove 2024.

A. Yes. And that's an adjusted hazard ratio, just not an odds ratio you referred to.

Q. Sure.
A. An incorrect measure of association.
Q. And that confidence interval by traditional convention is non-statistically significant, correct?
A. Correct. It crosses 1.
Q. And you didn't cite it in your Cagiano report, correct?
A. Correct. As I've stated multiple times, I haven't cited the confidence intervals anywhere in my reports.
Q. All right. Going back to your Cagiano report, turning to TVOC, Mr. Cagiano was in the high TVOC exposure category compared to Bove 2014a, correct?
A. Correct.
Q. And I think we discussed this earlier, but the point estimate for high TOV exposure was 1.20 with a confidence interval of 0.17 to 8.65, correct?
A. Yes, that's correct.
Q. All right. Turning to PCE, Mr. Cagiano was in the medium exposure group, correct, compared to ATSDR 2018, correct?
A. Correct.

Q. And if you'll please turn to page 78 of ATSDR 2018, please. Just let me know when you are there.

A. Yes.

Q. Do you see that this table sets out the odds ratios for cumulative PCE exposure of Marines at Camp Lejeune compared with those at Camp Pendleton, correct?

A. Correct.

Q. And for bladder cancer in the medium exposure group, the odds ratio is 1.30 with a confidence interval of 0.76 to 2.23, correct?

A. Correct.

Q. And incidentally, for the low exposure group, the odds ratio is 1.33, with a confidence interval of 0.8 to 2.24, correct?

A. Correct.

Q. And Mr. Cagiano fell into or was in the high exposure group for PCE under Bove 2014, correct?

A. Yes, that's correct.

Q. And if you turn, please, to page 8 of Additional File 2.

Sorry. Excuse me. Page 9.

A. Yes, I'm there.

Q. The OR for high exposure for PCE is 1.24 with a confidence interval of 0.25 to 6.21 based on three bladder cancer cases, correct?

A. Yes, that's correct.

Q. And then you state that Mr. Cagiano also would have fallen within the high exposure group under Aschengrau 1993, correct?

A. Correct.

Q. And we already discussed the data that you are citing or relying on in Aschengrau 1993, correct?

A. Correct.

Q. And then for TCE, Mr. Cagiano fell into the high exposure group under ATSDR 2018, correct?

A. Correct.

Q. And if you turn to page 76 of ATSDR 2018, please let me know when you are there.

A. Yes, I'm there.

Q. The high exposure group had a odds ratio of 0.93 with a confidence interval of 0.43 to 2.01, correct?

A. Correct.

Q. And that's not an elevated measure of association with bladder cancer, correct?

A. Correct.

MR. RUZICKA: Objection to form. Go ahead.

A. Correct, based on this study.

Q. And then you state you did a sensitivity analysis, as you referred to a few minutes ago, correct?

A. Yes.

Q. And that reduced Mr. Cagiano's TCE exposure category to medium, correct?

A. Correct.

Q. And the OR for the medium TCE exposure category is 1.68 with a confidence interval of 1.0 to 2.82, correct?

A. Correct.

Q. And we have already discussed I think how you did your sensitivity analysis, correct?

A. Correct.

Q. And for TCE you also state that Mr. Cagiano fell into the high exposure category under Bove 2014, correct?

A. Correct.

Q. And if you turn, please, to page 7 of Additional File 2. Are you there?

A. Yes.

Q. The odds ratio for high exposure to TCE

was 0.92 with a confidence interval of 0.15 to 5.55 based on two bladder cancer cases, correct?

A. Correct.

Q. That's also not an increased measure of association with bladder cancer, correct?

A. Correct, based on that study.

Q. And for vinyl chloride Mr. Cagiano fell into the high exposure category under Bove 2014?

A. Yes, that's correct.

Q. And the OR was 0.91 with a confidence interval of 0.15 to 5.52, correct?

A. Correct.

Q. And same as before, that's not an elevated measure of association with bladder cancer, correct?

A. Correct. Yes, that's correct.

Q. And for benzene, Mr. Cagiano fell into the high exposure category under Bove 2014, correct?

A. Yes, that's correct.

Q. And the OR was 2.26 with a confidence interval of 0.37 to 13.78 based on three bladder cancer cases, correct?

A. Yes, that's correct.

Q. And you opined that Mr. Cagiano

experienced exposures at levels recognized to be hazardous to humans based on time on base, TVOC, PCE, TCE and benzene, correct?

A. Correct.

Q. And you also opined that the dose estimates generated by Dr. Reynolds represent a substantial exposure to PCE, TCE and benzene, correct?

A. Correct.

Q. Is it your opinion that Mr. Cagiano was exposed to sufficient levels of vinyl chloride to increase his risk of bladder cancer?

A. He was exposed to levels of vinyl chloride. You are asking specifically about vinyl chloride or --

Q. Yes.

A. I don't believe that he has -- was exposed to levels that have been recognized as hazardous to human health, but he was exposed to measurable levels that may have an unclear impact and should be considered substantial, particularly in combination with exposure to other compounds.

Q. Dr. Hatten, let me ask you this: If a exposure -- a cumulative exposure calculation is at a level that compared to the data from the studies

we have been discussing is associated with an elevated measure of bladder cancer, of association with bladder cancer, you would opine that that person has been exposed to levels recognized to be hazardous to human health, correct?

A. Correct. I think I've consistently testified to that.

Q. Right, but if they were not exposed to those levels or if the levels they were exposed to correspond to it, not to an elevated level of association with bladder cancer, are you still opining that they were exposed to levels sufficient or recognized to be hazardous to humans and to human health?

MR. RUZICKA: Objection to form.

A. No. I'm saying that his exposure was substantial and should be taken into consideration. For example, if I were seeing him in my office and he reported this level of exposure, I would consider it a substantial exposure that I should investigate more fully and not dismiss as a de minimis exposure.

Q. And is that -- labeling it a substantial exposure, that's not based quantitatively on the data that you cite in your studies, correct?

A. No. That's a consideration of is this a similar exposure to what people are exposed to every day walking around versus a more substantial exposure, exposure that would be considered -- considered greater than what the general population would be exposed to.

Q. So substantial exposure involves a comparison to background or ambient levels of exposure to these chemicals; is that correct?

A. As one factor, I think. It also matters whether this is a compound that has additional evidence for general causation with respect to the outcome of interest.

If we were talking about something like a melanoma, I'm not aware that there is any data that links vinyl chloride to melanoma, and so I would say -- as from a general causation perspective, so I would say that that is not a -- even at a measured -- a highly measured level or estimated level I would not consider that a substantial exposure because there is no data with respect to melanoma that I'm aware of, melanoma and vinyl chloride exposure, whereas that's not the case for vinyl chloride and bladder cancer. There are multiple studies that have looked at that and

found an elevated level of association.

The dose range or the exposure range that has been estimated for Mr. Cagiano doesn't fall into the ranges where it's been identified as an elevated measure of association, but it is a greater-than kind of background level of exposure.

Q. So there was a lot there. I want to ask you a couple of followup questions.

So would you agree that there are no background -- there is no data about background or ambient levels of exposure in your Phase III reports?

A. There is not. That is a -- that was a qualitative statement when developing this report.

Q. What do you mean by "a qualitative statement"?

A. As in it's not expected for people to experience substantial measured exposures of vinyl chloride in their everyday life, but we have measured levels that are or estimated levels that are appreciable in this case.

Q. Did you do any kind of research about what background exposures of vinyl chloride might exist in everyday life?

A. I did some reading in my -- in the

relevant literature in my general causation report, but I didn't do a specific search for that.

Q. So how can you say that Mr. Cagiano was exposed to more vinyl chloride than background levels of vinyl chloride in everyday life?

A. It's not a common chemical that people encounter in their everyday life. It's just not something that we walk around and encounter regularly.

Q. And is that something that you are basing on a specific scientific source or just your general sense?

A. My specific training and expertise as a toxicologist.

Q. But you can't point me to a document that you would draw that from?

A. Not while I'm sitting here. I didn't cite it as a -- I didn't have a specific reference or anything that I cited in my -- in this report, so...

Q. Do you have any other opinions in Mr. Criswell's case -- Mr. Cagiano's case, excuse me, that we haven't discussed?

A. Not that I'm aware of that -- that isn't listed in my report or that we have discussed.

Q. And your materials considered list for Mr. Cagiano lists the Plaintiff-specific documents that you reviewed for him, correct?

A. Correct, yes.

Q. All right. I want to turn now to your report in Mr. Laramore's case. Do you have that in front of you?

A. Yes.

Q. And you agree that Mr. Laramore was at Hadnot Point between December 1983 and December 1984, correct?

A. Correct.

Q. And he therefore falls into the category of one to six quarters for time on base for military personnel?

A. Correct.

Q. And that category under Bove 2024 did not have an elevated measure of association with bladder cancer; is that correct?

A. That's correct.

Q. And then you also compare Mr. Laramore to civilians on base for 1 to 21 quarters, correct?

A. Correct.

Q. And I think I asked this earlier, but just to ask it here again, is it your opinion that

any Marine or Navy personnel on base for at least one quarter are at an increased risk for bladder cancer under this exposure metric?

A. I'm saying that that has been associated with an -- with an elevated -- it has an elevated measure of association with the outcome of interest, which is bladder cancer.

Q. And looking at TVOC, Mr. Laramore fell into the medium exposure category under Bove 2014, correct?

A. Yes.

Q. And I think we discussed the odds ratio for that category, correct?

A. The hazard ratio, yes, we have.

Q. Hazard ratio. And turning to PCE, he falls into the medium exposure category under ATSDR 2018, correct?

A. Yes, that's correct.

Q. And I think we discussed that data, correct?

A. I believe so.

Q. And for PCE again he also is in the medium exposure category under Bove 2014?

A. Correct.

Q. And I think we discussed that data,

correct?

A. Yes, I believe we have.

Q. And you also state that he would fall into either the low or high exposure category under Aschengrau 1993, depending on whether you include latency or not, correct?

A. Correct.

Q. And we already discussed Aschengrau 1993?

A. Yes, that's correct.

Q. And for TCE, he falls into the medium exposure group under Bove 2024, correct?

A. Yes, that's correct.

Q. And I don't think we've discussed this yet, but if you turn to page 7 on Additional File 2, please, do you see that the OR for TCE, the hazard ratio is 2.69 with a confidence interval of 0.63 to 11.46 based on five cases?

A. Yes, that's correct.

Q. And turning to vinyl chloride, he was in the high exposure category under Bove 2014 prior to a sensitivity analysis, correct?

A. Yes, that's correct.

Q. And we discussed that data, correct?

A. Yes, we have.

Q. And then you performed a sensitivity analysis, and as a result of that analysis even fell into the medium exposure group?
A. Yes, that's correct.
Q. And I think we've discussed that data, correct?
A. I believe so.
Q. And just to be clear, if you go to the last page of your appendix, the sensitivity analysis results are on the right-hand side; is that correct?
A. Yes, that's correct.
Q. And turning back to benzene, he fell into the medium exposure group under Bove 2014, correct?
A. Yes, that's correct.
Q. And we discussed that data, correct?
A. I believe so.
Q. And then you opine that Mr. Laramore experienced exposures of levels recognized to be hazardous to humans for time on base, TVOC, TCE, PCE, vinyl chloride and benzene, correct?
A. Correct.
Q. And you also opine that the dose estimates by Dr. Reynolds represents substantial

rather than de minimis exposures to all four chemicals at issue, correct?

A. Correct.

Q. And you considered the transcript of his deposition in a single document, correct?

A. Yes, that's correct.

Q. Do you have any opinions of Mr. Laramore's case that we haven't discussed?

A. Only anything else that's listed in my written report.

Q. Is there anything else in your report we haven't discussed?

A. I also mentioned that he falls in the levels recognized to be hazardous to human health. The last sentence refers to the Aschengrau study and that he falls into elevated measures of association in that study as well.

Q. And we discussed that study already, correct?

A. Yes, that's correct.

Q. All right. I want to turn now to Dyer, which is the last report. Do you have Dyer in front of you, sir?

A. Yes, I do.

Q. And this is your report in Miss Dyer's

case, correct?

A. Correct.

Q. And you include the -- in the analysis tables the summed variable totals from Dr. Reynolds, correct?

A. Yes, I believe so.

Q. Are you aware that -- and that's based off -- well, strike that.

Are you aware that Dr. Reynolds later disclosed a corrected appendix for Miss Dyer that altered her calculations?

A. Not -- not that I'm aware of. I don't believe I was informed of that.

Q. I'm going to know hand you -- are we on 52? 53, I'm sorry.

(Exhibit 53 was marked for identification and is attached to the transcript.)

BY MR. ORTIZ:

Q. And I'm handing you Hatten Exhibit 53, the corrected appendix from Ms. Dyer. Have you ever seen this document before?

A. Not that I'm aware of.

Q. And I apologize for the tiny font, but that's how we received it. Do you agree that there

are changes made from Dr. Reynolds' original appendix for Miss Dyer in this document?

A. I can only compare to the table I have in my appendix.

Q. I think we have the appendix for Miss Dyer as well. Do you need to go off the record to review that?

A. I'm saying that my -- this is my appendix. There is a table taken from Dr. Reynolds then she has a corresponding table. This is a corrected one. Is that accurate? That seems to be blown up and readable. Is there something specific we should discuss on this?

Q. Yeah. So if you go to the first page of the corrected appendix for Miss Dyer, can you do that, please. Do you see the exposure dates?

A. Yes.

Q. And do you see the date for the first exposure begins August 5th, 1958?

A. Yes.

Q. If you go to -- do you have, Doctor, the report, the excerpts I gave you from Dr. Reynolds' report in front of you as well?

A. Yes.

Q. And if you turn to the first page of the

original appendix for Miss Dyer, can you please do that? And just let me know when you are there.

A. Do you know which appendix it is?

Q. I believe it's Appendix 3.

A. Okay.

Q. Do you see that the exposure dates begin in May of 1958?

A. Yes, I see that.

Q. Okay. And if you turn to -- well, let me ask you this: Did there appear to be any other changes between these two appendices?

A. I've reviewed all the entries here, so I don't have an opinion one way or another without spending a substantial portion of time reviewing all of them.

Q. So if you go to your -- and I apologize. I know there is a lot of documents swimming around, but if you go to your Dyer report -- can you do that, please.

A. Yes.

Q. And you see that you included the totals in the bottom left-hand corner?

A. Correct.

Q. And those were not in Dr. Reynolds' original summed variable totals for Miss Dyer,

correct?

A. Yeah. I think in my rationale and methods, the last sentence, I say I apportion her exposures as 76 percent Tarawa Terrace and 24 percent Hadnot Point. So I think I multiplied the cumulative exposure for each water system by those proportions to come up with a total in that bottom category, that bottom --

Q. Okay. Thank you.

A. -- table.

Q. Thank you for clarifying that.

If you also look at the summed variable totals in the corrected appendix, do you see the totals in the bottom left corner?

A. Yes.

Q. Can you tell me why those numbers are different from your numbers?

A. I think I did my own apportioning in this, and I don't know what her methods were for developing that.

Q. And if you compare the summed variable totals in the corrected appendix for Miss Dyer to the summed variable totals in the original appendix for Ms. Dyer, aside from the numbers in the bottom left-hand corner, do you agree that the remaining

numbers appear to have remained the same?
A. Sorry. I have to find that section again.
Q. That's fine.
MR. RUZICKA: I think he was referring to the corrected.
MR. ORTIZ: Yeah, I'm comparing the corrected appendix for Ms. Dyer from Dr. Reynolds to the original appendix for Ms. Dyer from Dr. Reynolds.
THE WITNESS: Sabotaging me.
MR. RUZICKA: Yeah, I know.
BY THE WITNESS:
A. Yeah, I don't recall specifically, but I presume this was the table provided to me and I had to do my own apportioning because there wasn't an apportionment in here.
BY MR. ORTIZ:
Q. Sure. And my question was, aside from the bottom left-hand corner, would you agree that the remaining numbers appear to have remained the same?
A. They appear to based on a brief review.
Q. And as discussed, Dr. Reynolds appears to have started the exposure dates from August of

1958 in the corrected appendix as opposed to May of 1958, correct?

A. That's what -- that's how it appears, but I did not author that report or anything.

Q. Does it seem odd that the final numbers for Miss Dyer remain the same given those changes?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. You can answer.

A. I don't know how -- what her calculation was, so I'm not sure what went into it.

Q. Is it fair to say you need to review Dr. Reynolds' corrected appendix in detail since you have not seen it before today?

MR. RUZICKA: Objection, form.

A. The final numbers in the corrected appendix match the exposure numbers for the water system-specific values that I use to then apportion it. So to speak any more about her corrected appendix I would have to review it in detail, but I don't see a discrepancy between the numbers that I was provided that appear to be consistent with this original chart and the numbers that are on the corrected appendix.

Q. Sure. And as discussed, I think you

testified that your apportionment resulted in numbers that were different in the bottom left-hand corner than Dr. Reynolds' numbers in the bottom left-hand corner of her corrected appendix, correct?

A. Correct. My numbers, the way I apportioned it, are lower than her estimates.

Q. And you said that you could not explain why that was?

A. I just don't have direct knowledge of how she apportioned the various water systems.

Q. And Miss Dyer was at Camp Lejeune between August 1958 and June of 1964 and then between May of 1965 and January 1973, correct?

A. I would have to review all the dates but -- because I think in my report I just list the total range from her first time on base to her last.

Q. And are you aware that she lived off base for a period of time, from June of 1964 to May of 1965?

A. I just don't recall the details. I would have to review what information was provided to me.

Q. And do you agree that there is no actual

sampling data for the period that Miss Dyer lived in Camp Lejeune?

A. I'm not aware that there is any sampling data from that period.

Q. She was a child during that time, correct?

A. At least -- I believe that she was a child and a teenager, and I don't recall exactly how old she was when she last lived on base.

Q. Are you aware that Dr. Reynolds calculated Miss Dyer's exposure based on the assumption that Miss Dyer was drinking as a child almost as much water as a Marine in training?

A. I think I -- there were some questions about that in her deposition transcript, but I don't know all the details of her calculations.

Q. Do you think that's a reasonable assumption?

MR. RUZICKA: Objection, form, foundation.

A. If I recall from the deposition transcript, she stated that or from Dr. Reynolds' deposition transcript she stated that she was basing that upon Miss Dyer's direct testimony.

Q. And her time on base, Miss Dyer was

there between 1958 and 1973, which was before the 1975 to 1985 time period for Marines under Bove 2024, correct?

A. Correct. The Bove studies started after she left base.

Q. Right. So -- and you recall that Mr. Raymond and the Bove studies started after he left base, correct?

A. Correct.

Q. And then you stated that a lower one to six quarters' period of exposure was a more appropriate proxy for Mr. Raymond as a result, correct?

A. Correct. I believe his exposure estimates were both similar to that -- that exposure estimates for that duration.

Q. And why didn't you say the same for Miss Dyer in your Phase III report?

A. I do discuss that.

Q. Right, and you reach a different conclusion?

A. I'm not sure what your question is. Could you explain your question?

Q. Why do you not put Miss Dyer in a lower proxy category like you did for Mr. Raymond given

that she was there earlier like Mr. Raymond?

A. I do. I do put her in a lower category.

Q. I thought you said, "Although this is" -- this is beginning at the top of page 3.

"Although this is not the same exposure period studied, the estimated exposure for each toxin falls within the range of exposures estimated between October 1972 and December 1985. Thus, it's reasonable to conclude that Miss Dyer's exposure is similar enough to civilian exposures from October 1972 to December 1985 such that the elevated measure of exposure for development" -- "measure of association for development of bladder cancer for this population is applicable to her exposure."

Did I read that correctly?

A. Yeah, you read that correctly. Let me just look at this.

Q. I guess let me try to clarify it this way: Are you saying that she was there for long enough that her exposure was similar to someone who was there from 1 to 21 quarters as a civilian even though she was there at an earlier time period?

A. Yes. I believe that is what I was saying in here. I'm just confirming that I transposed the correct hazard ratio.

So even though she was there for 54.7, quarters, her exposures were more similar to a 1 to 21 quarter during that time period.

Q. And similar in intensity?

A. Similar in terms of the -- what the range of cumulative exposures would be during that time period.

Q. And you opine that Miss Dyer experienced exposures at levels recognized to be hazardous to humans for all of your exposure metrics except benzene, correct?

A. I believe that is correct.

Q. And that's based on your review of the data from the same set of studies we've discussed today, correct?

A. That's correct.

Q. And we've discussed all that data for those different metrics, correct?

A. Yes, I believe we have.

Q. And you also opine that the dose estimates that are generated by Dr. Reynolds for Miss Dyer represent substantial exposure to PCE, TCE and vinyl chloride, correct?

A. I believe I also include benzene as a substantial exposure.

Q. And is that based on the same considerations that you articulated during our discussion earlier?

A. Yes, that is.

Q. And for Miss Dyer's case you reviewed her deposition transcript and four documents that are identified in your materials considered list, correct?

A. Yes, that's correct.

Q. And have we discussed all of your opinions in Miss Dyer's case?

A. I believe so. I mean, they are articulated in more detail in this report, but I believe we have covered all those opinions.

Q. I want to talk for a few minutes about the Yu study that you've referenced. I guess first, you said earlier that that was not listed on a supplement to your materials considered list, correct?

A. I think the preprint was listed on a materials considered, but the final version has not been listed.

Q. Would you agree that you did not have individual exposure data?

MR. RUZICKA: Objection, form.

A. If I recall, it was -- it was estimated, or I don't recall if it was estimated or based on a geographic area with direct measurements. I would have to review the methods to confirm.

Q. And that was based off benzene ambient air, correct?

A. Correct.

Q. Not water?

A. Correct.

Q. And the authors noted that the results should be interpreted with caution, correct?

A. I would have to review the context for that statement, if that's a correct statement that's in there.

Q. And they stated that there was -- they lacked data on indoor emissions of benzene, correct?

A. If you are going to ask specific questions about a study, I would prefer to have the study available to look at.

Q. And if that's what they say in there, you wouldn't have any reason to disagree with that?

MR. RUZICKA: Objection to form and foundation.

A. I may or may or may not. I would have

to review the context of it.

Q. You don't recall as you sit here?

A. I don't.

Q. And do you recall that they found elevated associations for 18 site-specific cancers?

A. Again, if you are going to ask specific questions, I would prefer to have the manuscript in front of me to --

Q. You don't recall as you sit here?

A. I don't recall the number of cancers that they found associations.

Q. And would you agree that everyone is exposed to some carcinogens every day?

MR. RUZICKA: Objection, form.

A. There is some exposure to some -- I would agree that everyone has some exposure to some carcinogens every day.

Q. Would you agree that people are exposed to TCE every day?

A. Most -- most likely to some degree.

Q. In ambient concentrations in air, for example?

A. Yes, I believe that's correct.

Q. Did you ever try to research what background exposures to TCE in ambient

concentrations in air would be?

A. I've reviewed that material, but I don't recall what the numbers are.

Q. And do you recall what material you are referring to?

A. I believe there is discussion of it in various monographs such as ATSDR, some of the EPA IRIS data. I just don't recall any numbers from that.

Q. And are you aware, just for another example, that people are exposed to benzene every day?

A. At least in the industrial world they are. I don't know if that holds true everywhere, but...

Q. Do you recall giving testimony at your last deposition in May about benzene levels and raw bananas?

A. I recall a question about that. I don't recall the specific testimony, no.

Q. And you agree that cigarettes have benzene in them, correct?

A. Cigarettes are a source of benzene exposure.

Q. Have you ever calculated someone's

exposure to benzene from cigarettes?
A. Not that I recall that. I may or may not have done that at some point, but not that I specifically recall.
Q. As you sit here right now, you don't recall specifically a time doing that?
A. No.
Q. And you would agree that smoking is a major risk factor for bladder cancer?
MR. RUZICKA: Objection, form.
A. Smoking is a risk factor for bladder cancer. I did not review the literature surrounding, directly surrounding smoking and bladder cancer, though, for this.
Q. Do you know how many, approximately what percentage of bladder cancer cases are caused by smoking?
A. I don't have a good estimate for you.
Q. You just don't know?
A. I don't -- I don't have a specific estimate for you.
Q. Does approximately 40, 50 percent sound correct?
A. I don't have a way to confirm or deny that.

Q. And are you aware that several of these Plaintiffs have significant smoking histories?

MR. RUZICKA: Objection, form, foundation.

A. I think some of them may have been asked about smoking in their depositions, and that would be the only source of information that I have on their smoking history.

Q. For example, Mr. Raymond has a 50-packyear smoking history, correct?

A. I don't recall if that was stated in his deposition or not, but I don't have another way to determine that.

Q. And you didn't calculate Mr. Raymond's or attempt to calculate Mr. Raymond's cumulative exposure to benzene from cigarettes, correct?

A. I did not.

Q. And do you recall seeing in Mr. Laramore's deposition that he has a 30- to 60-packyear smoking history?

A. I don't recall whether that is correct or not.

Q. And you didn't try to calculate, I assume, Mr. Laramore's cumulative exposure to benzene from cigarettes, correct?

A. I did not.

Q. So you can't say whether Mr. Raymond or Mr. Laramore's cumulative exposures to benzene from cigarettes exceeded their exposures to benzene at Camp Lejeune?

A. I -- I did not attempt to do that. I don't know that I had sufficient information to do that.

Q. Right, and as a result of not attempting to do that, you can't tell me if it would be more or less, right? You just didn't do that analysis?

A. I just didn't do that analysis, that's correct.

Q. And, I mean, even Mr. Criswell smoked. Did you see in his deposition that he smoked two to three cigarettes per day for approximately two years? Do you recall that?

A. I don't recall that specifically; that I would have to review his deposition to confirm or refute that.

Q. I'm sorry. Go ahead. Are you done?

A. Yes.

Q. Two cigarettes per day for two years would be approximately 1,450 cigarettes, correct?

MR. RUZICKA: Objection, form,

foundation.

BY MR. ORTIZ:

Q. You can answer.

A. I think that math is correct. It's somewhere around there, but...

Q. And three cigarettes per day for two years would be approximately 2,190 cigarettes, correct?

A. That sounds approximately correct.

Q. And are you aware that the CDC defines nonsmoker as an adult who smoked less than a hundred cigarettes in their lifetime?

A. I don't recall what the CDC definition is for a nonsmoker.

Q. And if that was the CDC definition, that would put Mr. Criswell above the threshold for being a nonsmoker, correct?

MR. RUZICKA: Objection, form.

A. That's based on the CDC definition that it's not necessarily the same consideration for bladder cancer. A lot of times it depends on what you are considering smoking versus nonsmoking depending on the outcome of interest, or sometimes it also changes depending on the duration from less smoking, whether you are considered to have an

equivalent risk depending on the outcome of interest.

Q. And even one cigarette per day for two years would be approximately 730 cigarettes, right?

A. Yes, that would be approximately 730.

Q. 730 is more than 100?

A. 730 is more than 100.

Q. So if Miss Dyer smoked less than a pack per day but a cigarette per day for two years, that would be more than a hundred?

MR. RUZICKA: Objection, form, foundation.

A. Could you repeat the question? I'm sorry. I just...

Q. Sure. If Miss Dyer smoked a cigarette per day for two years, that would be approximately 730 cigarettes, right?

MR. RUZICKA: Same objection.

A. Yeah, I think I answered that one. What was your next question?

Q. That would be more than a hundred cigarettes?

A. That, 730 is more than 100.

Q. Are you aware that Miss Dyer's treating physician, Dr. McCarthy, testified about higher

rates of urological cancer in the area she lived in Southeast North Carolina near the Cape Fear River?

A. I don't have any knowledge of Dr. McCarthy's testimony.

Q. So you can't agree or disagree with it?

A. Correct. I just have no knowledge about his testimony.

Q. And as a general matter, Dr. Hatten, you did not calculate or attempt to calculate any of these five bladder cancer Plaintiffs' cumulative exposures to the chemicals at issue from any source other than the water at Camp Lejeune, correct?

A. Correct. I just evaluated their exposures at Camp Lejeune in isolation.

Q. And we touched on this a little bit, but you did not compare their cumulative exposures to any data concerning background exposures to the chemicals at issue, correct?

A. I didn't make an explicit comparison.

Q. And so you can't say whether any of these five Plaintiffs might have been exposed to higher cumulative amounts of the chemicals at issue from background exposures, correct?

MR. RUZICKA: Objection, form.

BY MR. ORTIZ:

Q. You can answer.
A. I just can't say one way or another. I have not evaluated that question.
Q. And likewise, you can't say whether accumulative exposures for each of these five bladder cancer Plaintiffs from any other source than Camp Lejeune might have exceeded their cumulative exposures from water at Camp Lejeune, correct?
A. I just haven't analyzed that, so I don't know.
Q. Those are just not analyses that you have done?
A. Correct.
MR. ORTIZ: Now is a good time for a break, if you want.
MR. RUZICKA: Sure. Are you -- we can go off.
THE VIDEOGRAPHER: The time is 2:39. We are off the record.
(Recess taken.)
THE VIDEOGRAPHER: The time is 2:49 p.m. We are back on the record.
BY MR. ORTIZ:
Q. All right. Dr. Hatten, you testified

earlier about your view of water models in your clinical practice as a medical toxicologist, correct?

A. Correct.

Q. Did any of those water models attempt to estimate levels of chemicals going back several decades?

A. I don't recall if they did or did not.

Q. Is it fair to say as you sit here today that you don't recall one that did?

A. I just don't recall. I don't recall the specifics of the timeframe for -- for those models.

Q. Can you give me an estimate of how many water models you have evaluated?

A. I think I said earlier around 20, but I don't know an exact number.

Q. And you said earlier that whether something is a substantial exposure or a de minimis exposure sometimes requires a qualitative determination, correct?

A. Yes, I think I said that before.

Q. Are you offering a quantitative opinion on what defines a substantial exposure as opposed to a de minimis exposure?

A. No, I am not.

Q. And you consider yourself as to be an epidemiologist, correct?

A. Correct.

Q. And you testified about your education, training and experience in epidemiology at your last deposition?

A. I believe so. It's typically part of the deposition discussions.

Q. Would you agree you have never conducted any published epidemiological studies relating to cancer?

A. Not with cancer as a specific endpoint. I have performed epidemiologic studies that may have included cancer outcomes, but not -- not where the design is specifically oriented towards cancer as an endpoint.

Q. So can you give me an example of what kind of a study?

A. I've conducted studies using a few different toxicology databases. Some of those may have cancer as an endpoint in there, but they weren't specifically oriented toward -- the studies I conducted were not specifically oriented toward cancer as an outcome.

Q. Were any of those published?

A. Multiple; I publish multiple epidemiologic studies using various toxicology databases.

Q. All right. Can you go back to -- I don't recall which exhibit number it was, but the transcript of your deposition in the Zantac litigation.

MR. RUZICKA: 52.

MR. ORTIZ: 52, thank you.

THE WITNESS: Or 49, I think.

BY MR. ORTIZ:

Q. 49, thank you.

Can you turn to page 32, please. Just let me know when you are there.

Are you there?

A. Yes.

Q. I'm going to read from line 17.

"Question: Have you ever conducted any epidemiological studies relating to cancer at all?

"Mr. Sheehan: Objection.

"Answer: Not -- not -- none that have been published. I have -- during my public health training, I did some evaluation of databases with cancer outcomes within the field of toxicology, but nothing that was ever published."

Did I read that correctly?

A. Yes, that's correct.

Q. And does that remain true today?

A. Yeah. I don't think that's different than the answer I just gave. I was saying that some of those databases may have had -- that I published on may have cancer as an outcome, but it wasn't a specific outcome I was studying in those, in those studies. So it may have been an outcome that was listed at some point in a table somewhere, but I don't -- it wasn't the specific outcome I was looking at in the study, so...

Q. So fair to say that you have never conducted a published epidemiological study where cancer was the specific outcome being evaluated?

A. That is correct.

Q. Thank you. And you are not an oncologist either, correct?

A. I am not an oncologist.

Q. Dr. Hatten, I'm going to show you Hatten exhibit --

MR. ORTIZ: We are on 54?

MR. ANWAR: Yes.

(Exhibit 54 was marked for identification and is attached to

the transcript.)

BY MR. ORTIZ:

Q. And before we look at that document, you are board-certified in emergency medicine by the American College of Emergency Physicians, correct?

A. Yes, that's correct.

Q. And have you ever seen this document that I handed you before?

A. I believe I have, at least some version of it. I don't know if there is a prior version that I've reviewed.

Q. And does it appear to be a policy statement from the American College of Emergency Physicians approved June 2021 entitled Expert Witness Guidelines for the Specialty of Emergency Medicine?

A. Yes.

Q. And you agree it sets out various guidelines for the specialty, expert witness guidelines for the specialty of emergency medicine, correct? Strike that. Let me ask that again.

Do you agree that it sets out guidelines for emergency physicians serving as expert witnesses in litigation, correct?

A. Yes, I believe that's the purpose of

this.

Q. And I've highlighted a few just for convenience. The first one I've highlighted says, "The expert witness should not provide expert medical testimony that is false, misleading or without medical foundation," and then the portion I've highlighted, "A key to this process is a thorough review of available and appropriate medical records and contemporaneous literature concerning the case being examined."

Did I read that correctly?

A. You read that correctly. I will point to the first sentence of this document, though. It says, "Expert witnesses are asked to render opinions as to assess the requisite standard of care pertaining to emergency physicians, cases of alleged medical malpractice and peer review."

I don't know what the relevance of this document is to the testimony I'm providing in this case.

Q. So do you think these guidelines don't apply to your testimony in this case?

A. That's not what I'm saying. I'm saying they apply to testimony about standard of care for emergency physicians. That's what this document is

written for. That doesn't necessarily mean that they wouldn't apply to testimony in this case, but they are not commenting on the kind of testimony I'm providing in this case.

Q. Do you think -- well, so you would agree that they are not limited to cases of alleged medical malpractice in peer review, correct?

MR. RUZICKA: Objection, form, foundation.

A. I think the first sentence describes the intent of this document, and it is intended to communicate standards for physicians testifying about standard of care.

Q. Do you think that you should follow these guidelines in this litigation?

A. If I were testifying about the standard of care in this case, for an emergency physician it would be appropriate for me to follow these guidelines.

Q. Are you testifying about the standard of care for an emergency physician?

A. I'm not.

Q. So do you think it is appropriate for these guidelines?

A. If they are general principles that are

appropriate for my testimony, but anything that is specific to standard of care testimony is likely not applicable.

Q. The second one I've highlighted just to go through those. "A medical expert's opinion should reflect the state of medical knowledge at the time of the event giving rise to the case."

Did I read that correctly?

A. You read that correctly. Again, that's referring to standard of care discussions because the standard of care changes as medical knowledge changes and technology changes, and these are all again in reference to standard of care, emergency physicians testifying toward standard of care.

Q. And the next one is, "The expert witness should review the medical facts in a thorough, fair and objective manner and should not exclude any relevant information to create a view favoring either the plaintiff or the defendant." Is that correct?

A. You read that correctly.

Q. Do you think it's important to follow guidelines as an expert witness in litigation?

MR. RUZICKA: Objection, form and foundation.

A. I think it's important to follow specialty guidelines that are applicable to your testimony.

Q. Does the American College of Emergency Physicians have expert witness guidelines that would apply to toxic tort litigation like this one?

A. Not that I'm aware of.

Q. And are you aware of any other expert witness guidelines that are promulgated by the American College of Emergency Physicians?

A. Not specific to expert witness testimony.

Q. Dr. Hatten, we discussed each of your Phase III reports in some detail. Is it fair to say that for each Plaintiff you reach the same opinion as to at least one of the chemicals at issue?

MR. RUZICKA: Objection, form.

A. I think for each Plaintiff their exposures reached a level that has been demonstrated to be hazardous to human health based on an elevated measure of association with bladder cancer; and I think it's especially important because this is primarily based on studies of the exposures at Camp Lejeune and of people who were on

base at Camp Lejeune or spent time on base at Camp Lejeune frequently; and when evaluating exposures, we don't have direct studies of the exposure of concern or the cohort of concern, and we're having to make a determination of how similar the exposures are and how similar the cohort is to what has been -- to the plaintiff at issue or the exposed individual at issue.

In this case we have direct evidence from studies of that direct cohort, which, to me is I think the strongest possible evidence you can have from an epidemiologic perspective.

Q. And did you review the general causation reports of the United States experts, Dr. Julie Goodman and Dr. Peter Shields?

A. I believe so. I reviewed Dr. Goodwin's and I believe I reviewed Mr. Shields. I don't recall specifically.

Q. Do you recall criticisms they had about the methodologies used in some of the epidemiological studies that we discussed here today, such as Bove 2024 and Bove 2014?

A. I recall they expressed criticisms. I don't think there is any -- any study that is beyond criticism. And I think -- and it's part of

the scientific process every study author will describe limitations of their own studies.

Q. Did you account for or consider those limitations when you were using those studies that we've discussed here today?

A. Yes, I considered those.

Q. Do you think it's possible that someone could have been at Hadnot Point or Tarawa Terrace between 1953 and 1987 without reaching levels of exposure that are hazardous to humans or substantial for at least one or more of the chemicals at issue?

MR. RUZICKA: Objection, form and foundation.

A. I think it's beyond possible. I think I identified multiple plaintiffs who I didn't believe that their exposures met the -- met levels that were hazardous to human health based on the estimates of the exposure, depending on what the compound you are discussing.

MR. ORTIZ: I know we just took a break, but can I just take a two-minute break and confer with my colleague?

MR. RUZICKA: Sure.

THE VIDEOGRAPHER: The time is

3:02 p.m. We are off the record.

(Recess taken.)

THE VIDEOGRAPHER: The time is 3:04 p.m. We are back on the record.

BY MR. ORTIZ:

Q. All right. Dr. Hatten, just to close this out, what did you do to prepare for this deposition?

A. I met with the attorneys twice, I believe, and I reviewed my general causation opinion; Dr. Reynolds' deposition testimony; and my -- each of my specific causation opinions or the specific -- plaintiff-specific opinions we have discussed today as well as the Bove studies or the relevant Bove studies for those opinions; reviewed the Yu, the final form of the Yu study. I may have reviewed other documents, but they have all been disclosed on my materials considered.

Q. Probably were other studies that were in your general causation report?

A. I probably reviewed some of those, but I don't recall the specific ones.

Q. And you said you met with counsel twice, correct?

A. I believe so.

Q. Who was present?
A. Ted and I believe Pat Wallace for at least one of the meetings and JT. I don't remember his last name. Is it --
MR. RUZICKA: Malone.
A. Malone, okay. It's on the Zoom, but I wasn't sure if that was the same JT or not.
Q. And do you recall how long each of those sessions was?
A. One to two hours.
Q. And were there any non-attorneys present?
A. Not that I'm -- not that I'm aware of.
Q. How much money would you estimate you have billed to date in this litigation?
A. I don't have a good sense. I don't know if there is an estimate. I can't remember if there was an estimate at my last deposition, but since that time I've probably performed another somewhere between 20 and 40 hours' worth of work. I don't recall the exact -- I don't know the exact number, though.
Q. And do you recall what your hourly rate is in this litigation?
A. I believe it's $750 an hour.

Q. So whatever $750 an hour by 20 to 40 hours is?
A. Correct.
Q. That's since your last deposition?
A. Correct. I just have a flat rate for all my work.
Q. And do you recall how much -- is it the same flat rate for you sitting here and me asking you questions?
A. Yeah. I just charge a flat rate for my time.
Q. Do you want to add to or change any of your answers to my questions?
A. Not that -- not that I -- not at this moment.
Q. And do you have any other opinions we haven't discussed yet?
A. I don't believe so.
MR. ORTIZ: Your counsel may have some questions for you. Depending on what he may ask, I might have some followup questions, but otherwise, I pass the witness.
MR. RUZICKA: Thank you. I just have a couple questions, Dr. Hatten.

EXAMINATION

BY MR. RUZICKA:

Q. If you could pull up Deposition Exhibit 39, which is your Criswell report.

A. Yes.

Q. And I believe, if you recall earlier, counsel for the DOJ was asking you questions about your appendix to that report and the cumulative level of chemicals that were calculated by Dr. Reynolds, correct?

A. Yes, I believe so.

Q. And do you recall there was some discrepancy between the cumulative levels of chemicals that Dr. Reynolds had in her report versus what was in your appendix in your Criswell report, Deposition Exhibit 39?

A. Yes, I believe so.

Q. And in looking at your appendix to Deposition Exhibit 39, you are relying on the cumulative microgram per liter month calculation in the far left-hand column to compare to the epidemiological studies performed by Dr. Bove. Is that correct?

MR. ORTIZ: Objection.

BY THE WITNESS:

A. Yes, that's correct.
BY MR. RUZICKA:
Q. And did you have a chance to review the levels that were identified in the far left column, the cumulative microgram per liter month as compared to what Dr. Reynolds had reported in her appendix for Mr. Criswell?
A. Let me just take a look.
Do you remember which appendix he is?
Q. He is Appendix...
MR. ORTIZ: I believe he's Appendix 2, yeah.
BY MR. RUZICKA.
Q. ...2.
A. Yes, I'm here.
Q. Okay. And looking at Dr. Reynolds' cumulative microgram per liter month calculations in the far left-hand column of the Criswell appendix, are those numbers largely similar, if not identical, to the numbers that you have in your appendix of your Criswell report?
A. Yeah, they are substantially similar. They are, I think, one number off for a few of the entries.
Q. Okay. And that one number off, does

that change your opinions that you have in your Criswell report?

A. No.

Q. And then the only cumulative calculation that Dr. Reynolds provided that formed a basis beyond the microgram per liter month calculation is for PCE. Is that correct?

A. Correct, with respect to the Aschengrau study.

Q. And comparing your cumulative microgram per liter month calculation for PCE, both the TechFlow and the MT3-DMS models, with Dr. Reynolds' cumulative per liter month for PCE for both models, are those numbers just about identical, maybe one microgram per liter month off?

A. They are close, like -- you are talking about the cumulative one, correct?

Q. Just the cumulative microgram per liter month.

A. Yes. The TechFlow model that she listed is one microgram per liter month less and the MT3-DMS model is one microgram per liter month more than I have listed.

Q. And in your report for Mr. Criswell, you utilized that number from the cumulative microgram

per liter month column as your low end of the range for the cumulative PCE exposure. Is that correct?

MR. ORTIZ: Objection to form.

BY THE WITNESS:

A. I used the cumulative consumption estimates that are in column 3 and column 4 for the cumulative PCE.

BY MR. RUZICKA:

Q. I apologize. And the cumulative amounts that -- of PCE that Dr. Reynolds has in her report are higher than the cumulative amounts that you have in your appendix, is that correct?

MR. ORTIZ: Objection.

A. The last column is higher. The next-to-the-last column is substantially similar. It's within a thousand micrograms for the TechFlow model, which is the one I used in forming my opinion.

Q. Okay. So despite the discrepancies between your appendix in your Criswell report and Dr. Reynolds' report, your conclusions are still the same; is that correct?

MR. ORTIZ: Objection, foundation.

A. Yes. My conclusions would not change using her up- -- the updated version of the table

that she has listed versus the one that I included in my report.

Q. Okay. Thank you.

Are you aware of any public comments that the government or the ATSDR or anyone in the scientific community has made regarding the scientific credibility of the water modeling performed by the ATSDR?

MR. ORTIZ: Objection.

A. Everything I've read has recognized the water modeling as the most appropriate modeling of exposures at Camp Lejeune. I think it has been recognized as an example of good -- good practice or good modeling. As I said before, I'm not a water modeling expert, so I don't have a way to independently evaluate that.

Q. And you were asked some questions about cigarette smoking earlier. Do you recall that testimony?

A. Yes.

Q. Is there any reason to believe or is there any evidence that the Marines or civilians at Camp Lejeune were disproportionately higher percentage of smokers in the Marines or civilians at Camp Pendleton?

MR. ORTIZ: Objection.

A. Not that I'm aware of.

Q. And the risk from the VOCs is demonstrated in spite of the background rates on smoking. Is that correct?

MR. ORTIZ: Objection.

A. Yes. That's the -- a major reason Camp Pendleton was chosen as a comparison site, is that it's presumably similar rates of background exposures aside from the water contamination.

MR. RUZICKA: I have no other questions for you, Dr. Hatten. Thank you.

MR. ORTIZ: I don't have any further questions.

THE VIDEOGRAPHER: This will conclude the deposition of Benjamin Hatten, M.D. the time is 3:14 p.m. We are off the record.

THE REPORTER: Did you want to put anything on the record about signature?

MR. RUZICKA: We will read and sign, yes.

(At 3:14 p.m., the deposition was concluded.)

- CERTIFICATE OF CERTIFIED SHORTHAND REPORTER -

I, PAULINE VARGO, Certified Shorthand Reporter, Registered Professional Reporter and Certified Realtime Reporter, do hereby certify that prior to the commencement of the examination, BENJAMIN HATTEN, M.D., MPH, was duly sworn by me to testify to the truth, the whole truth and nothing but the truth concerning the matters herein.

I DO FURTHER CERTIFY that the foregoing deposition transcript is a verbatim transcript of the testimony as taken stenographically by me at the time, place, and on the date hereinbefore set forth, to the best of my ability.

I DO FURTHER CERTIFY that a review of the transcript was requested.

I DO FURTHER CERTIFY that I am neither a relative nor employee nor attorney nor counsel of any of the parties to this action, and that I am neither a relative nor employee of such attorney or (ancially interested

:

Pauline M. Vargo

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COURT REPORTER
Certified Shorthand Reporter - IL No. 084-001573
Registered Professional Reporter
Certified Realtime Reporter
Dated: July 14, 2025

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Please read your deposition over carefully and make any necessary corrections. You should state the reason in the appropriate space on the errata sheet for any corrections that are made.

After doing so, please sign the errata sheet and date it. It will be attached to your deposition.

It is imperative that you return the original errata sheet to the deposing attorney within thirty (30) days of receipt of the deposition transcript by you. If you fail to do so, the deposition transcript may be deemed to be accurate and may be used in court.

E R R A T A

CASE NAME: IN RE CAMP LEJEUNE WATER LITIGATION

DEPOSITION OF: BENJAMIN WALTER HATTEN, M.D., MPH.

DATE TAKEN: July 7, 2025

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CASE NAME: IN RE CAMP LEJEUNE WATER LITIGATION
No. 7:23-cv-00897

I hereby certify that I have read the foregoing transcript of my deposition, given on July 7, 2025, at the place aforesaid, and I do again subscribe and make oath that the same is a true, correct, and complete transcript of my deposition so given as aforesaid, as it now appears.

(Signed)

_____

BENJAMIN WALTER HATTEN, M.D., MPH DATE

SUBSCRIBED AND SWORN TO
before me this day
of , A.D. 20___.

_____

Notary Public

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Federal Rules of Civil Procedure

Rule 30

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(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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