Exhibit 595

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

IN RE:	*	CAUSE NO:
	*	7:23-cv-00897
CAMP LEJEUNE WATER	*	
LITIGATION	*	
	*	
This Document Relates To:	*	
All Cases	*	

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ORAL AND VIDEOTAPED DEPOSITION OF
VITALY MARGULIS, M.D.
JULY 11, 2025

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DEPOSITION of VITALY MARGULIS, M.D., produced as a witness at the instance of the Defendants, and duly sworn, was taken in the above-styled and numbered cause on the 11th day of July, 2025, from 9:03 a.m. to 2:03 p.m., before Christy R. Sievert, CSR, RPR, in and for the State of Texas, reported by machine shorthand, at the University of Texas Southwestern Medical Center, 2001 Inwood Road, 4th Floor, Dallas, Texas, pursuant to the Federal Rules of Civil Procedure and the provisions stated on the record or attached hereto.

A P P E A R A N C E S

FOR THE PLAINTIFFS:

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FOR THE DEFENDANT:

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ALSO PRESENT:

GARY PAYNE, Videographer

I N D E X

PAGE

E X H I B I T S

E X H I B I T S
(continued)

P R O C E E D I N G S

THE VIDEOGRAPHER: The date is July 9th -- or, sorry, today is July 11th, 2025. The time is 9:03 a.m., and we are on the record.

THE STENOGRAPHER: Counsel, can you introduce yourselves for the record, please.

MR. BU: Sure. Nathan Bu for the United States.

MR. ROBERTS: Jim Roberts with Plaintiffs' Leadership Group appearing on behalf of the plaintiffs.

MS. JOHNSON: Camille Johnson for the United States.

VITALY MARGULIS, M.D.,

having been first duly sworn,

testified as follows:

EXAMINATION

BY MR. BU:

Q. Dr. Margulis, can you please state your name and spell your name for the record, please.

A. Vitaly, V-i-t-a-l-y, Margulis, M-a-r-g-u-l-i-s.

Q. Okay. And you're a physician here at the University of Texas Southwestern Medical Center?

A. Correct.

Q. Okay. Do you primarily practice out of this office at 2001 Inwood Road?

A. Correct.

Q. Okay. My name is Nathan Bu. I'm a trial attorney in the United States Department of Justice. I represent the United States in this lawsuit. The purpose of this deposition today is to understand the opinions you're offering in this case and how you came to those opinions.

Do you understand that?

A. I do.

Q. Okay. To do that I'm going to ask you some questions and ask that you answer them to the best of your ability.

Do you understand that?

A. I do.

Q. Okay. Is there any reason why you would be unable to give your most accurate and complete testimony today?

A. Not that I know of.

Q. Okay. Are you currently taking any medication that might affect your ability to offer complete and accurate testimony?

A. I do not.

Q. Okay. Have you been deposed as an expert

witness in other litigation?
A. Yes.
Q. About how many times?
A. Something in the range of ten.
Q. Okay. So some of this may be familiar to you, but I still would like to go over them.
You understand that your deposition is being recorded by a court reporter and a videographer today, correct?
A. I do.
Q. Okay. And even though we have a videographer, your answers must still be verbal. This means a "yes" or a "no" instead of a head nod or a head shake.
Do you understand that?
A. I do.
Q. Do you understand that your answers should be given after the question is finished to allow time for Mr. Roberts to object if he needs to and to allow time for the court reporter to get down all of the testimony?
A. I do.
Q. Okay. Do you understand that you may request a break unless there is a question pending? If there's a question pending, I'm going to ask you

answer the question before we take a break.

A. Understood.

Q. Okay. And just so that you and Mr. Roberts are aware, my practice is generally to take a break about every hour.

If a question is unclear, do you understand that you may ask to have the question rephrased or indicate how the question is unclear?

A. I do.

Q. All right. If you answer a question, is it fair for me to -- to assume that you understood the question being asked?

A. Yes.

Q. If you need to correct an answer, you understand that you have the opportunity to do so?

A. Okay.

Q. And if an answer that you gave previously during your deposition is incomplete, you understand you have the opportunity to address why that answer was incomplete and to correct it?

A. Okay.

Q. Do you understand that your answers today are being given under oath under penalty of perjury?

A. I do.

Q. All right. And you understand that your

testimony today has the same force and effect as if you were testifying in a courtroom with a judge and a jury present?

A. I understand.

Q. Okay. You have a laptop in front of you here today?

A. Yes.

Q. Okay. Is that your laptop?

A. It's actually institutional.

Q. Okay. So it belongs to University of Texas Southwestern?

A. Correct.

Q. Okay. Can you tell me why you brought a laptop to your deposition this morning.

A. Just in case I need to look up an article. I don't have any notes here. Just some literature that -- the same literature that you have.

Q. Is there anything saved on the laptop currently?

A. Is there anything saved on it?

Q. Yes.

A. Yes.

Q. Okay. What do you have saved on the laptop?

A. Patient data, HIPAA, things -- things like

that. It's a work --
Q. Is this a --
A. It's -- it's a work computer.
Q. Okay. So this is a laptop that you also use as part of your practice as a clinical physician?
A. Correct.
Q. Okay.
A. I can put it away if it makes anybody uncomfortable. It's not necessary. If it --
MR. ROBERTS: Dr. Margulis, to the extent you need your laptop in front of you, you keep it in front of you. Okay?
THE WITNESS: Oh, okay.
BY MR. BU:
Q. Do you have anything open on the laptop right now?
A. I do not.
Q. Okay. All right. If during your testimony you need to refer to something on your laptop, I ask that you let us know that you're referring to something on your laptop and to identify what it is on the laptop that you're looking at.
A. Sure.
Q. Does that make sense?

A. Yes.
Q. Okay. Thank you.
Would you agree that physicians who assist in legal proceedings, including as an expert witness, should accurately represent their qualifications?
A. Yes.
Q. And would you agree that physicians who assist in legal proceedings should testify honestly?
A. Yes.
Q. Would you agree that physicians who testify as an expert witness must only testify in areas which they have appropriate training and recent, substantive experience and knowledge?
A. Yes.
Q. Would you agree that physicians who serve as an expert witness must ensure that their testimony appropriately characterizes the theory on which the testimony is based if that theory is not widely accepted in the profession?
A. I agree.
Q. And do you agree to hold yourself to those standards as best that you can in giving your testimony today?
A. I do.

MR. BU: Can we pull Tab 1, please. I have my own.

Can we mark this Exhibit 1, please.

(Exhibit No. 1 marked.)

BY MR. BU:

Q. Dr. Margulis, do you recognize this document?

A. I do.

Q. And what is it?

A. It's a Specific Causation Expert Report prepared by me on David Downs.

Q. Okay. Does this report contain all of the opinions that you formed in this case to date?

A. Yes.

Q. To the best of your knowledge, are any of those opinions incomplete or incorrect?

A. As far as I know, no.

Q. Can you turn to page 5 for me, please, of your report. Do you see that section at the top beginning "This evaluation" and underlined and italics?

A. Yes.

Q. Okay. And then the paragraph below that you write, "In preparing this evaluation, I have drawn upon the most rigorous and relevant

peer-reviewed scientific literature."

Do you see that?

A. I do.

Q. Okay. How do you determine what makes a study more rigorous?

A. Methodology.

Q. What about the methodology do you consider?

A. Depending on what type of trial you're looking at, if it's a case-controlled epidemiologic study, looking at the sample size; looking at the magnitude of difference being tested; looking at what's being adjusted for; looking at what kind of questions are being asked, if they're -- can be reasonably answered by a study proposed; looking at sort of the methodology that's -- that's utilized to make -- to -- to make statistical analyses.

Q. Okay. When you refer to the magnitude of what's being studied, are you referring to the magnitude of, like, a risk ratio or an odds ratio?

A. So, I mean, we can talk about sample sizes. We can -- you know, we -- what kind of differences that we're trying to assess. Is the sample size adequate to look for these things? Are the events that we're looking for common enough to -- to make conclusions? Things like that.

Q. Okay. Why is sample size important to the rigor of a study?

A. Well, it's -- it's part of it. I think the bigger the sample size, I would say probably the more -- all other things being equal, probably the more robust the conclusions are, right? If you have a small sample size, it's harder to make definitive conclusions.

Q. I guess, to -- to drill down a little bit more, why is it difficult to draw conclusions from studies that use a smaller sample size?

A. Well, you -- if you're looking for a certain difference, the sample size -- if the sample size is too small, you may not detect the difference because of the sample size.

Q. Is the size of the sample related to testing for a statistical significance?

A. Is it related to it?

Q. Yeah.

A. It can be, yes.

Q. Okay. And all else being equal, a larger sample size would make it easier to rule out random error; is that fair to say?

A. That is correct, yes.

Q. Would you consider studies that are more

able to rule out random error to be more rigorous?
A. So you're referring to the -- to the power of the study at this point? Yes.
Q. So studies with more statistical power are considered to be more rigorous?
A. It's part of the criteria of -- to assess the rigor of the study, yes.
Q. When you were referring earlier to adjustments in the study, are you referring to confounding variables?
A. Correct.
Q. Okay. So part of what makes a study more rigorous is its ability to control for confounding variables?
A. Again, it can be if necessary and appropriate, yes.
Q. Would you consider whether the study is susceptible to other forms of bias such as selection bias?
A. Yeah, bias is important, certainly can -- can affect the conclusions of the study, correct.
Q. And response bias is another form of bias that can affect the conclusions of a study?
A. Yes, it's one of the well-known biases for using a -- some sort of questionnaire to elicit a

response, yes.

Q. All right. So when you are reviewing the methodology of these studies, do you consider their ability to account for bias like selection bias and response bias?

A. Well -- what's the question again?

Q. Sorry. When you're reviewing the scientific literature to determine which is more rigorous and which is less rigorous --

A. Yeah.

Q. -- you're looking at the methodology of those studies, correct?

A. Correct.

Q. When you're looking at the methodology of those studies, are you considering the extent to which the study can rule out bias like selection bias or response bias?

A. It's one of the -- it's one of the items that I look at, yes.

Q. Okay. Is one of the items that you look at the risk of misclassification, such as disease misclassification or exposure misclassification?

A. Yes, that's one of the known potential issues of the study, yes.

Q. Are there any resources that you consulted

to determine the rigor of studies?

A. No specific resources outside of my general training that I've received.

Q. Okay. And you mentioned case-control studies. Is that a particular type of study design?

A. Yes.

Q. Are there other types of study designs that are considered to be more or less rigorous than case-control studies?

A. Case series -- I mean, there's many types of different trials. For example, a case series probably would be less rigorous, an uncontrolled series. There are metaanalysis that look at -- aggregate multiple studies. There are prospective studies where you're, you know, randomizing somebody to a certain group. They probably would be the highest level of evidence.

Q. Okay. Would you consider a case series study to generally be more or less rigorous than a case-control study?

A. A case series?

Q. Case series, yes.

A. Usually less.

Q. Okay. And would you consider a metaanalysis to be more or less rigorous than a

case-control study?

A. That's harder to -- it would depend on what metaanalysis includes, what kind of studies it -- it itself includes. If a metaanalysis includes only series of cases, then probably not.

Q. Would it be fair to say that the rigor of the metaanalysis depends on the rigor of the underlying studies that it looks at?

A. That's correct.

Q. Okay. Is a cohort study different than a case-control study?

A. Depending on what you mean by "cohort." If you're just looking at the cohort of the patients as the -- as the only group, then probably, yes.

Q. Okay. And generally, is a cohort study considered more rigorous or less rigorous than a case-control study?

A. I -- I don't know.

Q. Okay. In your practice have you reviewed randomized controlled trials?

A. Yes.

Q. Okay. And would a randomized controlled trial be considered more rigorous or less rigorous than a case-control study?

A. In general, it would be more. I mean,

again, you know, it depends on how the trial was designed, and there a lot of poorly designed trials that probably are less rigorous. But as a general statement, I would agree with you.

Q. Okay. All right. Also on page 5 of your report, in the next paragraph down you state that -- you conclude, "with a reasonable degree of medical and scientific certainty."

Do you see that?

A. Yes.

Q. Okay. How do you define "a reasonable degree of medical" -- I'm sorry. How do you define "a reasonable degree of" -- yes -- "medical and scientific certainty"?

A. Well, just -- it's relatively well-stated. So it's -- in my opinion, based on a synthesis of the information in my review, I feel like this is medically certain that A leads to Z or A affects B, et cetera.

Q. Okay. Have you ever used the phrase "a reasonable degree of medical and scientific certainty" in any of your academic publications?

A. I believe so.

Q. Okay. Do you use that phrase in your clinical practice?

A. I can't give you a specific example, but I think it would not be reasonable -- would not be unreasonable to use such terminology.

Q. Okay. Are there any resources that you reviewed or consulted to define the term "reasonable degree of medical and scientific certainty"?

A. I have not.

Q. And your opinions in this report are also based on the standard for causation being defined as "sufficient to conclude a causal relationship is at least as likely as not"; is that correct?

A. Correct.

Q. Okay. Does your understanding of that definition come from the Agency for Toxic Substances and Disease Registry?

A. Yes.

Q. Okay. And for everyone's sake here, if I refer to the ATSDR, do you understand that to mean the Agency for Toxic Substances and Disease Registry?

A. Yes.

Q. Okay. Is the ATSDR's definition of that standard the same one you applied in your report?

A. Actually, in my report I think I even held this to a higher standard of more likely than not.

Q. Are there opinions in your report that you're offering under an as likely as not standard?
A. No, not specifically.
Q. Okay. So would it be fair to say you're not applying the ATSDR's as likely as not standard for purposes of this report in Downs?
A. That's correct.
Q. Okay. And would it be fair to say, then, that your interpretation of an at least likely as not standard is not relevant to the opinions you're offering in Downs?
MR. ROBERTS: Objection.
A. I'm not sure what I'm supposed to do now.
MR. ROBERTS: No. You --
BY MR. BU:
Q. You can answer.
MR. ROBERTS: You can answer unless I instruct you otherwise.
A. For -- for the -- for the main points of this report, the associations of some of these volatile chemicals, my opinion is that they're -- they are more likely than not the causation of Mr. Downs' kidney cancer.
THE STENOGRAPHER: "Mr. Downs'" what? I'm sorry.

THE WITNESS: Kidney cancer.

BY MR. BU:

Q. Okay. So I -- I'm not sure that answered my question. I was asking if your understanding of an as likely as not standard could be considered irrelevant to your opinions in Mr. Downs's case.

MR. ROBERTS: Objection.

A. I don't think they're irrelevant.

BY MR. BU:

Q. Okay. Your opinions are looking at whether exposure to Camp Lejeune water caused Mr. Downs's kidney cancer, correct?

A. That is correct.

Q. Okay. Would you agree that a correlation between exposure and disease is not necessarily the same as exposure causing disease?

A. Are you asking me if correlation is the same as causation? Is that --

Q. Yes.

A. Is that the question?

Then the answer is yes. I agree with your statement, it's not the same.

Q. Okay. Would you agree that part of determining whether an association is causal includes evaluating the quality of the studies

reporting an association?
A. Yes.
Q. Okay. And that evaluation would include some of those methodologies we discussed in determining whether the literature is rigorous; is that fair to say?
A. That's fair to say.
Q. So part of the evaluation of the quality of studies reporting an association includes whether chance and bias can be ruled out with reasonable confidence; is that fair to say?
A. It's fair to say.
Q. Okay. Outside of this litigation, when you review medical literature as a physician, do you consider the study's ability to rule out bias?
A. Yes.
Q. Okay. And you consider the study's ability to rule out chance; is that fair?
A. Yes.
Q. How, if at all, does the reasonable degree of scientific and medical certainty differ from the more likely than not standard you're applying for causation in Mr. Downs's case?
A. It does not.
Q. Okay. Generally speaking, how does cancer

form?

A. A sequence of mutations.

Q. Is that the only process by which cancer forms?

A. No. That's the most common. The other -- there's other mechanisms such as epigenetic changes where the gene functionality and gene expression is -- it's changed without actually causing mutation.

Q. Do all mutations lead to cancer?

A. No.

Q. Why not?

A. We -- we develop mutations at a relatively high rate. Most of them are inconsequential, and most of them are corrected. We have innate mechanisms to identify mutations and correct them.

Q. When you say, "correct it," do you mean the body has ways of correcting errors in -- in the DNA?

A. Correct.

Q. Are there other ways that the body prevents mutations from spreading?

A. Yes. So if -- in some cases when a mutation develops, it causes the immune system to destroy -- naturally destroy the cell in question. So there -- there are various mechanism of -- of

immune response to mutations. There are -- there are -- there are ways for the DNA to be repaired properly during replication, et cetera.

Q. Is another way that the body can address mutations cell death?

A. Apoptosis would be another way. Apoptosis would be another -- or cell death more commonly known is another way, but that -- that's sometimes triggered by the immune system as well.

Q. If a mutated cell is subject to cell death and does not replicate, that mutated cell would not cause cancer; is that fair to say?

A. That's fair to say.

Q. Okay. And if a mutated cell with a DNA error has that DNA corrected, that would also not cause cancer; is that fair to say?

A. That's fair to say.

Q. Would you agree that the causes of cancer are multifactorial?

A. Generally, yes. There are circumstances where there is a clear-cut single factor that causes cancer, but in most cases, I agree with you.

Q. And would you agree that the practice of medicine is not an exact science?

A. I agree with that sadly.

Q. And in your practice do you offer any guarantees to your patients?
A. No, I do not offer guarantees.
Q. Why not?
A. Because of what you just said, it's not a perfect science. There's -- occasionally, unexpected things occur.
Q. And there are many different forms of cancer; is that right?
A. Yes.
Q. Okay. And there are many forms of renal cell cancer specifically, right?
A. Correct.
Q. Okay. Of those, clear cell is the most common; is that correct?
A. That is correct.
Q. Okay. And papillary is another form of renal cell cancer?
A. Correct.
Q. And this is a less common form?
A. Yes.
Q. Would you agree that the different subtypes of renal cell cancer can have different appearances, cellular appearance?
A. That is true.

Q. Okay. And they can have different clinical characteristics?
A. Yes.
Q. The different subtypes of renal cell cancer can have different prognostic significance?
A. Yes.
Q. And the different subtypes of renal cell cancer can have different etiologies?
A. Yes.
Q. Is upper tract urothelial carcinoma a type of renal cell cancer?
A. It's not renal cell carcinoma. It's a -- it's a different -- cancer arises in a different anatomic area of the kidney.
Q. All right. And how is UTUC different than renal cell cancer?
A. It's completely different biology.
Q. When you say, "It's a completely different biology," what do you mean?
A. The biology of the cancer is different from your -- what we -- from renal cell carcinoma, meaning the different mechanisms, different mutations, different ways that it develops, different risk factors.
Q. And the way that it's treated would also be

different?

A. Correct.

Q. Okay. And its prognosis would also be different?

A. Correct.

Q. Okay. And you said it -- correct me if I'm wrong. It -- UTUC is in a different location than renal cell carcinoma?

A. Generally, yes.

Q. Okay. How so?

A. If you think about the kidney, think about a, you know -- let me make it simplistic. There's meat that filters the blood, and then there's a collecting system, the plumbing of the kidney that drains the urine. Upper tract urothelial cancer starts in the plumbing system of the kidney, so it's a -- it's a cancer of the lining. It's very similar to the bladder cancer in that way.

Q. Okay. And the renal cell carcinomas occur in what you would refer to as the meat of the kidney; is that fair to say?

A. That -- that's correct.

Q. Okay. All right. To determine whether Mr. Downs's renal cell carcinoma was caused by exposure to Camp Lejeune water, did you perform a

differential diagnosis?
A. I did.
Q. All right. In performing your differential diagnosis, you would agree that you would need to consider all the possible risks for Mr. Downs's renal cell carcinoma, correct?
A. Yes.
Q. Okay. And then you would need to rule each -- each possible risk either in or out and give each possible risk the appropriate weight; is that correct?
A. To the best of one's ability, yes.
Q. Okay. You consider those risks factors to be environmental exposures, obesity, smoking history, sex, and familiar -- familial history; is that right?
A. That's right.
Q. Okay. Are there any other risk factors that you believe have a valid basis for consideration?
A. In this case --
Q. For --
A. -- or just in general?
Q. -- renal cell carcinoma generally.
A. I think these would be the most common.

There's been -- some literature suggested that certain high blood pressure medications, certain other medications can cause kidney cancer, and certain other rare chemicals can cause it. So there -- there's probably more potential risk factors that could be at play than what's -- what's listed here, which -- which did not -- were not applicable in this case.

Q. Okay. When you refer to "high blood pressure medication," are you referring to statins?

A. There's been some -- there's been some epidemiologic literature potentially linking statins. There have been literature linking calcium channel blockers and other antihypertensive medications to kidney cancer, mostly observational data.

Q. What do you mean by "observational data"?

A. Well, you -- you observe differences between patients that are exposed to certain medications versus -- versus the ones that have not. There's no direct or -- in my -- from what I remember or from what I understand, direct mechanistic link explaining this association.

Q. Okay. So when you refer to observational data, are you referring to an observed association

between hypertensive medications and kidney cancer?
A. Correct.
Q. Okay.
A. And the literature --
Q. But --
A. -- literature is not -- also not -- not very clear-cut. There's some -- some studies that suggest that but then some others that don't.
Q. Okay. And in addition to the observational data of an association, you would also look for a mechanism between hypertensive medications and renal cell carcinoma?
A. Yes.
Q. Okay. Can you explain a little bit more what you mean the data is not clear-cut?
A. Well, you know, in some cases -- and I -- again, I'm not prepared to discuss, unfortunately, today the -- the -- how the hypertensives play into the risk of kidney cancer, but my synthesis overall of the information is such that there are -- are many studies that seem to suggest an association. There's -- there's almost as many that -- that don't.
Q. All right. Would it be fair to say that in determining whether something is a risk factor for

renal cell carcinoma, you look for consistency in the medical literature?

A. I think that's one of the parameters, yes.

Q. Okay. And if the medical literature is inconsistent, there's less evidence that that risk factor is, in fact, a cause of kidney cancer?

A. That's not necessarily true. So, I mean, you'd have to look again at the quality of the -- of the studies --

Q. Okay.

A. -- to make that decision.

Q. Do you consider hypertension itself to be a risk factor for kidney cancer?

A. It's controversial. I would say, again, it's going to be the same discussion we just had. I mean, there -- there are studies that certainly link hypertension to -- to kidney cancer. There's some -- some that -- some that don't. Again, I'm not aware of convincing mechanistic data that -- that would make this plausible.

Q. Do you consider diabetes to be a risk factor for kidney cancer?

A. Again, there have been -- just give you the same sort of answer that I just gave. I mean, there -- there have been studies that have shown

association, not entirely clear the mechanism of which -- by which this may happen.

Q. What about chronic kidney disease?

A. It's a -- it's -- that is more of an established risk factor. There's some mechanistical data that would explain this association.

Q. Is chronic NSAID use related to kidney cancer?

A. Yes, there are studies that -- that have suggested that certain -- certain types of kidney cancer and, actually, upper tract urothelial cancers are linked to -- to NSAIDs, and certain NSAIDs have been taken off the market for those reasons.

Q. What types of kidney cancer are related to NSAID use?

A. I think the -- the strongest -- the strongest association has been between NSAIDs and upper tract epithelial cancer.

Q. Okay. Is race a risk factor for renal cell carcinoma?

A. I -- there -- there seems to be slightly different distribution of different subtypes of kidney cancer among races. I -- I don't -- I don't specifically think of it as a risk factor.

Q. Okay. Is there a difference for clear cell

carcinoma?

A. Difference in what? In incidence? Mortality?

Q. In incidence among races.

A. I don't -- I don't remember actually.

Q. Okay. Is gender a risk factor for renal cell carcinoma?

A. Yes, it's -- as -- as you know, this is -- kidney cancer's more prevalent in men.

Q. Okay. Is age a risk factor for renal cell carcinoma?

A. Yes.

Q. Are you offering any opinions about what percentage of kidney cancers in the general population are attributable to these different risks?

A. I'm trying -- trying to think and be sure -- make sure I understand your question. Different way you can phrase it for me?

Q. Sure. Well, let's take -- so smoking is an established risk factor for kidney cancer, right?

A. Correct.

Q. Okay. Do you have opinions about what percentage of kidney cancers are attributable to smoking?

A. I'm not -- you know, I'm not going to offer those opinions.

Q. Okay. And obesity is another risk factor, correct?

A. Correct.

Q. Okay. Are you offering opinions about in the general population what percentage of kidney cancers are attributable to obesity?

A. I'm not offering those opinions.

Q. Okay. Are you offering opinions about how -- the magnitude by which these risk factors increase the likelihood of developing kidney cancer?

A. Not -- not in the scope of today -- of this report, no.

Q. Would you agree that patients with these risk factors may never develop kidney cancer?

A. Yes.

Q. Okay. And would you agree that patients who have none of these risk factors may still develop kidney cancer?

A. True.

Q. Okay. So just because a risk factor is capable of causing a disease does not mean that it did, in fact, cause the disease; is that fair to say?

A. That is fair to say.
Q. Okay. Would you also agree that the same risk factor may affect different individuals in different ways?
A. Yes.
Q. Okay. So, for example, a one pack-year smoking history may impact Patient A's cancer risk more than a one pack-year smoking history would affect Patient B's cancer risk; is that fair to say?
MR. ROBERTS: Objection.
A. That is possible.
BY MR. BU:
Q. Would you agree that risk factors may also have a dose-response relationship?
A. Yes.
Q. Okay. What does a dose-response relationship mean to you?
A. It means the -- the probability of developing an index cancer is higher with increasing doses of exposure.
Q. You had mentioned earlier that cancer is formed by a sequence of mutations; is -- do you recall that?
A. Yes.
Q. Would you agree that those mutations can

occur randomly?
A. Yes.
Q. And would you agree that those mutations often do occur randomly?
A. Yes.
Q. Okay. When you were developing your list of risk factors for renal cell cancer, were there any specific sources or articles that you consulted?
A. No.
Q. So how did you develop this list of risk factors for your report in Downs?
A. Based on my cumulative training and prior sort of studies that there was -- there were done in this field.
Q. Can you explain a little bit more how a risk factor may differ from a cause of cancer.
A. Interesting question. I would say a bit -- a bit arbitrary distinction. I -- when -- when you say -- when I tell somebody that, "This is the cause of your cancer," it's -- it's -- I'm certain that -- that that specific entity or insult contributed directly to a formation of somebody's cancer. If we talk about risk, you know, you can say -- you can tell somebody, "Listen, you're at a risk of this, but the" -- "the cancer hasn't necessarily developed

yet."

Q. If a risk factor contributed directly to someone's cancer, are you excluding the contributions of other risk factors, or are you still considering the contributions of those other risk factors?

A. I don't think one has to exclude the contributions necessarily.

THE STENOGRAPHER: I'm sorry. Could I ask you to repeat that?

A. I don't think one has to exclude the other risk factors from consideration.

BY MR. BU:

Q. Is it fair to say that some cancers have no known cause?

A. That is fair to say.

Q. All right. Do physicians in your -- in your field refer to these cancers as idiopathic?

A. Yes.

Q. And is this a term that you're familiar with?

A. Yes.

Q. Okay. Would you agree that no known cause is not the same thing as no cause?

A. Yes.

Q. So a -- an idiopathic cancer would still be caused by something, correct?
A. Well, it's still a cancer. It's still a consequence of mechanisms that we've described earlier that can cause cancer.
Q. And if it's idiopathic, that just means that we haven't identified the particular mechanism for that cancer; is that fair to say?
A. That's fair to say.
Q. Would you agree that the majority of kidney cancer cases have no known cause?
A. That's true.
Q. So would it be fair to say that idiopathy accounts for more than half of cases of kidney cancer?
A. I don't know the exact number, but majority are idiopathic, yes, meaning we don't know what caused them.
Q. Would you agree that we don't fully understand all of the causes of kidney cancer?
A. I think that's fair to say.
Q. And the medical community is still continuing to identify new potential causes of kidney cancer?
A. Yes.

Q. In your experience treating kidney cancer patients, are unexplained causes common?

A. So you're asking me if in my practice, is the idiopathic variety of kidney cancer, quote, unquote, the most common? Probably.

Q. Okay. Would you agree that in any given kidney cancer case, there's a strong likelihood of a currently unknown cause?

A. Yes.

Q. In your clinical practice, what percent of clear cell renal cell carcinomas are idiopathic?

A. I would say probably 60 percent, something in that range.

Q. Okay. Are other subtypes of kidney cancer more or less likely to be explained by idiopathy?

A. They're probably similar numbers.

Q. Okay. So is it fair to say that right now, we don't know all of the possible risks for renal cell carcinoma?

A. I think that's fair to say.

Q. Are you familiar with any literature explaining what might be the cause of these idiopathic cases?

A. Literature that -- I mean, there's a lot of literature that looks into molecular biology of

kidney cancer. I'm not sure I -- so I'm familiar with -- that literature exists, and I think there is -- there's varying hypotheses of what can cause kidney cancer. I'm not sure I can -- how to further answer this.

Q. Okay. Well, we discussed earlier that cancer is a sequence of mutations, right?

A. Yes.

Q. And those mutations can occur randomly, correct?

A. Yes.

Q. Okay. So would it be -- would it be fair to say that some idiopathic cases might be explained by random genetic mutations?

A. Yes.

Q. Would it be fair to say that some idiopathic cases might be explained by unidentified environmental exposures?

A. Yes.

Q. Okay. And some idiopathic cases might be explained by unidentified carcinogens, things that we just don't know are cancerous yet?

A. Yes.

Q. We may have discussed this already, and if so, I apologize. Would you agree that it's possible

for a member of the general public to develop kidney cancer without exposure to any potential risk factor?

A. Yes.

Q. Okay. And that means that it would be possible for someone at -- someone in the general public to develop kidney cancer without any exposure to Camp Lejeune water, for example, correct?

A. Yes.

Q. Would it be fair to say there's always some background risk for developing kidney cancer?

A. There must be.

Q. Are there any health protective steps someone can take to reduce their risk of kidney cancer?

A. Yes.

Q. What are some of those steps that someone can take?

A. Healthy lifestyle, stop smoking. These are -- probably would be the most common things to do. So, for example, if you're unhealthy, diabetic, hypertensive, obese, then those things can be corrected. Obviously, the easiest thing to do -- the most actionable in my practice is smoking.

Q. Okay. Are there any dietary changes

someone can make to reduce their risk of kidney cancer?

A. It's not entirely clear.

Q. Okay. Would it be fair to say that compared to other cancers, kidney and renal pelvis cancer are fairly common?

A. I'm not sure how to answer that. Compared to some cancers, yes, more common.

Q. Okay. Would they be in the top ten most common cancers excluding skin cancer?

A. It's pretty close, yeah.

Q. Would it be fair to say there are about 80,000 new cases of kidney cancer every year?

A. Yes.

Q. All right. And that kidney cancer is about 4 percent of all new cancer cases in the United States?

A. I think that's probably correct.

Q. Are you familiar with SEER, S-E-E-R?

A. SEER database?

Q. Yes.

A. Yes.

Q. Okay. And what is SEER database?

A. It's a national database of multiple participating sites where -- that logs various

cancers and their treatments and outcomes.

Q. Okay. Have you ever used SEER data -- the SEER database in your academic work?

A. Yes.

Q. Do you refer to the SEER database in your clinical work?

A. Meaning when I speak with patients? Generally not.

Q. Do you consider the SEER database to be a reliable source of information?

A. I mean, it's -- every database will have its downsides and its biases and -- but, yes, I mean, generally, I consider it to be reliable.

Q. Okay. And so if, for example, SEER reported that there were 80,000 new cases of kidney cancer in 2025, you'd have no reason to dispute that number; is that fair to say?

A. I don't think that number should come from SEER because SEER does not capture the entirety of the demographics of the United States. So SEER is based on -- as far as I understand, I'm not an expert in this case, but SEER is based on certain participating sites that -- that -- that input these cases into the database.

Q. Would it be fair to say the number of new

cases in 2025 is at least 80,000?
A. I think that's fair, yeah.
Q. Okay. If SEER reported that the lifetime risk of developing kidney and renal pelvis cancer is 1.8 percent, would you have any reason to disagree with that number?
A. Only in -- in -- as far as to say in -- within the -- the sample of the population that's specifically sampled by SEER and understanding the limitations of the database, meaning that it doesn't capture the entirety of the U.S. population.
Q. It only would capture the participating sites, correct?
A. Correct.
Q. If you wanted to determine the lifetime risk of developing kidney and renal pelvis cancer, are there other resources that you would look at?
A. I would peruse epidemiologic literature to see what resources are available and -- and go from there.
Q. Okay. Is SEER one of the resources that you would look at?
A. It could be, yeah.
Q. All right. The 1.8 percent lifetime risk would include all possible causes of kidney cancer,

correct?

A. I mean, assuming -- yeah. Yes.

Q. Would you agree that determining the cause of disease should take into account the background risk of that disease?

A. What do you mean? So you have to tell me, what do you mean by "background risk"?

Q. All right. So there's some background risk that people will develop kidney cancer, right?

A. Uh-huh.

Q. All right. So if we want to determine the cause of a kidney cancer, would we also have to consider the possibility that it was caused by some of this background risk?

A. Yes. I mean, it -- okay. Sure.

Q. And you consider Camp Lejeune water to be one of the risk factors for kidney cancer; is that right?

A. Yes.

Q. Okay. And to reach that conclusion, you reviewed the general causation reports of Dr. Hatten and Dr. Bird?

A. That's correct.

Q. Okay. Do you rely on those analyses for your opinions in Mr. Downs's case?

A. I do.
Q. Okay. Did you review any other general causation reports?
A. I did not.
Q. Okay. So you did not review the general causation report for the United States's expert, Dr. Julie Goodman?
A. I did not.
Q. Okay. Did you ask to review any other general causation reports other than those of Dr. Hatten and Dr. Bird?
A. I did not.
Q. Okay. And do you also rely on the reports of Dr. Hatten and Dr. Bird -- I'm sorry, take a step back.
Would you agree that dose-response is relevant to determining the risk for exposures to Camp Lejeune water similar to determining the risk for other risk factors?
A. You're asking me if -- if dose-response is important in your assessment of -- of risk of a certain exposure? I think it's -- yeah, it's part of it, yeah.
Q. Okay. Do you rely on the reports of Dr. Hatten and Dr. Bird to understand the

dose-response relationship for exposures to Camp Lejeune water?

A. Yes.

Q. And do you rely on the reports of Dr. Hatten and Bird to determine the levels at which chemicals at issue are hazardous to humans and known to cause kidney cancer?

A. Yes.

Q. All right. Other than Dr. Hatten and Dr. Bird's reports, are there other reports that you considered to determine the levels at which the chemicals at issue are hazardous?

A. No. You mean outside of the literature that I cite in my -- in my report? So --

Q. So that's the next question.

Is there literature that you refer to to determine the levels at which the chemicals at issue are hazardous?

A. The literature is the same that -- that the general causation experts have used.

Q. To the best of your knowledge, did you review any literature that was not cited by the general causation experts, Dr. Hatten and Dr. Bird?

A. As far as I know, no.

Q. Okay.

MR. BU: Let's take a five-minute break.

THE VIDEOGRAPHER: All right. We are off the record at 9:55.

(Break taken, 9:55 a.m. to 10:04 a.m.)

THE VIDEOGRAPHER: We are back on the record at 10:04.

BY MR. BU:

Q. Dr. Margulis, did you speak with anyone about your deposition testimony during the break?

A. I did not.

Q. Is there anything that you testified to that you'd like to clarify or correct?

A. Not that I can think of.

Q. Okay. Did you review the IARC working group's monograph on TCE and PCE for your report?

A. Yes.

Q. Would you agree that IARC in its review of studies in humans determined there was no consistent pattern of elevated risk observed for cancer of the kidney?

A. I think that was the statement that they made, yes.

Q. Okay. And I should clarify, that's in -- with respect to PCE, correct?

A. Correct.
Q. Would you agree that IARC also determined that many of the studies looking at PCE failed to account for coexposure to TCE, which has been associated with cancer of the kidney?
A. Yes.
Q. And would you agree that the cohort studies that IARC looked at generally did not find an association between PCE exposure and cancer of the kidney?
A. I think they -- I -- I don't remember the exact studies they cited, but I thought their -- the evidence was mixed where there were some studies that did and some studies that didn't.
MR. BU: Can we pull Tab 4, please? And can we mark this Exhibit 2.
(Exhibit No. 2 marked.)
BY MR. BU:
Q. So I've handed you what's been marked Exhibit 2. This is an excerpt from the IARC monograph. It's the section on PCE. Can you turn to page 327 of that exhibit for me, please.
Are you there?
A. Yeah.
Q. Okay. Do you see that paragraph on the

left-hand column that begins, "For cancer of the kidney"?

A. Yes.

Q. And IARC reports that, "For cancer of the kidney, some case-control studies were suggestive of a positive association for occupations involving exposure to tetrachloroethylene." Is that right?

A. Yes.

Q. All right. And tetrachloroethylene is PCE, correct?

A. Correct.

Q. IARC goes on to report, "However, the cohort studies generally did not find an association between tetrachloroethylene exposure and cancer of the kidney, and most studies did not evaluate or fail to show positive exposure- or duration-response relationships; is that correct?

A. That is correct.

Q. And IARC goes on to say, "The studies also did not account for coexposure to trichloroethylene, which has been associated with cancer of the kidney in many other studies"; is that correct?

A. That is correct.

Q. Accounting for coexposures to other chemicals associated with kidney cancer risk, like

TCE, it would be important to rule out confounding; is that fair to say?

A. That is fair to say.

Q. Okay. And when the evidence of the studies is mixed, we should look at the rigor or the methodology of those underlying studies; is that fair to say?

A. Yes.

Q. And one of the things that we should look at is whether the study design is a case-control study or a cohort study; is that fair to say?

A. Yes.

Q. Do you refer to IARC's conclusions regarding PCE and kidney cancer in your report?

A. I think I cite it in my report. I don't remember.

Q. Do you recall whether you cite it for PCE specifically?

A. I don't recall.

Q. Okay. Why would you refer to IARC's findings in your report?

A. Well, I mean, IARC is a notable sort of body of -- body of literature. I mean, I think it's -- it's -- it would be -- I would be remiss not to at least include it in my -- in my bibliography.

Q. Do you refer to IARC in other of your academic publications?

A. I can't remember an instance where I did.

Q. Okay. What make IARC a notable body of literature?

A. Well, I mean, it's a synthesis of -- the authors of this, I think, do a good of synthesizing the most relevant and available literature.

Q. Is IARC considered a reliable resource by practitioners in your field?

A. Frankly, if you talk about practicing medicine on a day-to-day basis, this is not something that's -- that's utilized by practitioners if you -- very -- very frequently.

Q. Okay. Did you also review the ATSDR's assessment of the evidence in your report?

A. Yes.

Q. ATSDR also concluded that there was below equipoise evidence for causation for PCE and kidney cancer; is that correct?

A. Yes.

Q. And you do not refer to ATSDR's conclusion as to PCE in your report when you discuss PCE, do you?

A. It -- I don't think I do.

Q. Did you conduct a PubMed search for PCE in preparing your report?

A. I did.

Q. Okay. And why did you conduct a PubMed search for PCE?

A. Mainly wanted to see if my review of the literature and -- and -- coincided and corresponded well with -- with the general conditions experts to make sure there was something that -- that -- that I should look at that they didn't.

Q. Okay. Did your PubMed search for PCE identify any studies that found no association between exposure and kidney cancer?

A. To PCE specifically?

Q. Yes.

A. Yes.

Q. Okay. Do you offer critiques of those studies -- you identify those studies in your report?

A. I believe so.

Q. And do you offer critiques of those studies?

A. I do not.

Q. In your report you also opine that vinyl -- Mr. Downs was exposed to vinyl chloride. Sorry. Do

you recall that?
A. Yes.
Q. Okay. Is your opinion that vinyl chloride causes kidney cancer?
A. Yes.
Q. Are you aware of any other agencies that have determined that vinyl chloride causes kidney cancer specifically?
A. I can't recall.
Q. Did you review any epidemiological literature looking at vinyl chloride and kidney cancer specifically?
A. I -- I did a brief PubMed search. I reviewed the literature available briefly.
THE STENOGRAPHER: I'm sorry, say that -- you "did a brief" what?
THE WITNESS: I reviewed the literature briefly.
BY MR. BU:
Q. Okay. Would you agree that vinyl chloride is most strongly associated with liver cancer?
A. I -- I think that's correct.
Q. And most of the evidence of the carcinogenicity of vinyl chloride is related to liver cancer; is that fair to say?

A. Yes. And a rare subtype of liver cancer, if I understand correctly.

Q. If Dr. Bird and Dr. Hatten do not offer opinions about the levels of vinyl chloride that cause kidney cancer, would you be offering any opinions about the levels of vinyl chloride that cause kidney cancer?

A. No, I would not be.

Q. Okay. Are you offering any opinions in this case related to benzene?

A. I do not.

Q. Okay. And you would agree that Mr. Downs was not exposed to benzene; is that fair?

A. It's -- to -- to the best of my knowledge, it's -- it's unclear if he was exposed, yeah.

Q. If Dr. Reynolds did not determine that Mr. Downs was exposed to benzene, would you have any reason to think that he was, in fact, exposed to benzene?

A. I would not.

Q. Okay.

A. I'm sorry, are we -- are we done with this? Can I close it or -- IARC, or you want me to keep it open to a certain page?

Q. You can set Exhibit 2 to the side, yes.

A. Yeah. Okay.
Q. All right. Can you go back to your report, Exhibit 1, and turn to page 15 for me, please. Okay. On --
A. I'm there.
Q. On page 15 and going on to page 16 of your report, you list 23 different levels of exposure to TCE and PCE; is that right?
A. That is correct.
Q. Okay. How did you develop this list of levels of exposure?
A. Based on reports -- general causation reports of the studies that they reviewed, the -- and those levels were associated with kidney cancer.
Q. Okay. When you say, "the general causation reports," you're referring to Dr. Hatten and Dr. Bird; is that right?
A. That is correct.
Q. Okay. All right. The first level that you cite is, "Cumulative exposure to 27.1 to 44.1 milligrams of PCE"; is that right?
A. That's correct.
Q. Okay. And the cite for this is to Aschengrau's 1993 article; is that right?
A. That's right.

Q. Okay. Did you review the Aschengrau study in preparing your report?

A. I did.

Q. The 27- to 44-milligram of PCE exposure range reflected the 90th percentile of those exposed in the study; is that correct?

A. Yes.

Q. Okay. And none of the kidney cancer cases in the Aschengrau study were exposed to that level of PCE; is that correct?

A. That's correct.

Q. The Aschengrau study also concluded that, "No kidney cancer cases were considered exposed when latency was taken into account and no meaningful increases in the risk of kidney cancer were detected without latency"; is that correct?

A. That's correct.

Q. Okay. And IARC when it discussed Aschengrau also made the same observation that none of the kidney cancer cases in that study were classified as exposed to PCE; is that correct?

A. Correct.

Q. When you looked at Aschengrau, did you consider whether that study controlled for smoking?

A. I have to look at the study. I -- I think

they -- I think they attempted to do something, but I don't -- I don't recall.

Q. Okay. All right.

MR. BU: Can we pull Tab 11, please. And I think we're on Exhibit 3.

(Exhibit No. 3 marked.)

MR. BU: Thank you.

BY MR. BU:

Q. You can take a moment to review Aschengrau, but my question is still whether this study controlled for smoking as a confounder.

A. (Reviews document.)

Well, they -- they state here, "Our rule of thumb was that at least three cases had to have positive history of a potential confounder for it to be controlled. Prior medical treatment with radiation was included in the leukemia analysis, usual number of cigarettes smoked, and history of urinary tract infection or stones were included in the kidney cancer analysis."

Q. But there were no cases of kidney cancer once latency was taken into account, correct?

A. That is correct.

Q. So if there were no cases of kidney cancer, would they have been able to control for smoking?

A. No.
Q. Okay.
A. And i believe my answer was they attempted to do it, but, yeah.
Q. Okay. Going back -- you can set Exhibit 3 to the side.
Going back to your report on page 15 and 16, the second level that you cite is, "Exposure to a TCE concentration of greater than 76 ppb"; is that right?
A. Correct.
Q. And a ppb is a part per billion; is that right?
A. Correct.
Q. All right. This reflects a concentration of contaminant in a medium?
A. Yes.
Q. This level comes from a study by Moore in 2010; is that right?
A. Correct.
Q. All right. Did you review that study in preparing your report?
A. Yes.
Q. A 76 ppb does not reflect a cumulative exposure; is that fair to say?

A. It's fair to say.
Q. Would you agree that the duration of exposure to a given concentration is relevant to determining whether that exposure can cause disease?
A. Yes.
Q. So for example, an exposure to 76 ppbs of TCE every day for 20 years would be more likely to be causal than an exposure to 76 ppbs of TCE once a month for one year?
A. I'm not sure I have enough data to make that conclusion. I mean, there are certainly certain magnitude levels that would be important, right? If you're exposed to too much at one time, there could be enough to be -- to be carcinogenic, right? I think that's the point that they're trying to make in -- in that paper.
Q. Okay. So would you say in addition to the duration of the exposure, you would need to consider the frequency of the exposure to that concentration?
A. Yes, frequency and the magnitude of the exposure itself.
Q. Would the magnitude of the exposure change if the concentration is the same?
A. No.
Q. All right. So in your earlier testimony

you're using magnitude and concentration interchangeably; is that right?

A. I think that's reasonable, and there are exceptions to that. For example, I mean, you can have the same -- you can be exposed to the same concentration of a substance in a medium, but, you know, if the medium is ingested versus inhaled versus absorbed through the skin, there can be a difference in -- in actual individuals' cumulative exposure at the same concentration. Is that -- is that fair?

Q. Okay. So the route of exposure is also relevant to determining risk?

A. Yes.

Q. Okay. Does the medium of exposure also matter like the differences between concentration in air and the concentration in water?

A. I suspect that's the case. I think that's a little bit outside my area of expertise.

Q. Okay. Do you know whether ppb concentrations are measured the same in air as they are in water?

A. I don't know how specific the concentrations are measured. Usually, the -- something's measured in an air medium it's reported

as parts per billion versus usually, the concentrations in -- in a liquid would be, you know, micrograms per liter. But other than that, I don't know how exactly the concentrations are measured. I mean, I suspect there would be some mass spectrometry involved, et cetera. I don't know.

Q. Okay. For the Moore study, would you agree that the median duration of exposure for cases in that study was 19 and a half years?

A. Yes.

Q. Okay. And the interquartile range for durations of exposure were from 5.8 years to 31 years?

A. I don't -- you know, probably best you show me the study. I don't -- I don't --

Q. Okay.

A. -- have these numbers memorized. I -- I don't have any reason to disagree with you.

Q. Okay.

A. I don't -- I don't remember the exact numbers that you're quoting me.

Q. That's fine.

MR. BU: Let's pull Exhibit 12 -- or Tab 12. Sorry.

(Exhibit No. 4 marked.)

MR. BU: Thank you.

BY MR. BU:

Q. I have handed you what's been marked Exhibit 4. This is the Moore 2010 study. Is this the study that you reviewed in preparing your report?

A. Yes.

Q. Okay. Can you turn to page 6531 for me, Table 1.

A. I'm there.

Q. All right. And in this table, the authors describe the different durations of exposure and other medians and interquartile ranges; is that right?

A. Yes.

Q. Okay. And do you see the footnote describing the median exposure and interquartile range -- sorry -- the median duration of exposure and interquartile range?

A. Yes, I do.

Q. Okay. And Moore reports the median and -- duration of exposure is 19.5 years, right?

A. That's correct.

Q. And the interquartile range is 5.8 to 31 years; is that correct?

A. That's -- that seems to be correct, yes.
Q. And what is an interquartile range?
A. So range of -- range of numbers -- so you -- you quartile the patients into quartiles and what -- what is the range of findings you find in each quartile.
Q. And the interquartile range is the median 50 percent, from the 25th percentile to the 75th percentile --
A. Correct.
Q. -- is that right?
A. Correct.
Q. Okay. And we use an interquartile range -- or I should say -- strike that.
In your experience, are interquartile ranges used to get an understanding of what the average patient or case would look like?
A. Well, yes, but also to understand the -- what the spread is.
Q. When Moore was looking at exposure concentrations of 76 parts per billion, do you know whether they were looking at concentrations in air or in water or in some other medium?
A. I suspect it was in water. No, I don't remember exactly, to be honest with you.

Q. Okay. Was Moore primarily an occupational study?

A. Yeah. It was in drinking water, I believe.

Q. Okay. You also cite Moore in support of 1,580 ppb-year exposure being associated with kidney cancer; is that right?

A. Yes.

Q. And 1,580 ppb-years describes a cumulative exposure; is that right?

A. That is correct.

Q. And your understanding is, like the 76 ppb concentration, this ppb-year exposure is referring to exposures to contaminated water?

A. I would have to double-check that. I don't remember exactly the medium in the study, to be honest with you.

Q. Okay. And when we're discussing the 1,580 ppb-year exposure, this is exposure also to TCE; is that right?

A. Yes.

Q. Okay. The title of this article is, "Occupational Trichloroethylene Exposure and Renal Carcinoma Risk"; is that right?

A. Yes.

Q. So this study is primarily looking at

occupational levels of exposure; is that right?
A. Yes.
Q. In your report, the fourth -- you can set aside the Moore study, if you'd like.
In your report, the fourth level that you cite is a "Sustained exposure to 0 to 25.3 ppb of TCE"; is that right?
A. Yes.
Q. Okay. And this level comes from a study by Andrew in 2022; is that correct?
A. Correct.
Q. Okay. 0 to 25.3 ppb is also describing a concentration, right?
A. Yes.
Q. Okay. And it is not describing a cumulative exposure?
A. That's correct.
Q. Okay. So similar to our understanding in Moore, our understanding of the level in Andrew would need to consider also the duration and frequency of exposure; is that fair to say?
A. I mean, I think it's -- it's a consideration, yes.
Q. It depends on what?
A. It's a consideration also, yes.

Q. Okay. This study looked at five-, ten-, and 15-year exposure periods; is that correct?
A. Yes.
Q. Okay.
A. And, again, I think -- Counselor, I think if you're going to ask me specifics, I'd like to have this in front of me if possible.
Q. Sure.
MR. BU: Can we pull exhibit -- Tab 13? Actually, sorry. Hold on. This is 14. They may be misnumbered. We're looking for Andrew.
MS. JOHNSON: I messed it up.
MR. BU: No, it's okay. It's this one.
(Exhibit No. 5 marked.)
A. Is this Exhibit 5?
BY MR. BU:
Q. Yes. So I've handed you what's been marked Exhibit 5. This is Andrew 2022. Take a moment to look over the exhibit, and let me know when you're ready.
A. (Reviews document.)
Okay.
Q. Is this the same Andrew 2022 article that you reviewed in preparing your report?

A. Yes.
Q. Can you turn to page 5, Table 2 for me, please.
A. Okay.
Q. Okay. And Andrew looked at different durations of TCE exposure; is that right?
A. Yes.
Q. Okay. And they looked at a five-year median, a ten-year median, and a 15-year median duration of exposure?
A. Correct.
Q. Okay. And Andrew only reports a statistically significant odds ratio for the 15-year median exposure; is that right?
A. Yes.
Q. And they only do so for the 50th to 75th percentile exposure?
A. Are you referring to the p-values being -- approaching statistically significant? Is that -- is that -- is that how you define. . .
Q. Well, let me ask it this way.
How do you define statistical significance?
A. Well, the -- the causation is more likely than not attributed to the error.

Q. To random error?
A. Yeah, it's not attributed to random error, right? So -- so here, I mean, I -- I'm just -- I'm asking if you're asking about the p-values that are -- that are attached to this, or -- or how do -- how do you determine --
Q. All right. Do you see in the far right-hand --
A. Yeah.
Q. -- column there's a heading, "OR (95 percent CI)"?
A. Yes.
Q. Okay. And OR is an odds ratio, correct?
A. Correct. Correct. Yes.
Q. And an odds ratio is one way of measuring whether there is an association between exposure and disease; is that right?
A. Yes.
Q. Okay. A CI is a confidence interval; is that right?
A. Correct.
Q. And 95 percent reflects the level of significance testing that's being imposed; is that right?
A. Yes.

Q. Okay. Here the 95 percent confidence intervals are reported as a range in parentheses in that right-hand column; is that right?

A. That's right.

Q. And by convention, an odds ratio would be considered statistically significant if the confidence interval is either entirely greater than 1 or greater less than 1; is that fair to say?

A. Well, ideally, your -- your -- your confidence interval does not cross 1 one way or the other.

Q. And if the confidence interval does cross 1, it would be considered statistically insignificant; is that right?

A. Yes.

Q. Okay. And if the confidence interval crosses 1, we would not be able to reliably exclude random error as an explanation for the association; is that right?

A. It's -- it's less -- you know, when -- when the confidence interval crosses 1, it's less statistically significant, yes.

Q. Okay. And if it's less statistically significant, that diminishes our ability to exclude random error as an explanation for the association?

A. It diminishes it to some degree, yes.
Q. Okay. For Andrew 2022, the only odds ratio that does not cross 1 is for the 50th to 75th percentile of exposures in the 15-year median exposure duration; is that right?
A. That -- that's correct.
Q. Okay. And when Andrew looked at similar durations of exposure for the 75 percentile, greater concentration levels, the relationship was no longer statistically significant; is that right?
A. Right.
Q. And, in fact, the odds ratio became less than 1; is that correct?
A. Yes.
Q. So at these higher concentration levels, Andrew reported a decreased incidence of disease; is that fair to say?
A. What -- that's -- that's what -- yeah, that's what's written here, yes.
Q. Okay. And this is the opposite of what we would expect to see with a dose-response relationship?
A. Yes, it doesn't go along with a dose, yes.
Q. Okay. The 50th to 75th percentile concentration reflects a range of concentrations; is

that right?
A. Yes.
Q. All right. And you would agree that the risk of kidney cancer is affected by whether the exposure is to a concentration at the low end of that range versus the high end of that range?
A. Again, are you asking about the dose-response --
Q. Uh-huh.
A. -- concept? That --
Q. Yes.
A. Is that -- yes.
Q. All right. So there's a -- there would be some difference between being exposed to 1 microgram per liter of TCE versus 25 micrograms per liter of TCE; is that right?
A. Potentially, yes.
Q. Okay. And in Andrew, the range includes anything greater than 0; is that right?
A. Yes.
Q. Okay. Is your opinion that any exposure to TCE greater than 0 parts per billion causes kidney cancer?
A. Potentially, yes.
Q. Is your opinion that any exposure above 0

parts per billion is the level at which TCE can cause kidney cancer?

A. No. You have to look at specific exposure duration. The -- the -- there -- there's a lot of possibilities when you say, "greater than 0."

Q. Okay. Would you need to look at whether the exposure duration is comparable to the exposure durations in Andrew?

A. Yes.

Q. Okay. You can set Andrew aside, and we'll go back to your report.

All right. Levels 5 and 6 come from a study by Parker in 1981; is that correct?

A. Yes.

Q. Okay. And these were based on residential exposures in Woburn, Massachusetts?

A. I believe so.

Q. Okay. And the ppb values that you refer to in 5 and 6 refer to ppbs in water; is that right?

A. I'd have to -- you have to show me the study. I believe so.

Q. Okay. Well, it was a residential -- Parker was a residential water --

A. Yeah. So it has to be --

Q. -- case in --

A. -- water, yeah.
Q. -- Woburn.
A. Yeah.
Q. All right. Okay. After Item 6, Items 7 through 23, these all come from either Dr. Bove or the ATSDR; is that correct?
A. That's correct.
Q. Okay. And items 7 through 23 are all related to studies of cohorts at Camp Lejeune; is that correct?
A. Yes.
Q. All right.
MR. BU: All right. Can we pull Tab 8?
(Exhibit No. 6 marked.)
BY MR. BU:
Q. I've handed you what's been marked -- I'm sorry -- Exhibit 6, and this is Dr. Bove's 2014 Marine mortality study. Did you review this study in preparing your report?
A. I did.
Q. Okay. And is this one of the studies that you referred to to determine the levels of exposure that are capable of causing kidney cancer?
A. Yes.

Q. Okay. And in this study, Dr. Bove and his coauthors divide different exposures into low-, medium-, high-exposure categories; is that right?

A. That's correct.

Q. Okay. And they do so for total VOCs, TCE, PCE, and vinyl chloride; is that right?

A. That's right.

Q. Okay. And the levels that you describe in your report on page 15 refer to these low-, medium-, high-exposure categories; is that correct?

A. Correct.

Q. In your report, you refer to "cumulative exposure to all compounds at Camp Lejeune." Do you recall that?

A. Yes.

Q. Okay. And when you refer to "all compounds at Camp Lejeune," this is the same as TVOC; is that right?

A. Correct.

Q. Okay. Dr. Bove also looked at a total hazard ratio for all exposures; is that correct?

A. Yes.

Q. All right. And is this hazard ratio reported on Table 5 on page 8?

A. Yes.

Q. Okay. The hazard ratio that's reported for all exposures in kidney cancer is also not statistically significant; is that right?

MR. ROBERTS: Objection.

A. Do you mean that the confidence interval crosses -- by your definition of confidence interval crossing 1 --

BY MR. BU:

Q. Yes.

A. -- is that correct? Yes, that -- that meets that definition, although I don't think it's -- it's very common in epidemiologic studies to cross -- to cross 1, so that's not -- that's not -- it doesn't say that the findings are insignificant.

Q. Well, isn't the convention if the confidence interval crosses 1, that it is not statistically significant?

A. It's -- it lessens the strength of the finding, but, again, it's very common to -- to find those types of associations in this -- in epidemiologic studies just in general. I think if we were talking about a randomized clinical trial that was specifically designed to answer a question and then that happened, I think I would give it a different weight, that finding a different weight.

But in epidemiologic studies, especially case-control studies, it's not a -- it's not an uncommon scenario to -- to see this type of result.

Q. Okay. Is that because you would expect a randomized control trial to be better at ruling out random error than a case-control --

A. Yes.

Q. -- study?

Okay. Why is a case-control study less able to rule out random error?

A. Well, we talked about it. You know, there are confounders, things that -- that may be within the trial design impossible to adjust for, you know misattribution bias, misclassification bias, things like that.

Q. Okay. All right. Earlier, when we were discussing statistical significance you also referred to p-values. Do you recall that?

A. Yes.

Q. Okay. And here the p-value is reported as 0.19 for kidney cancer; is that right?

A. That's correct.

Q. What is your understanding of a p-value?

A. P-value is probability of -- of a null hypothesis being correct.

Q. And the null hypothesis would be that there is no true association between exposure and disease; is that right?

A. That's correct.

Q. Okay. And a p-value is another conventional way of expressing statistical significance; is that fair to say?

A. That's true.

Q. Okay. Do you know whether this study was able to control for smoking?

A. I think they did it indirectly by -- by looking at diseases that are -- that were known to have smoking as causation and looking to see if there was difference between cases of controls in those studies in cancer incidence of smoke -- specifically diseases that are -- that are related to smoking.

Q. Okay.

A. So not -- not directly by measuring tobacco use but by doing some of the secondary analyses, which I think are reasonable.

Q. Okay. Would looking for diseases associated with smoking like COPD be a less reliable way of controlling for confounding than directly measuring smoking exposures?

A. Yes.
Q. And this study, Bove 2014, looked at a Camp Lejeune cohort, not the entire Camp Lejeune population; is that right?
A. Well, this particular study -- there's two studies. One looked at the Marines and one looked at the civilian population, right? So what you're showing me here were the Marines and Navy personnel exposed, yeah. Is that -- is -- is that -- I'm sorry. Make sure -- make sure I'm understanding your question.
Q. No. I guess what I'm asking is, is there a difference between a cohort in a population or a sample in a population?
A. Yeah, I mean, a population looks -- the entire population, a sample looks at a specific sample of it.
Q. Okay. And for this Camp Lejeune cohort, they were only looking at Marines who began service from 1975 to 1985; is that right?
A. That's correct.
Q. So they're not looking at Marines during the entire time Camp Lejeune existed, right?
A. That's true.
Q. Or the entire time that the water at Camp

Lejeune was detected to have contamination?
A. Fair.
Q. Okay. And Mr. Downs would not have been included in this cohort because he began service at Camp Lejeune before 1975; is that right?
A. That's right.
Q. Do you know whether the levels of contamination that Mr. Downs was exposed to are comparable to the levels of contamination at Camp Lajeune between 1975 and 1985?
A. I don't know the exact numbers. I don't have any reason to believe they wouldn't be.
Q. Okay. Did you make any comparison between Mr. Downs's levels of exposure and the levels of contamination at Camp Lejeune between 1975 and 1985?
A. I did not personally.
Q. Okay.
MR. BU: Can we pull 41?
A. Am I -- wait. We're good with this? Yeah.
BY MR. BU:
Q. Yes, you can set that aside.
MR. BU: Actually, it may no longer be 41. I'm sorry. 20.
(Exhibit No. 7 marked.)
MR. BU: Thank you.

BY MR. BU:

Q. Do you recall whether Bove's 2014 article included supplemental tables?

A. I believe it did.

Q. All right. And those supplemental tables describe the different hazard ratio for the different categories of exposure to different chemicals; is that right?

A. That's right.

Q. Okay. And the different categories of exposure are those low-, medium-, high-exposure groups that we discussed earlier; is that right?

A. Yes.

Q. Okay. Did you review the supplemental tables when you prepared your report?

A. Yes.

Q. Okay. For kidney cancer, were any of the hazard ratios for any of the categories of exposure found to be statistically significant?

A. Again, I'm just going to say that the -- in -- in all cases, the hazard ratios crossed the 1 threshold.

Q. When you say, "all cases," you mean for all categories of exposure?

A. For all categories of exposure --

Q. Okay.
A. -- correct.
Q. Okay. And that's the case both for TCE and for PCE, correct?
A. Yes.
Q. All right. And the number of cases was -- in this study for kidney cancer was 42; is that correct?
A. Correct.
Q. All right. And so for the different categories of exposure the number of cases may range from, you know, eight to 11; is that right?
A. Yes.
Q. Okay. The small number of cases included in this study would diminish its statistical power; is that fair to say?
A. Yes.
Q. Okay. And this would make it more difficult to exclude random error?
A. Yes.
Q. All right. You can set that exhibit aside.
In your report on page 15, Item 17 is, "Employment on base 2.5 years."
Do you see that?
A. Yes.

Q. Okay. This is referring to a civilian study; is that right?
A. Yes.
Q. Okay. And Mr. Downs was not a civilian during his time at Camp Lejeune, correct?
A. He was not.
Q. Okay. And he was also not working at the base for two and a half years; is that correct?
A. Yes.
Q. Item 18, "Cumulative exposure to 110 to 11,030 ppb-months of TCE," and the other references to footnote 38 refer to ATSDR's 2018 morbidity study; is that correct?
A. Correct.
Q. Okay. And this was -- I'm sorry. And these levels were also not reported as statistically significant; is that correct?
A. Well, again, the hazard ratio did cross the boundary of 1.
Q. Okay. All right. And Items 22 and 23 citing footnote 39 refer to Bove's 2024 "Cancer Incidence" study; is that correct?
A. Correct.
Q. Okay.
MR. BU: Can we please pull Tab 10?

(Exhibit No. 8 marked.)
MR. BU: Thank you. This was 8?
MS. JOHNSON: Uh-huh.
MR. BU: Okay.
BY MR. BU:
Q. I've handed you what's been marked Exhibit 8. This is Bove's 2024 "Cancer Incidence" study. Did you review this article in preparing your report?
A. I did.
Q. Okay. And I should ask, why did you review this article in preparing your report?
A. Well, I mean, it's relevant to the population question that we're trying to -- to answer here.
Q. Okay. Is cancer incidence different than mortality or morbidity?
A. Yes.
Q. How so?
A. Well, I mean, you could have -- cancer incidence means development of cancer. Mortality means dying from that. So different -- different cancers have different mortality, some more lethal, some less. So there's obviously disconnect in a lot of cases between mortality and incidence.

Q. Okay. Does kidney cancer have a higher survival rate than other types of cancer?

A. It has a higher rate than some and possibly lower late -- rate than some others.

Q. Okay. So there is some difference between the incidence of kidney cancer and mortality related to kidney cancer; is that fair to say?

A. Yes. It's fair to say, yeah.

Q. Do you consider one of type of study to be more rigorous than another when looking at kidney cancer?

A. No. Well, I mean, pertaining to looking at incidence versus mortality?

Q. Yes.

A. Just looking -- you're asking a different question. I'm not sure it has anything to do with the rigor of the study.

Q. Okay. Do you consider a difference in kidney cancer-related mortality versus a difference in kidney cancer incidence to weigh differently on whether an exposure causes kidney cancer?

A. I mean, they're different questions. I mean, one, you're asking who is dying from a disease, and then the other you're asking who is getting it.

Q. But --
A. I'm not sure I --
Q. Sure. Is one question -- does one question better answer whether an exposure causes disease?
A. I don't think so.
Q. Okay. Okay. Can you turn to page 7, Table 3 of Exhibit 8.
A. Let me see what the pages are. Let's see. 7. Okay. Okay.
Q. And this is a table comparing cancer outcomes at Camp Lejeune versus Camp Pendleton for the Marine/Navy subgroup.
A. Okay.
Q. All right. And similar to prior studies, this is looking at Marines who began service before -- or, sorry, between 1975 and 1985; is that right?
A. That's correct.
Q. Okay. And this study also distinguishes different subtypes of renal -- oh, sorry, kidney and renal pelvis cancers; is that right?
A. That's right.
Q. Okay. For all of these associations, the confidence interval crosses 1, right?
A. Correct.

Q. And for clear cell only, the association is less than 1; is that right?

A. Yes.

Q. So this means that the study found fewer -- or, sorry, the -- if the hazard ratios is less than 1, that would mean there was a lower rate of clear cell cancer in the Camp Lejeune cohort than compared to the Camp Pendleton cohort; is that right?

A. Yes.

Q. And a hazard ratio less than 1 would be inconsistent with evidence that exposure to Camp Lejeune water causes clear cell cancer; is that correct?

A. Correct.

Q. So we looked at -- there were a number of associations that were measured between Camp Lejeune water and kidney cancer; is that right?

A. What -- what do you mean by number of associations? Like what?

Q. So we looked at, for example, associations between Camp Lejeune water and kidney cancer for kidney and renal pelvis and other subtypes of kidney cancer, correct?

A. You mean in this specific --

Q. In this --

A. -- study? Yes.
Q. Yes.
And then in addition to this study, there were other associations that were measured for different categories of exposure?
A. Okay. Yes.
Q. And other associations measuring different chemical exposures such as TCE versus PCE?
A. Yes.
Q. Would you agree that if we measured 20 associations, we can expect to find one statistically significant association by pure chance even if there is no true association?
MR. ROBERTS: Objection.
A. If you looked at 20 random associations, then you would expect to find one that was true by random chance?
BY MR. BU:
Q. Uh-huh.
A. It's possible, yes.
Q. All right.
A. I'm not sure how likely that is, but it's certainly possible.
Q. Okay. Well, one out of 20 would be -- would be 5 percent, right?

A. Yes.
Q. So if we're testing statistical significance at a 95 percent level, we should expect one out of 20 associations to come back as statistically significant even if there's no true association?
A. That's possible, yes.
Q. Other than the levels that you cite on pages 15 and 16 of your report, are there any other levels of exposure to TCE or PCE that you believe are capable of causing kidney cancer?
A. No.
Q. No?
A. No.
Q. Okay. And these are the levels that you would compare Mr. Downs's exposure to to determine whether his cancer was caused by Camp Lejeune water; is that correct?
A. That's correct.
Q. Okay. And to determine the level of Mr. Downs's exposure, you refer to Dr. Reynolds's calculations; is that right?
A. Yes.
Q. And Dr. Reynolds is an expert for the plaintiffs in this litigation?

A. Correct.
Q. All right. You did not -- you were not familiar with Dr. Reynolds before this litigation; is that fair to say?
A. I was not.
Q. Okay. Did you do anything independently to determine the levels of Mr. Downs's exposure?
A. I did not.
Q. Okay. Is it your understanding that Dr. Reynolds's exposure calculations estimated Mr. Downs's exposures on a daily basis?
A. Yes.
Q. And is it your understanding that she uses the ATSDR water modeling result to determine the concentrations of chemicals that Mr. Downs was exposed to on a daily basis?
A. Yes.
Q. And this would include the daily exposure to PCE that Mr. Downs would have had during his time at Tarawa Terrace?
A. Yes.
Q. Okay. And similarly, are you using Dr. Reynolds's calculations to determine Mr. Downs's exposures on a daily basis?
A. Yes.

Q. Did you review the ATSDR's water modeling in preparing your report?
A. Yes.
Q. Okay.
A. Briefly. I -- I can't tell you that I'm an expert in that methodology.
Q. And specifically, did you review the ATSDR's summary report, Chapter A, for its Tarawa Terrace model?
A. Yes.
Q. And did you review the appendices attached to that report?
A. Yes.
Q. Okay. Would you agree that ATSDR's water modeling data is not specific enough to accurately estimate daily levels of PCE in the Tarawa Terrace water system?
A. I -- I -- I don't -- I -- I'm not sure I'm qualified to make that conclusion.
Q. Okay.
MR. BU: Can we pull 61?
(Exhibit No. 9 marked.)
BY MR. BU:
Q. So I've handed you what's been marked Exhibit 9. These are the appendices to ATSDR's

Tarawa Terrace report, Chapter A. Are these the appendices that you would have reviewed in preparing your report for Mr. Downs's case?

A. Yes.

Q. Okay. Can you turn to page A97 for me, please.

A. I'm there.

Q. All right. And do you see at the bottom of that page the answer to the question, "Can ATSDR water modeling results be used to determine the concentration of PCE that my family and I were exposed to on a daily basis?"

A. Yes.

Q. Okay. And ATSDR's answer to that question was, "No. The available data are not specific enough to accurately estimate daily levels of PCE in the Tarawa Terrace water system"; is that correct?

A. Yes.

Q. Okay. Do you have any reason to disagree with ATSDR's response to that question?

A. I do not.

Q. Okay. Dr. Reynolds, when she reports Mr. Downs's exposure reports it in both micrograms per liter-month and total micrograms; is that correct?

A. Yes.
Q. Okay. And the total micrograms would reflect the total mass of ingested chemicals; is that fair to say?
A. Yes.
Q. All right. Do you know whether the total mass of ingested chemicals is a standard exposure metric in risk assessment?
A. I mean, it's -- it's informative. I don't know if it's standard or not.
Q. Okay. Do you know whether the total mass ingested is a generally accepted metric in the field of toxicology?
A. I don't know. I'm not -- I'm not a toxicologist. I'm not sure I can comment.
Q. Would you agree that most reliable epidemiological studies provide cumulative exposure estimates in ppm-years or ppb-months?
A. It seems to be the most common metric that's used, yes.
Q. Okay. And total ingestion is a less commonly used metric; is that fair to say?
A. I -- I honestly don't know. I -- I think that's a question directed to an epidemiologist or toxicologist.

Q. All right. Have you ever reviewed EPA risk assessment guidelines for determining cancer risk from exposure to carcinogens?

A. As a general guideline, no, I have not.

Q. Okay. Do you know whether EPA's assessment guidelines require some consideration of the subject's body weight?

A. I don't know.

Q. Okay. In your clinical practice, are chemicals metabolized differently depending on a patient's body weight?

A. Yes.

Q. Okay. Does Dr. Reynolds calculate TVOC exposures?

A. Like, accumulative TVO exposure?

Q. Yes.

MR. ROBERTS: I'm sorry, what was the question? I -- I missed it.

BY MR. BU:

Q. Did Dr. Reynolds calculate TVOC exposures?

A. I mean, she calculates exposures to TCE, PCE, benzene, vinyl chloride. I mean, you can -- you can surmise the total exposure from that -- from those numbers.

Q. Okay. And how would you surmise the total

exposure from those numbers?
A. I mean, I imagine those things would be added to --
Q. All right. So you would add the µg/L-month exposure for TCE, plus PCE, plus vinyl chloride, plus benzene?
A. I -- I would add the cumulative dose -- cumulative exposure together, these things.
Q. Okay. When you say, "cumulative exposure," are you referring to the far left-hand column or one of the other columns in Dr. Reynolds's table?
A. Yeah, I'm -- I don't know what the methodology would be to -- to gain cumulative exposure. I mean, I think there's indirect measure of cumulative exposure when you're -- where you can sort of assess individual exposures which provides all of them, right? So, I guess, what -- what am I missing here?
Q. Okay. Let me ask it this way, then.
So one of the levels that you identified in your report --
A. Yeah.
Q. -- was, "Cumulative exposure to 1 to 4,600 micrograms per liter-month of exposure to all compounds at Camp Lejeune." This is Item 9 in your

report.

A. Correct.

MR. ROBERTS: What -- what page are we on? I'm sorry.

MR. BU: Page 15 of Exhibit 1, Item 9 of Dr. Margulis's report.

BY MR. BU:

Q. And you testified earlier that exposure to all compounds at Camp Lejeune refers to TVOC in the Bove article?

A. Correct.

Q. Okay. And Dr. Reynolds does not provide a calculation for Mr. Downs's TVOC exposures, right?

A. She does not specifically, that's correct.

Q. So how would you compare -- or how would you determine whether Mr. Downs's TVOC exposure falls within this 1 to 4,600 range?

A. You can't do it directly based on this specific report.

Q. Okay. Did you compare Mr. Downs's exposures to the TVOC range reported in the Bove studies?

A. Yes.

Q. Okay. And how did you make that comparison?

A. So specifically -- let's see. So you go back to the study. You -- we have this specific -- I'm sorry, let me make sure I understand the question. How did I expose his cumulative TVOC exposure or -- or --

Q. How did you compare Mr. Downs's exposure to the 1 to 4,600 TVOC range?

A. So what -- what -- you know, I think one way to do this is -- is to -- to sort of add the cumulative exposure provided here and -- and go back to the studies and -- and --

MR. ROBERTS: Dr. Margulis, what -- you're saying, "here," and you're pointing. Could you -- so the record's clear, what -- where are you pointing to, sir?

THE WITNESS: At -- at Table -- at Kelly's -- Kelly Reynold's table provided by her.

MR. ROBERTS: Okay. What -- what page are you on?

THE WITNESS: Page 20.

MR. ROBERTS: Okay.

THE WITNESS: Sorry.

MR. ROBERTS: Of your report, right --

THE WITNESS: Correct.

MR. ROBERTS: -- Exhibit 1? Okay.

THE WITNESS: Correct.
BY MR. BU:
Q. Okay.
A. So one -- one way to do this is to add the cumulative exposures that's provided by -- by the doctor here and then compare them to the -- to the -- to the numbers in the study.
Q. Okay. I'm --
MR. ROBERTS: I didn't -- compare them to what? I -- I don't mean to be interrupting. Compare those numbers to what?
THE WITNESS: To the ranges -- to the ranges that are -- that I'm citing from the Bove studies.
MR. ROBERTS: Okay.
BY MR. BU:
Q. So looking at Dr. Reynolds's table that's included in your report on pages 20 and 21, which values would you add to determine whether Mr. Downs's exposures were similar to the 1 to 4,600 range?
A. So you would add the -- you have to compare apples to apples here, right? So you would -- you would compare the -- the table on the left -- the column on the left, you would add those numbers

and -- and see where they fall within that range.
Q. Okay. So you would add, for example, the 325 µg/L-months for TCE, plus the 939 for PCE, plus the 1,281 for PCE, plus the 122 for VC?
A. Correct.
Q. Okay. Actually, I'm sorry, would you add PCE twice?
A. No, you wouldn't. It depend -- you have to pick whichever model you -- you think is -- whichever modeling method is consistent.
Q. Okay. So to -- to determine Mr. Downs's TVOC exposure and compare it to the 1 to 4,600 range --
A. Right.
Q. -- you would add 325, plus either 939 or 1,281, plus 122?
A. Correct.
Q. Okay. And is that what you did to compare Mr. Downs's TVOC exposures to those described on page 15 and 16 of your report?
A. Yes.
Q. All right. That's fine. And Dr. Reynolds only accounts for ingestion as a route of exposure; is that right?
A. Yes.

Q. Okay. And her calculations do not take into account inhalation or dermal exposure; is that right?

A. She does factor -- I don't remember her modeling exactly. She does factor in that he takes showers and things like that, and so, I mean, I think she factors those things in. So. . .

Q. Okay. If -- if Dr. Reynolds's ingestion numbers overestimated Mr. Downs's actual ingestion of these chemicals, would it be fair to say that her charts might not -- underestimate his total exposure even though they only consider one route of exposure?

MR. ROBERTS: Objection.

A. I'm not sure I fully understand -- I'm not sure I fully understand your question --

BY MR. BU:

Q. Sure.

A. -- honestly.

Q. Let me take a step back.

A. Yeah.

Q. In your report, do you opine that because Dr. Reynolds does not directly take into account inhalation or dermal exposure, Mr. Downs's exposure would be greater than the dosage numbers reflected

in Dr. Reynolds's chart?
A. Yes.
Q. Okay. And it's your opinion that the inhalation and dermal exposures would add to Mr. Downs's total exposure, correct?
A. Yes.
Q. Okay. Do you have any opinion about how much it would add to Mr. Downs's total exposure?
A. I do not.
Q. Okay. And you don't make a -- and Dr. Reynolds doesn't offer any quantification of the inhalation or dermal exposures, correct?
A. No, no, correct.
Q. Are you aware of any other reports that you reviewed that quantify the inhalation or dermal exposures?
A. I do not.
Q. Okay. So the inhalation and dermal exposures are some unknown plus at this -- in this equation, right?
A. I think that's fair to say, yes.
Q. Okay. If Dr. Reynolds overestimates the ingestion exposure, could that overestimation of ingestion exposure be greater than this unknown plus of inhalation and dermal?

A. I don't know. I guess it's possible.
Q. Okay.
A. Depends how much -- by how much she overestimates it, right?
Q. Right. So we can only really speculate whether Dr. Reynolds's charts overestimate or underestimate the total exposure, correct?
A. Yes.
Q. Okay. And Dr. Reynolds's ingestion numbers rely on the ATSDR's water models; is that right?
A. Yes.
Q. Okay. Did you -- are you offering any critiques of the ATSDR's water model?
A. No, I do not.
Q. Okay. Did you evaluate how ATSDR determined the levels of contamination in the water?
A. I -- I've read their methodology. I'm not sure I'm a qualified expert to opine on the -- on -- on the validity of it.
Q. Okay. Did you consider how dermal exposures to these chemicals differ from ingestion exposures?
A. What do you mean by that? You mean -- I understand it's a different methodology of exposure probably underestimated by -- by these reports, but

that's -- that's about it.

Q. Okay. Did you look at any literature describing whether the risks associated with different routes of exposure are different for these chemicals?

A. I did not.

Q. Okay. And are you -- you offering any opinions about how the different routes of exposure may pose different levels of risk?

A. I will not.

Q. Okay. In your report, you use the levels described on pages 15 and 16 as part of your causation analysis to inform the differential diagnosis as to etiology of Mr. Downs's kidney cancer. Do you recall writing that?

A. Yes.

Q. Okay. Can you explain how those levels are used in your causation analysis to inform the differential diagnosis.

A. I'm trying to understand your question. So -- so the question is, I mean, based on his exposure levels and charts provided here, he certainly falls into that -- the levels of exposure that we glean from -- from many general causation reports where they put him at -- at -- at risk --

the exposure risk that causes kidney cancer.
Q. Okay. Well, let's do this, then. The second level that you refer to on page 15 is, "Exposure to a TCE concentration of 76 ppbs"; is that right?
A. Yeah.
Q. Okay. And your understanding was that this is ppbs in water; is that right?
A. It's ppbs in some medium, yes.
Q. Okay. Was Mr. Downs exposed to TCE at concentrations of 76 ppbs?
A. No.
Q. And we discussed earlier that the duration of exposure in that study was in the span of around 19 and a half years, correct?
A. Yes.
Q. And Mr. Downs was not exposed to TCE at Camp Lejeune for 19 and a half years, correct?
A. That's true.
Q. Okay. Level 3 in your report is, "Cumulative exposure to TCE of greater than 1,580 ppb-years"?
A. Correct.
Q. Okay. Was Mr. Downs exposed to 1,580 ppb-years of TCE?

MR. ROBERTS: I'm sorry. Objection. You said -- I'm sorry.

Do you understand the question?

THE WITNESS: I do.

MR. ROBERTS: Okay.

A. He was not.

BY MR. BU:

Q. The fourth level is, "Sustained exposure to 0 to 25.3 ppb of TCE"; is that right?

A. Yes.

Q. Okay. And was Mr. Downs -- did Mr. Downs have a sustained exposure to 0 to 25.3 ppb of TCE?

A. Yes.

Q. Okay. And how do you define a sustained exposure?

A. Well, I mean, you can look at the charts. He was exposed to substantial levels of TCE for -- for a duration of, what -- how many -- how many months? Almost a year and a half.

Q. Okay.

MR. ROBERTS: Again, I hate to interrupt, but what -- what are you referring to so we can -- so we can --

THE WITNESS: Yeah.

MR. ROBERTS: -- figure out what we --

what we're saying once we read the deposition? You're -- you're referring to what, Dr. Margulis?

THE WITNESS: Yeah, Table A7 on page 18.

MR. ROBERTS: Of -- of Exhibit 1, correct?

THE WITNESS: Exhibit 1, correct.

MR. ROBERTS: Okay. Thank you.

BY MR. BU:

Q. You're referring to the model levels of contamination from the ATSDR report, correct?

A. Correct.

Q. Okay. And some of those model levels for TCE are greater -- are within the range of 0 to 25 ppb, correct?

A. Yes.

Q. Okay. I should clarify earlier. What is the relationship between a ppb as described in Andrew in your report and a microgram per liter as described in the tables on page 18 of your report?

A. They would be equivalent.

Q. Okay. And they're equivalent because we're looking at concentrations in the same medium, water, right?

A. Well, they're -- they're a different

metric, but it'd be equivalent in terms of you can equate 1 ppb to 1 microgram per liter.

Q. Okay. Can you make the same conversion for ppbs to micrograms per liter when the medium is air?

A. I'm not sure.

Q. Okay.

A. I mean, generally, I would say yes.

Q. Okay. All right. Going back to Andrew, Andrew describes "a sustained exposure," correct?

A. Yes.

Q. All right. And we agreed earlier that the duration of exposure to a given concentration is relevant to whether that exposion -- exposure would be causal, right?

A. Yes.

Q. Okay. In Andrew, the sustained exposures were in the ranges of five, ten, and 15 years, correct?

A. Correct.

Q. And Mr. Downs did not have an exposure of five, ten, or 15 years, correct?

A. That's correct.

Q. So he would not have a sustained exposure as described in Andrew, correct?

MR. ROBERTS: Objection.

A. Specifically as quantified by the Andrew study, no.

BY MR. BU:

Q. Okay. All right. And then the fifth level that you cite in your report is a TCE concentration of 267.4 parts per billion, and this is from the Parker study in Woburn, right?

A. Yes.

Q. Okay. And Mr. Downs did not have exposure to 267.4 parts per billion of TCE, correct?

A. Correct.

Q. All right. All right. All right. And he would have had exposures to PCE concentrations of 20.8 ppb, correct?

A. Yes.

Q. Okay.

A. Correct.

Q. Did you make any comparison between the duration of Mr. Downs's exposure to the duration of exposure being studied in Woburn, Massachusetts?

A. I did not.

Q. And the last level that you cite, 23, is, "More than 21 quarters spent on base as a civilian worker from 1975 to 1985."

Do you see that?

A. Yes.
Q. Okay. And Mr. Downs was not a civilian worker, correct?
A. That is correct.
Q. And he was not on base between 1975 and 1985, correct?
A. That is correct.
Q. Okay. And he did not spend more than 21 quarters on the base, correct?
A. Correct.
Q. Okay. Okay. In your report, do you also compare the levels of contamination at Camp Lejeune to EPA's thresholds?
A. Yes.
Q. Okay. And these thresholds are referred to sometimes as MCLs?
A. Yes.
Q. Okay. And MCL is a maximum contaminant level?
A. Yes.
Q. What is your -- why do you compare the levels of contamination to the MCLs?
A. It just gives you some guideline. It certainly does not determine -- it doesn't determine causation, but just -- it just sort of gives you a

ballpark that the levels he was exposed to greatly exceeded these levels.

Q. Okay. How do you determine whether a level of concentration greatly exceeds the MCL?

A. Well, you have the number that's right by -- by MCL. He can look at his monthly exposures that he was exposed to. And in a lot of cases, the most -- in every -- every single instance of his exposure on camp was much higher than -- than maximum allowable exposure levels.

Q. Okay. I guess what I'm asking, is there a threshold at which you define an exposure to be greatly -- to greatly exceed the MCL?

A. You're concentrating on -- concentrating on the "greatly" here?

Q. Uh-huh.

A. I mean, anything that would double the exposure would be, I would say.

Q. Okay.

THE VIDEOGRAPHER: Counsel, I'm going to have to change files here in about six minutes.

MR. BU: Okay.

BY MR. BU:

Q. All right. Would you agree that Mr. Downs's exposure to contaminants depended on

where at the base he was?
A. Yes.
Q. Okay. And his exposure to contaminants differed depending on whether we look at his residential exposures at Tarawa Terrace versus his workplace exposures at Hadnot Point; is that fair to say?
A. Correct.
Q. Okay. And when Mr. Downs was residing at Tarawa Terrace, he was not exposed to levels of TCE that exceeded the MCLs; is that correct?
A. Yes.
Q. He would have -- he would have only been exposed to TCE at levels exceeding the MCLs during his workplace exposures at Hadnot Point; is that right?
A. That's correct.
Q. Okay.
MR. BU: All right. Yeah, we can stop there.
THE VIDEOGRAPHER: Okay. We are -- we are off the record at 11:26.
(Break taken, 11:26 a.m. to 11:38 a.m.)
THE VIDEOGRAPHER: We are back on the record at 11:38.

BY MR. BU:

Q. Dr. Margulis, did you discuss your deposition testimony with anyone during the break?

A. No.

Q. Is there anything that you've testified to today that you'd like to clarify or correct?

A. Not -- not as of now.

Q. Okay. And during your deposition, have you consulted anything on your laptop to inform your testimony?

A. No.

Q. Okay. Do you know how EPA determines the -- what the maximum contaminant levels should be?

A. I -- I'm not familiar with their methodology.

Q. Okay. Do you know whether those MCLs are determined based on an assumption of a -- a certain duration of exposure?

A. I -- I don't know.

Q. Okay. Do you know whether EPA makes any other health-protective assumption -- assumptions when determining the MCLs?

A. I'm sure they do. I just don't know what they are.

Q. Would you agree that an exposure to drinking water -- or I'm sorry. Would you agree that exposure to a chemical in drinking water at concentrations in excess of the MCL does not necessarily mean that those concentrations will cause disease?

A. That's a fair statement.

Q. Can you go back to Exhibit 9, the Tarawa Terrace Chapter A appendices, for me, please.

A. Yep, I have it.

Q. Okay. And on page 98, do you see a question, "ATSDR's historical reconstruction analysis documents that Tarawa Terrace drinking water was contaminated with PCE that exceeded the current maximum contaminant level (MCL) of 5 micrograms per liter (µg per liter) during 1957 and reached a maximum value of 183 µgs per liter. What does this mean in terms of my family's health?"

A. Okay.

Q. Do you see that?

Okay. And ATSDR's response was, "ATSDR's exposure assessment cannot be used to determine whether you, or your family, suffered any health effects as a result of past exposure to PCE-contaminated drinking water at Camp Lejeune."

Do you see that?
A. I do.
Q. Do you have any reason to disagree with ATSDR's response to that question?
A. No.
Q. Okay. And in the next paragraph, ATSDR explains how the MCL for PCE was derived. Do you see that?
A. Where it says, "Many factors determine" -- what -- which -- which --
Q. Sorry, in the next paragraph beginning, "The National Toxicology Program."
A. Yes.
Q. In the next sentence ATSDR explains that, "The lowest level of PCE in drinking water at which health effects begin to occur is unknown."
Do you have any reason to disagree with that statement?
A. I do not.
Q. Okay. And ATSDR goes on to explain that, "The MCL for PCE was set at 5 µgs per liter (or 5 parts per billion) in 1992 because, given the technology at that time, 5 µgs per liter was the lowest level water systems could be required to achieve."

Do you have any reason to disagree with that statement?

A. I do not.

Q. Okay. So would it be fair to say that the MCLs are derived based on technological constraints and not health risks?

A. At least according to this statement here, yes.

Q. Are you able to express the increased risk of cancer for exposures at 5 parts per billion?

A. I'm not.

Q. Okay. Are you able to express the increased risk of kidney cancer for exposures at a given concentration?

A. I -- I'm not.

Q. Okay. Are you able to express the increased risk of cancer for exposures at a given dose?

A. I -- I -- I don't have that capacity, no.

Q. Okay. Are you offering any opinions regarding the -- quantifying the increased risk of Mr. Downs based on his exposure to Camp Lejeune water?

A. My -- well, my opinion would be that based on the data we reviewed so far, exposure to the

water at Camp Lejeune was a significant -- significant contributing risk factor.

Q. Okay. When you say, "significant contributing risk factor," how do you define when a risk factor becomes significant?

A. I would say in my opinion, it's more likely than not that the -- his exposures contributed to developing kidney cancer.

Q. But a -- okay. But a contribution to risk is not necessarily the same thing as being the cause of an event, right?

A. I mean, it's kind of part of the same spectrum, I would say.

Q. Okay. You're not quantifying how significant the contribution from Camp Lejeune water was to Mr. Downs's total cancer risk, are you?

A. You -- you're asking me to give you a specific number? Then no.

Q. Okay. Do you know whether his Camp Lejeune water exposures would increase his cancer risk by doubling that risk?

A. I -- I don't -- I don't have that --

Q. Okay.

A. -- information.

Q. Do you have an opinion about whether his

increased risk from Camp Lejeune water would be more or less than 50 percent increased risk?

A. I -- I -- I cannot quantify that, no.

Q. Okay. Would you agree that we are exposed to some carcinogens daily as a part of everyday life?

A. That's true.

Q. Okay. And it's also true that our bodies naturally make carcinogens; is that right?

A. Yes.

Q. Okay. Would you agree that it is impossible to live a life completely free from carcinogenic exposures?

A. It's difficult.

Q. Okay. Do you know whether people are exposed to background levels of TCE in everyday life?

A. I'm sure there's some level of TCE, a minute amount, that we're exposed to. I'm not sure what that level is.

Q. Okay. In preparing your report, did you examine the background levels of TCE, PCE, or vinyl chloride?

A. In -- in -- in where? Background in my environment here or -- or where?

Q. For Mr. Downs.
A. No, I did not.
Q. Okay. And you do not compare Mr. Downs's Camp Lejeune-related exposures to his potential background levels of exposure, do you?
A. I do not.
Q. Okay. All right. And you do not compare Mr. Downs's cancer risk due to his exposures to Camp Lejeune water to his cancer risks from these background exposures, correct?
A. I don't -- I don't know what his background exposures are.
Q. Okay. Would you agree that background exposure to TCE could be a cause of kidney cancer?
A. Depending on what that exposure is.
Q. When you say, "depending on what type of exposure," what would you look at?
A. What -- what levels he was exposed, duration, motive, absorption. I -- I don't have any indication that he's exposed to high levels of TCE outside of Camp Lejeune.
Q. Okay. Well, presumably, the duration of exposure for background exposures would be the patient's lifetime, correct?
A. Yes, yeah.

Q. And the frequency of those exposures to background levels would be constant, correct?

MR. ROBERTS: Objection.

A. I'm not -- that's super hypothetical. I mean, assuming the patient doesn't move. I mean, he could be traveling, could be exposed to different levels at different places. I -- I don't -- you know, it's hard to answer that.

BY MR. BU:

Q. Okay. Let me put it this way, then.

Is there any evidence that you reviewed that Mr. Downs removed himself from background levels of TCE exposure?

A. There's no evidence to suggest there were background levels of TCE exposure and what they were, so I -- I cannot answer your question properly.

Q. Okay. All right.

MR. BU: Can we pull Tab 15, please.

This will be Exhibit 10.

(Exhibit No. 10 marked.)

BY MR. BU:

Q. So I have handed you what's been marked Exhibit 10. This is an excerpt from the ATSDR's toxicological profile on TCE. Did you review the

ATSDR's toxicological profile on TCE in preparing your report?

A. Yes.

Q. Okay. And this excerpt is from Chapter 6, "Potential for Human Exposure." Did you review Chapter 6 in preparing your report?

A. Yes.

Q. Okay. Can you turn to -- I'm sorry -- page 332, Section 6.4.4.

A. Okay.

Q. And here ATSDR describes contaminant levels of TCE that are detected in food items collected from supermarkets in the United States, correct?

A. Okay.

Q. Okay. And those levels of contamination are reported in Table 6-8 on the next page; is that correct?

A. Okay.

Q. Did you review Table 6-8 in preparing your report?

A. I've seen Table 8, yes.

Q. Okay. And would you agree that an individual could be exposed to these levels of TCE from these foods?

A. Yes.

Q. Okay. Do you have any reason to question the levels of TCE reported by the ATSDR in Table 6-8?

A. I do not.

Q. And can you turn to page 335 for me, please. Do you see the paragraph beginning, "Assuming a typical air concentration," in the middle of that page?

A. Yes.

Q. Okay. And ATSDR reports that, "Assuming a typical air concentration range of 100 to 500 ppt and a breathing rate of 20 cubic meters of air per day, the average daily air intake of trichloroethylene can be estimated at 11 to 33 micrograms per day"; is that right?

A. Yes.

Q. And a ppt is a part per trillion, right?

A. Correct.

Q. Do you have any reason to question that the average daily air intake of TCE could be estimated at 11 to 33 micrograms per day?

A. I mean, I have no reason to disagree with the statement. I don't know enough about it.

Q. Okay. ATSDR goes on to report that, "Average daily water intake of trichloroethylene can

be estimated at 2 to 20 micrograms per day, assuming a typical concentration range of 2 to 7 ppb and consumption of 2 liters water per day"; is that right?

A. That's what it says, yes.

Q. Okay. And do you have any reason to disagree that an average daily water intake of TCE could be estimated at 2 to 20 micrograms per day?

A. Based on this data from 1987, no.

Q. Mr. Downs was exposed to contaminants at Camp Lejeune in the early 1960s, correct?

A. He was exposed in 1960, right? 1960 to 1961; is that correct?

Q. Is there any reason to think that the air -- the background concentrations reported by the ATSDR in this study would be significantly greater than those in the 1960s?

MR. ROBERTS: Objection.

A. I don't know.

BY MR. BU:

Q. Okay. Are you offering any opinions about what those background levels -- how those background levels in the 1960s may have differed from those reported by the ATSDR in its toxicological profile?

A. I will not.

Q. Okay. Would you agree that other than TCE, we're exposed to other background levels of carcinogens?

A. Yes.

Q. So we're also exposed to, for example, background levels of benzene?

A. Yes.

Q. Okay. Are there other contaminants you're aware of known to be in the background environment?

A. There -- there are numerous, yeah.

Q. Okay. What are some examples?

A. Let's see. Some of the Teflon byproducts of development, some of the carbon -- carbon C-8 -- C-8 products. I mean, there's -- there's -- there's a plethora of potential carcinogens that -- that -- present in minute quantities in -- in our environment.

Q. Okay. When you referred to "Teflon products," are you referring to PFAS, PFOA?

A. Correct.

Q. Are these sometimes also referred to as microplastics or nanoplastics, or are those different?

A. I think that fall -- yeah. I think they can fall into that category, yeah.

Q. And your opinion is that -- is it your opinion that PFOA/PFAS exists in the background and are capable of causing kidney cancer?

A. I'm not prepared to offer any opinions on that today.

Q. Okay. Did you conduct any tests to determine -- are you -- let me strike that.

Are you aware of any tests that can be used to determine whether a patient's kidney cancer was caused by a toxic exposure?

A. I'm not.

Q. Okay. Are you aware of any tissue sampling that can be -- can be conducted to determine whether a patient's kidney cancer was caused by a toxic exposure?

A. I'm not aware of that, no.

Q. And there are no other types of biomarker tests, for example, that would indicate whether a patient's kidney cancer was related to toxic exposures; is that right?

A. That's correct.

Q. Are there any clinical features of kidney cancer that are characteristic of a chemically-induced cancer?

A. No.

Q. Outside of this litigation, have you ever diagnosed a patient with a chemically-induced cancer other than smoking?

A. I have not.

Q. Have you ever treated a patient for kidney cancer following an exposure to TCE?

A. Not that I'm aware of.

Q. Okay. Have you ever treated a patient for kidney cancer following an exposure to either PCE or vinyl chloride?

A. I have not. Or at least I don't know. I may have, but I -- I'm not aware.

Q. Okay. When you see new patients for kidney cancer, do you ask about their smoking histories?

A. Yes.

Q. And why do you ask about smoking history?

A. Mainly, so that I can tell them to quit if they're still smoking.

Q. And that's because smoking increases the risk of cancer, correct?

A. Yes.

Q. And does smoking also increase the risk of recurrence?

A. It's a little bit difficult to -- to -- it certainly increases the risk of development, and how

it plays into disease kinetics is not entirely clear, meaning the risk of recurrence. That's not been established fully.

Q. Okay. When you see new patients, are there other risk factors that you inquire about or screen for?

A. I mean, we -- you ask about risk factors. They, unfortunately, don't play into management. So in clinical practice it's one of the things you document, but they don't entirely play into how we treat the patient with an exception of smoking. That's a modifiable risk factor. Obesity, for example, you can institute programs to help patients --

Q. Okay.

A. -- get in shape.

Q. So when you see new patients, do you ask them if they've been exposed to TCE, PCE, or vinyl chloride?

A. I do not.

Q. Would exposure to TCE, PCE, or vinyl chloride change your recommended course of treatment for a patient with kidney cancer?

A. It would not.

Q. Okay. All right. Is it your opinion that

smoking cessation can eliminate the risk of kidney cancer?

A. I mean, there's always some risk of kidney cancers. I mean, I think the -- smoking cessation eliminates -- can at some point probably eliminate the increased risk afforded by smoking itself.

Q. Okay. So is it your opinion that at some point, former smokers approach the same level of risk as never smokers?

A. Yes.

Q. Okay. What is your understanding of what that point is?

A. It's hard to -- it's a very hard sort of number to estimate. Literature varies. Anywhere from ten to 20 years.

Q. Okay. And is this based -- sorry.

Is this ten- to 20-year time frame based on observational data?

A. Correct.

Q. Okay. Is there a proposed mechanism for why the risk for distant former smokers reaches the same level of risk as never smokers?

A. I mean, cumulative exposure at some of the -- some of the damage that's done by smoking as far as genetic changes, methylation, et cetera,

could be cleared out and appropriately dealt with. I think that's one of the mechanisms.

Q. What is methylation?

A. It's one of the epigenetic changes that -- that can happen. So -- so you can modify expression of the genes by doing -- by methylating them or unmethylating them. We know that smoking can cause some of these changes, and with time, they can be undoed. That's at least in theory.

Q. So you have to forgive me. Is the methylation what causes the cancer, or is methylation repairing a mutation that would cause cancer?

A. It -- methylation usually changes -- at least -- it actually can go either way, but -- but generally, we think of methylation as -- as potentially carcinogenic.

Q. Okay. And it -- okay. Is the -- the clearing out of this methylation unique to tobacco smoke?

A. No.

Q. Okay. Mr. Downs had a smoking history, correct?

A. Correct.

Q. All right. And your opinion is that his

smoking history is not causative of his kidney cancer; is that right?

A. That's right.

Q. All right. Is your opinion that his smoking risk would not have contributed -- or I'm sorry.

Is your opinion that his smoking history was not a contributing factor to his kidney cancer risk?

A. That's correct.

Q. All right. And is that based on his period of smoking cessation?

A. And his smoking duration.

Q. Other than the smoking duration and cessation, is there anything else you considered in ruling out his smoking risk?

A. Smoking amount, how much he smokes. So how many packs per day, duration of smoking, and time -- and length of cessation.

Q. You would agree that the time period at which he smoked would have coincided with his -- at least coincided with his exposures to water at Camp Lejeune, correct?

A. Yes.

Q. Okay. And if anything, his smoking

exposures would be more recent than his Camp Lejeune water exposures?

A. They predate them, I would imagine. I think he smoked -- if I'm not mistaken, I think he smoked in the '50s, late '50s. Maybe I'm wrong.

Q. Okay. And you testified earlier that you agree age is a risk factor for renal cell carcinoma, correct?

A. Correct.

Q. All right. And Mr. Downs was diagnosed, I think, in his 80s; is that right?

A. He was diagnosed in 2016, right, so he was -- he would be in his early 80s, yeah.

Q. Okay. How do you rule out age as a cause of Mr. Downs's renal cell carcinoma?

A. You can't rule it out. I mean, he was -- he was diagnosed at the age that he was diagnosed. Most people that are diagnosed with kidney cancer are diagnosed at an elderly age. I mean, average age of diagnosis is 60s.

Q. Okay. So Mr. Downs was diagnosed later than average; is that fair to say?

A. That's fair to say, yeah.

Q. Okay. You testified also earlier that gender can be a risk factor for RCC; is that right?

A. That is correct.
Q. Okay. Is it fair to say that men are at roughly twice the risk of RCC as women?
A. That's correct.
Q. Okay. And how do you exclude gender as a risk factor for Mr. Downs's kidney cancer?
A. You can't exclude it.
Q. Okay. All right. Okay. Are you familiar with a public health assessment that the ATSDR conducted at Camp Lejeune?
A. Yes.
Q. Okay. Did you review the public health assessment in preparing your report for this litigation?
A. Yes.
Q. All right. As part of that public health assessment did ATSDR try to determine the elevated levels of cancer risk for different groups at Camp Lejeune?
A. Yes.
Q. All right. And did you consider those elevated lifetime cancer risks in your report for Mr. Downs?
A. I did not.
Q. Why not?

A. I'm not sure how -- how that directly plays into it.
Q. Okay.
A. Maybe -- show -- show me specifically what -- what you're referring to, maybe a specific --
Q. Sure.
A. -- table or paper. Okay.
MR. BU: Can you pull Tab 7, please?
(Exhibit No. 11 marked.)
MS. JOHNSON: This is going to be 11.
MR. BU: Okay. Thank you.
BY MR. BU:
Q. Okay. So I've handed you what's been marked Exhibit 11. This is the -- ATSDR's 2017 Public Health Assessment. Is this one of the documents you would have reviewed in preparing your report in Downs?
A. Yes.
Q. Okay. Can you turn to page Romanette 12. It's, like, xii in the introduction.
A. Okay.
Q. All right. This page reports ATSDR's conclusions regarding the Hadnot Point water system, correct?

A. Correct.
Q. All right. And in those conclusions, ATSDR describes estimated upper-bound cancer risks for different population groups at Camp Lejeune; is that right?
A. Yes.
Q. And those population groups are children living on base, workers, Marines-in-training, and other adults living on base; is that right?
A. Yes, resident workers, other personnel, yeah.
Q. And for the Marines-in-training, from the early 1970s to the early 1980s, ATR -- ATSDR reported "an estimated upper-bound cancer risk of about four excess cases of cancer for every 10,000 exposed persons"; is that right?
A. Yes.
Q. And your understanding would be that this cancer risk refers to all cancer, not specifically renal cell carcinoma, correct?
A. That's correct.
Q. So the risk of renal cell carcinoma specifically would be less than four?
A. Well, I mean, it --
MR. ROBERTS: Objection.

A. Yeah, worst-case scenario, if all of these were kidney cancers, it would be exactly four.
BY MR. BU:
Q. Okay. If they're all -- if all four are kidney cancer, then the assumption would be Camp Lejeune water does not cause any other forms of cancer; is that right?
A. That's right.
Q. Okay. These are also lifetime risks for the 10,000 exposed persons, correct?
A. Correct.
Q. All right. Do you have any reason to question whether the elevated lifetime cancer risk for Marines-in-training would be different than four cases for every 10,000 exposed persons?
A. You're asking me if I have any reason to disagree with the statements on this page?
Q. Uh-huh.
A. I do not.
Q. Okay. And would Mr. Downs's risk best be described by the Marines-in-training population?
A. It can be except his timing on camp did not coincide with -- with the timing here.
Q. Okay. His timing does not coincide with any of the other groups, does it?

A. That's correct.
Q. Okay. Can you turn to Romanette 14 for me, Conclusion 2.
A. I'm there.
Q. Conclusion 2 describes ATSDR's conclusions regarding exposures at the Tarawa Terrace water system, correct?
A. Correct.
Q. Okay. And for the Tarawa Terrace water system, ATSDR concluded that for adults, workers, and Marines-in-training who are exposed only to water from Tarawa Terrace, the estimated upper-bound cancer risk was within U.S. EPA's Superfund target risk range; is that right?
A. That's right.
Q. Okay. Do you have any reason to think that adults, workers, and Marines-in-training exposed only to water at Tarawa Terrace had cancer risks that exceeded the U.S. EPA's Superfund target risk range?
A. I don't have any reason to disagree with the statements on this page.
Q. Okay. Do you have any reason to believe that Mr. Downs's exposure to water at Tarawa Terrace caused him to have a cancer risk that exceeded the

U.S. EPA's Superfund target risk range?

A. Well, based on -- based on the trials we reviewed earlier, it appears to be -- it appears to be so. So I'm not familiar with what the -- the only thing I'm not sure is what the Superfund target risk range is and what that means.

Q. Okay. Do you recall whether ATSDR made assumptions about durations of exposures for the Marines-in-training?

A. I do not recall.

Q. Okay. All right. Can you turn to page 20 for me, please. Do you see those bullet points in the middle of page 20, the bullet point beginning, "The tour-of-duty data"?

A. I do.

Q. Okay. ATSDR reviewed tour-of-duty data to determine what a reasonable exposure duration would be for its public health assessment, correct?

A. Correct.

Q. Okay. And at the end of that bullet point, ATSDR reports that, "Using this information, a 3-year exposure duration is considered a conservative onbase-time estimate for most Marine personnel and their families."

Do you see that?

A. Yes.
Q. Okay. Would it be fair to assume that ATSDR used a three-year exposure duration for the Marine-in-training group for its public health assessment?
A. It's possible, yeah.
Q. All right. And Mr. Downs did not have a three-year exposure duration at Camp Lejeune, correct?
A. He did not.
Q. All right. His exposure was shorter than three years, right?
A. Correct.
Q. Okay. All right. Can you turn to page 22 and 23, for me, please. And I'm actually going to mostly ask you about 22. Okay? All right. Do you recall earlier some discussion about the Bove studies looking at a Camp Lejeune cohort from 1975 to 1985?
A. Yes.
Q. Okay. And we agreed that Mr. Downs would not have been included in that cohort because his period of exposure would have been earlier than 1975, correct?
A. That's correct.

Q. All right. And at that time, I had asked you whether Mr. Downs's levels of exposure would be comparable to those in the 1975 to 1985 cohort. Do you recall that?

A. I do.

Q. Okay. Does Figure 5 describe the average concentration levels in drinking water between 1940 and 2000?

A. Yes.

Q. Okay.

MR. ROBERTS: '42 and -- and 1999, isn't it?

MR. BU: Yeah. Okay.

BY MR. BU:

Q. From 1942 to 1999?

A. Yes.

Q. All right. And looking at this summary chart, are the contamination levels greater between 1975 and 1985 for PCE than they are in 1960 when Mr. Downs was at Camp Lejeune?

A. So let's see. Tetrachloroethylene. They seem to be slightly higher, yes.

Q. Okay. And, in fact, for PCE at Hadnot Point, ATSDR's three-year average was no PCE in 1960, correct?

A. Correct.
Q. Okay. Similarly, for TCE at Hadnot Point, did ATSDR assume a higher three-year average concentration between 1975 and 1985 compared to the levels of TCE in 1960?
A. Yes.
Q. Okay. And this table is on a logarithmic scale; is that right?
A. Yes.
Q. Okay. So that means the -- the delta, I guess, between the levels in 1975 to 1985 are actually greater than would be depicted on a linear scale; is that fair to say?
A. That's -- yes.
Q. Okay.
A. That's fair to say.
Q. All right. The three-year rolling average for vinyl chloride is also greater for the 1975 to 1985 range than compared to 1960, correct?
A. So we're looking at -- yes.
Q. And, in fact, for its public health assessment, ATSDR assumed no vinyl chloride contamination at Hadnot Point in 1960, correct?
A. That's what they assumed, yes.
Q. Okay. Do you know how EPA determines the

regulatory risk values used in its public health assessment?

A. I do not.

Q. Okay. Are you offering any opinions critiquing ATSDR's public health assessment?

A. I will not.

Q. Other than the levels of exposure calculated by Dr. Reynolds and your review of the general causation reports and the epidemiological literature regarding the contaminants at Camp Lejeune, is there anything else that you considered in order to rule in Camp Lejeune water as the -- as a cause of Mr. Downs's cancer?

A. Well, outside of looking at his other risk -- potential risk factors, no.

Q. Okay. You mean ruling out his other potential risk factors?

A. Yes.

Q. Okay. Was there -- okay. So there was nothing in Mr. Downs's clinical presentation or his course of treatment that indicated TCE-induced or contaminant-induced kidney cancer; is that right?

MR. ROBERTS: Objection.

A. Yeah, I'm not sure I understand.

BY MR. BU:

Q. Okay.
A. Is anything specific to his course that would be different from a course of another patient with kidney cancer? Is that the question?
Q. Yeah, let me ask it this way.
Mr. Downs was not treated differently as if his cancer was caused by Camp Lejeune water; is that fair to say?
A. Again, make sure I understand. Was he treated differently because he was at Camp Lejeune? No.
Q. Okay. All right. And Mr. Downs had a recurrence in his small bowel. Do you recall that?
A. I do.
Q. All right. And your opinion is that the recurrence is related to the prior renal cell carcinoma; is that correct?
A. Yes.
Q. All right. Are you offering any opinions that the recurrence was caused itself by Camp Lejeune water?
A. Well, if we think that his kidney cancer was caused by Camp Lejeune water, then natural to surmise that his recurrence also was.
Q. Okay. Let me ask it this way.

Are you opining that his small bowel cancer was caused by anything other than a recurrence of his kidney cancer?

A. I do not.

Q. Okay. And the small bowel cancer was resected, correct?

A. That's correct.

Q. All right. And the resection was successful?

A. As far as I know, yes.

Q. Okay. Is there any indication that Mr. Downs will need further resection?

A. Yes.

Q. And what indicates that he will need --

A. Well --

Q. -- further resection?

A. -- let me rephrase that. Not further resection. Further treatment.

Q. Okay. What further treatment are you opining Mr. Downs will require?

A. Experience that patients that have a metastatic reoccurrence of kidney cancer are at extremely high risk of reoccurrence in other places. And so it's only fair to surmise that it's -- it's more likely than not that he'll have another

reoccurrence that will require treatment.
Q. Okay. Other than the fact that he's had a prior recurrence, is there any evidence that Mr. Downs will have a recurrence in the future?
A. Only statistical probabilities.
Q. Okay. To the best of your knowledge, no other recurrence has been detected, right?
A. That's correct.
Q. Okay. Have you identified any other injuries or permanent effects related to Mr. Downs's cancer other than his resection of his kidney and his resection for his small bowel?
A. I believe he developed chronic kidney disease as -- as -- as a consequence of losing his kidney.
Q. Okay. His chronic kidney disease is Stage 3, correct?
A. That's correct.
Q. All right. And Stage 3 chronic kidney disease is manageable?
A. It is manageable, yes.
Q. Okay. Are you offering opinions about what additional treatment Mr. Downs needs to manage his Stage 3 chronic kidney disease?
A. I will not.

Q. Can you refer to page 26 of your report for me, please.
A. It's --
Q. It's the last page.
A. It's the last page. Does it --
Q. Yeah.
A. -- mean we're almost done?
Q. Not quite.
A. It's okay.
Q. It means we're making progress.
A. All right.
Q. All right. The last item you offer the opinion that, "The medical billing relating to Mr. Downs's kidney cancer diagnosis and metastasis, the surgery to remove his kidney and the follow up treatment related to his kidney cancer was reasonable and medically necessary."
Do you see that?
A. Yes.
Q. Okay. What -- what follow-up treatment are you describing for Mr. Downs here?
A. Well, I mean, every patient with cancer requires careful follow-up, including scans, examinations, blood work, et cetera.
Q. Okay. And did you review Mr. Downs's

billing records?
A. Yes.
Q. Okay. Are you offering opinions regarding the reasonableness of the amounts billed to Mr. Downs?
A. Not really.
Q. Okay.
A. Let's just say that I didn't see -- I didn't think any of the billing was unreasonable. Let me put it this way.
Q. Okay.
A. That's the information that I've gotten.
Q. Did you do anything to tabulate or add the total amount of those bills?
A. I did not.
Q. Okay. Did you do anything to calculate the total value of those medical bills?
A. I did not.
Q. All right. And you understand that the amount billed is not necessarily the same as the amount that Mr. Downs or any insurance would necessarily pay for treatment; is that fair?
A. I understand, more than most probably.
Q. And it's fair to say that hospitals often do not collect the full amount charged to an insured

patient?
A. That is -- that is correct.
Q. And some of the medical costs may be written off by either the hospital or an insurer; is that fair?
A. It's possible.
Q. Okay. When you reviewed Mr. Downs's medical bills and the reasonable -- reasonableness of those costs, are you looking at the amount that Mr. Downs paid or the amount the insurance paid or the total amount billed?
A. I looked at the total amount billed.
Q. Okay. Including the portion that may be written off by a hospital or insurer?
A. Most likely, yes.
Q. In your practice are you involved in determining the appropriate costs for medical services?
A. I'm not.
Q. Is there any methodology you used to determine whether Mr. Downs's medical bills were reasonable?
A. Just my ballpark understanding of what things cost.
Q. Okay. For his prior kidney cancer

diagnosis, other than his initial testing, his nephrectomy, and his postsurgical surveillance, is there any other treatment that you would relate to that kidney cancer?

A. So diagnosis, surveillance, treatment, management of recurrence.

MR. BU: All right. Let's actually stop there.

THE VIDEOGRAPHER: All right. We are off the record at 11 -- sorry, 12:27.

(Break taken, 12:27 p.m. to 1:05 p.m.)

THE VIDEOGRAPHER: We are back on the record at 1:05.

BY MR. BU:

Q. Dr. Margulis, did you discuss your deposition testimony with anyone during the break?

A. I did not.

Q. Is there anything that you testified to today that you would like to clarify or correct?

A. Not yet.

Q. Going back to the studies to which you compared Mr. Downs's levels of exposure, would it be fair to say most of those comparisons are to the levels described in Dr. Bove's studies?

A. Yes.

Q. Okay. And you reviewed those studies, including Dr. Bove's, for rigor and methodology; is that correct?

A. I mean, I reviewed the methodology, yes.

Q. Okay. Would you agree that one weakness of Dr. Bove's study is the potential for exposure misclassification?

A. Yes.

Q. Did you review the National Toxicology Program's report on carcinogens?

A. Pertaining to this specific case, yes.

Q. Okay. And in that report on carcinogenics, did the National Toxicology Program review the methodology in Bove?

A. Perhaps. I don't -- I don't recall what specific. . .

MR. BU: Can we pull 65? Should be the -- the table.

(Exhibit No. 12 marked.)

MR. BU: Thank you.

BY MR. BU:

Q. The court reporter just handed you what's marked Exhibit 12. This is an excerpt from the Report on Carcinogens Monograph on Trichloroethylene, and it was Figure 4-1 on page 65

from that report.
A. Yes.
Q. Do you recall reviewing this figure when you were preparing your report in Downs?
A. I saw this figure, yes.
Q. Okay. And is this describing the study utility of different epidemiological studies, examining the relationship between TCE and kidney cancer?
A. Yes.
Q. Okay. And in this ranking, NTP ranks Bove as low utility, correct?
A. Yes.
Q. And that is the lowest utility ranking that NTP reports, correct?
A. Yes.
Q. Okay. And one of the concerns that NTP raised with Bove were, "Considerable concerns for exposure misclassification"; is that right?
A. Correct.
Q. All right. And do you have any reason to disagree that one considerable concern regarding the utility of the Bove study is exposure misclassification?
A. That is a concern, yes.

Q. Okay. And another concern that's listed here is mortality. Do you see that?

A. Yes.

Q. And why would mortality be a concern for the utility of an epidemiological study?

A. I mean, many potential reasons. They don't specify here, but I would imagine that ascertainment of mortality could be different. You have to do it by -- through death records. It's not entirely clear what caused the mortality. You could have, for example, kidney cancer and die from an unrelated disease. So those types of issues are -- would be -- would be -- would be, I think, a problem with any epidemiological study.

Q. Is what you described similar to a concern about disease misclassification?

A. Yes.

Q. Okay. And would it be fair to say one concern with mortality studies is disease misclassification?

A. Potentially, yes.

Q. All right. The last concern noted by NTP in Figure 4-1 is, "Limited method to consider potential confounding."

Do you see that?

A. Yes.
Q. All right. And we had discussed earlier that Bove 2014 does not directly control for smoking, correct?
A. Yes.
Q. And smoking is one potential confounding variable for kidney cancer, correct?
A. Yes.
Q. Okay. Okay. Do you consider the latency between exposure and disease relevant to determining whether the exposure is a cause of disease?
A. It's one of the considerations.
Q. Okay. And why is latency one of the considerations?
A. Ultimately, you know -- to give an example, you know, if you got exposed to a potential carcinogen and develop cancer within several days from exposure, you know, one could question the -- question the -- the -- the correlation, right? Conversely, you know, I think latency for solid tumors should be probably at least ten, 15 years.
Q. When you say, "at ten to 15 years," you're describing a minimum latency?
A. Well, yes.
Q. Okay. In your report, you cite a latency

presumption that's provided by the Department of Labor for certain energy workers. Do you recall that?

A. Can you point me -- what specifically in the report?

Q. Sure. Well, let's -- I'll cite you to the report, and then we can look at the presumption. So footnote 50 refers to "Department of Labor Office of Workers' Compensation Program"; is that right?

A. Yes.

Q. Okay.

MR. BU: Can we pull 62, please?

(Exhibit No. 13 marked.)

MS. JOHNSON: It'll be 13.

MR. BU: Okay. Thank you.

BY MR. BU:

Q. And do you recall reviewing a website describing DOL's Office of Workers' Compensation Programs' presumptions?

A. Yes.

Q. Okay. All right. And it's page -- can you turn to page 5, Item 9.

A. I'm there.

Q. Okay. And Item 9 describes DOL's presumptions regarding kidney cancer, correct?

A. Yes.
Q. Okay. And these are just presumptions; it's not a determination of causation, correct?
A. Correct.
Q. In paragraph c on page 7, DOL describes the latency for these workers and describes the latency as "20 years after initial exposure."
Do you see that?
A. Yes.
Q. Okay. Would you agree that cancer that manifests shorter than 20 years after the initial exposure is less likely to be caused by that exposure?
A. I'm not sure.
Q. Okay. And if you look on page 6, paragraph b, DOL also describes the duration of exposure. Do you see that?
A. So page 11 --
Q. Sorry, page 6 of 11, paragraph b at the top.
A. 6 of 11, paragraph b. Okay. I see "Exposure." Okay.
Q. And these presumptions only apply to employees who are employed for five or more consecutive years prior to 1990, correct?

A. Correct.
Q. Okay. And the duration of employment would be relevant to determine the extent of the TCE exposure, correct?
A. Correct.
Q. Okay. Are -- do you have any opinions about whether the dose of TCE affects the latency of TCE?
A. I don't think that relationship is clear-cut.
Q. Okay. Do you have any opinions about when a latency would be too long to ascribe causation?
A. I'm not sure if such -- such a cutoff exists.
Q. Okay. Would you agree cancers that arise far, let's say -- let me put it this way.
Would you agree that a cancer that arises much longer than 20 years after the exposure is less likely to be caused that -- by that exposure than a cancer that arises 20 years after the exposure?
A. I'm not sure it's -- you can use that across the board, the -- this type of statement.
Q. And why do you think that would not apply across the board?
A. I mean, really, really specific -- would it

be specific to the substance you're looking at, how it -- the mechanism of -- by which it causes cancer, dose of exposure, potentially other factors involved.

Q. Okay. How did you first become aware of the Camp Lejeune water litigation?

A. I -- I think I may have seen this in the media somewhere.

Q. When you say, "media," are you referring to, like, a news articles, to an advertisement? What -- what do you think you may have seen?

A. I think a news article.

Q. Okay.

A. This has been -- this has been years back, so I don't -- I don't recall the exact time.

Q. All right. Do you know if it would have been within the last three years or before then?

A. It would have been within the last three years, I think, yeah.

Q. And who first contacted you about working on the Camp Lejeune water litigation?

A. I believe I was contacted by an attorney named Pat Telan.

Q. Without telling me anything you and Mr. Telan may have discussed, do you know why

Mr. Telan reached out to you?

A. I'm not sure.

Q. Okay. Do you know how Mr. Telan found out about you?

A. That also, I don't know.

Q. Okay. When did Mr. Telan first contact you about the Camp Lejeune water litigation?

A. It's possibly a couple of years ago.

Q. Okay.

A. Or close to it. I -- I honestly don't remember the exact date.

Q. Okay.

MR. BU: Can we pull 31?

(Exhibit No. 14 marked.)

MS. JOHNSON: It's 14.

BY MR. BU:

Q. Okay. I have handed you what's been marked Exhibit 14. These are invoices from you submitted to Bell Legal Group.

Do you see that?

A. I do.

Q. Okay. And these are the invoices that you would have submitted to Bell Legal Group?

A. Yes.

Q. Would the first invoice that you submitted

have been, I guess, for services through February 17, 2024?

A. Yes.

Q. Okay. And do you know about how long before February 2024 you would have started working for Bell Legal Group?

A. Months and months before.

Q. Okay.

A. It was a prolonged period of time from which I was contacted from -- to which we actually did any work on this.

Q. Okay. Did you sign any contracts or retainer agreements with Bell Legal Group?

A. Not that I recall.

Q. Had you worked with Bell Legal Group before this litigation?

A. I have not.

Q. When Mr. Telan reached out to you, did he reach out by phone or by e-mail or some other form of communication?

A. I think -- honestly, I think the initial contact was made by e-mail, I suspect, but then we had a phone conversation afterwards.

Q. Okay. And when you had that first phone conversation had you agreed to work with Bell Legal

Group in the Camp Lejeune water litigation yet?

A. I hadn't formally agreed to do it at that point.

Q. Okay. Do you recall what was discussed on that first phone conversation?

A. Just the nature of the -- of the case and what -- what my potential engagement would be.

Q. Okay. How was the nature of the case described to you at that first phone conversation?

MR. ROBERTS: Well, objection. Don't disclose any discussions you've had with Mr. Telan or any of the other attorneys.

MR. BU: I think the -- the first communication is not protected because he was not retained at that point.

MR. ROBERTS: Well, I think that's a pretty fine distinction you're drawing. I'm not sure I -- I agree with that.

MR. BU: Okay. So are you instructing him not --

MR. ROBERTS: Well, let -- let -- let's see where this goes. Are you asking him to disclose opinions that Pat Telan may have had that he provided to Dr. Margulis?

MR. BU: I'm asking, yes, about how

the nature of the litigation was described at this first phone conversation before Mr. -- Dr. Margulis was retained.

MR. ROBERTS: Okay. I'm -- I'm going to instruct you not to answer that.

BY MR. BU:

Q. And are you declining to answer?

A. I'm following the lead of my counsel.

Q. Okay.

MR. ROBERTS: Let me -- let -- let me rethink that. If you're asking him generally what he understood about the litigation, I -- I think I'm okay with that, but I don't want you getting into theories or -- or our -- our assessment of various issues in the case.

But with that caveat, go ahead.

A. I mean, I -- honestly, he made a very general sort of statement about, you know, who -- who the population was, what the potential questions would be, and what my potential engagement in the case would be as an expert witness.

BY MR. BU:

Q. Okay. And what was your potential scope of engagement?

A. To review -- to look at specific charts of

patients that may have been affected by -- by Camp Lejeune.

Q. Okay. Did you do any research of -- regarding Camp Lejeune before you were retained as an expert witness?

A. I did not.

Q. Okay. Did you do any research on the contaminants at issue in the Camp Lejeune water litigation before you were retained as an expert witness?

A. I did not.

Q. Looking at your invoice from February 2024, some of this refers to work being done for a draft in Downs and some of it is redacted.

Do you see that?

A. Yes.

Q. Okay. Without telling me information about the redacted -- the redacted work, what percent of the 16 hours billed was for Downs?

A. All of it.

Q. Okay. So none of the 16 hours billed in February 2024 were for this redacted item?

A. Well, the redacted item, without saying more than I'm allowed to, was -- was specifically pertaining to Mr. Downs. I just broke it down into

some specifics. So the redacted item was directly related to -- to the Downs matter.

Q. Okay. The redacted item is not related to another case or another litigation?

A. Correct.

Q. Okay. Can you turn to the next page of that exhibit. This is your invoice through September 2024.

A. Yes.

Q. A similar question. This line item for the 23 hours, what percent of that was for work related to Mr. Downs's case?

A. All of it.

Q. All of it.

Okay. And the line item for 4.5 hours, what percent of that was related to Mr. Downs's case?

A. All of it.

Q. Okay. And your understanding is the redacted information is -- is only describing the specific work being done in the Downs case?

A. Correct.

Q. Okay. Can you turn to the next page, your December invoice.

A. I'm there.

Q. All right. Same question. The 13 and a half hours billed through December 2024, what percent of that work related to Downs?

A. All of it.

Q. Have you -- I'm sorry. Did you do other work on the Downs report between December 9th and today?

A. I -- I did the workup until the final version of this report was submitted so whenever -- whenever this is dated. After this report was submitted and signed, I did not do any work specific to this report --

Q. Okay.

A. -- itself.

Q. Do you have records describing how much work you would have done between December 9th and when this report was submitted?

A. I -- I don't.

Q. Okay. Have you submitted additional invoices to Bell Legal Group since December 9th, 2024?

A. I have not.

Q. Okay. Do you know how much work you've done for Bell Legal Group between December 9, 2024, and today?

A. Almost all of it would be for prep for the deposition, so probably something in the range of eight hours.

Q. And how did you prepare for today's deposition?

A. Reread my report, reread most of the relevant articles, which you very aptly questioned me on, things like that.

Q. Okay. Without telling me what was discussed, who did you meet with to prepare for your deposition?

A. I met the counselor here, and blanking on -- Mandel, I believe I -- yeah.

Q. Was anyone other than a plaintiff's attorney involved in your preparation for today's deposition?

A. No.

Q. Okay. Did you have any support staff assist in drafting your report?

A. I had one of my assistants review the report for -- mainly for sort of structure and getting the bibliography together in a proper format.

Q. Did you have your assistant help you identify articles to review?

A. No.
Q. Did you have your assistant help you review Mr. Downs's medical records?
A. No.
Q. Is this an assistant that you have worked with in the past?
A. No.
Q. Was the assistant someone provided to you by Bell Legal Group?
A. No.
Q. Is it someone here at University of Texas Southwestern?
A. Yes.
Q. Okay. What's the assistant's name?
A. Thomas Monaghan.
THE STENOGRAPHER: I'm sorry. What was that?
THE WITNESS: Thomas Monaghan.
BY MR. BU:
Q. Did you invoice Bell Legal Group for the time that Mr. Monaghan spent assisting in the report?
A. I did not.
Q. Do you know how much time Mr. Monaghan spent assisting with the report?

A. I do not.
Q. Other than reviewing for structure and assisting with the bibliography, was there anything else Mr. Monaghan did to help you prepare your report in Downs?
A. No.
Q. Did you ever discuss the substance of your report with Mr. Monaghan?
A. I did not.
Q. Okay. Your fee schedule is $800 an hour; is that right?
A. Correct.
Q. Okay. And your payment does not depend on the outcome of this case, correct?
A. It does not.
Q. All right. Is this the same fee schedule that you use in other cases?
A. Yes.
Q. Did you speak with any other plaintiffs' experts in the course of preparing your report in this case?
A. I did not.
Q. How many meetings did you have with Mr. Roberts and Mr. Mandel to prepare for your deposition?

A. I would say two.
Q. Do you remember when the first meeting was?
A. It was roughly two weeks ago, I think, something in that range.
Q. And when was the second meeting?
A. Yesterday.
Q. Were both meetings with both Mr. Roberts and Mr. Mandel?
A. Yes.
Q. Were any other lawyers present at those meetings?
A. I don't recall. I don't think so, but I don't -- somebody may have been listening and -- they was Zoom meetings, so I'm not a hundred percent sure.
Q. Okay. How long did the first meeting last?
A. An hour.
Q. And how long did the second meeting last?
A. Roughly, the same.
Q. One hour?
A. Uh-huh, yes.
Q. Earlier, you said you spent about eight hours preparing for your deposition. What accounts for the other six hours, roughly?
A. So rereading the -- the literature,

rereading my report.

Q. Other than your meetings with Mr. Roberts and Mr. Mandel, you didn't meet with anyone else to prepare for your deposition, did you?

A. I did not.

Q. Okay. Have you had any communications with any of the plaintiffs in the Camp Lejeune water litigation?

A. I have not.

Q. Have you had any communications with any of Mr. Downs's treating physicians?

A. I have not.

Q. Have you had any communications with any other witnesses in the Camp Lejeune water litigation?

A. No.

Q. You mentioned earlier that you have testified before as an expert witness in litigation. Do you recall that?

A. Yes.

Q. Okay. And I think you said about a dozen times; is that right?

A. Yes.

Q. In how many of those cases were you an expert witness for the defendant?

A. I think my plaintiff versus defendant split would be something like 70/30.
Q. And that's 70 for plaintiffs, 30 for defendants?
A. Correct.
Q. Have you ever worked as an expert witness for Keller Postman?
A. The name sounds familiar, yes.
Q. Have you ever worked as an expert witness for Lieff Cabraser?
A. That doesn't -- doesn't ring a bell.
Q. What about Weitz & Luxenberg?
A. Doesn't ring a bell.
Q. Roberts & Lewis?
A. Doesn't --
MR. ROBERTS: Lewis & Roberts.
BY MR. BU:
Q. Lewis & Roberts?
MR. ROBERTS: You're promoting me today, Nathan.
MR. BU: Okay.
A. That rings a bell, yes.
BY MR. BU:
Q. Outside --
MR. ROBERTS: And for the -- for the

record, this is the only case I've ever worked on with Dr. Margulis, if that helps.

BY MR. BU:

Q. Have you worked with that law firm before the Camp Lejeune water --

A. No.

Q. -- litigation?

Okay. And have you worked with the Mandel law firm before the Camp Lejeune water litigation?

A. I have not.

Q. Okay. Have you ever been a witness in a case involving the United States?

A. Not that -- no, I don't think so.

Q. Okay. You're involved in the Zantac/ranitidine litigation, correct?

A. Yes.

Q. And is that for plaintiffs?

A. Yes.

Q. And are you a specific causation expert in that litigation?

A. No, general causation.

Q. What is your understanding of the difference between general causation and specific causation?

A. General is general pertaining to where --

certain substances generally considered to be carcinogenic. Here in -- in specific causation, my opinions are rendered in reference to a specific plaintiff.

Q. In this litigation, you're testifying as a specific causation expert, correct?

A. Correct.

Q. Are you offering your own general causation opinions in this litigation?

A. No.

Q. Over the past four years, about what percentage of your annual income would you say is earned from serving as an expert witness?

A. Less than 5 percent.

Q. What are -- I'm sorry. Have you been deposed in the Zantac litigation?

A. Yes.

Q. And have you testified at trial in the Zantac litigation?

A. I have not.

Q. Okay. What were the opinions you disclosed in the Zantac litigation?

A. In general, that there was evidence that Zantac was carcinogenic specifically in -- in -- as it pertains to kidney cancer.

Q. And how did you determine whether Zantac causes kidney cancer?

A. Looked at epidemiological data looking -- some of the animal data, human studies.

Q. Have you ever been involved in litigation in your personal capacity?

A. Are you asking me if I've been sued?

Q. Yeah.

A. No, I have not.

Q. Have you ever been a fact witness in another litigation regarding, like, a coworker who's been sued?

A. I have not.

Q. Sorry, can you go back to your report, Exhibit 1. I guess this would be page 73 of your testimony history.

MR. ROBERTS: What page, Nathan? I'm sorry.

BY MR. BU:

Q. Yeah. So this page is actually not numbered, but I think it would be basically 73. There --

A. This is depositions or --

Q. Testimony history.

A. Testimony history. I mean, I -- I have the

page that says, "Depositions."

Q. Yes.

A. Okay.

Q. And there's a reference to, "Zantac Medical Literature - Expert Witness - Princeton, New Jersey." Do you see that?

A. Yes.

Q. Okay. And so this would be your testimony as a general causation expert in the Zantac litigation?

A. Correct.

Q. Okay. What was the law firm that retained you in the Zantac litigation?

A. I -- I don't recall. I have to look it up.

Q. Okay. All right. Have you testified at trial in the last four years?

A. Yes.

Q. Okay. In what case did you testify at trial?

A. This was actually a case that's listed here. Let's see. Should be listed here. So Jennifer Hancock versus Sunil Purohit in Louisiana. So fifth line item.

Q. All right. When did you testify at trial in that case?

A. This is about a year ago.
Q. Are there any other cases where you testified at trial in the last four years?
A. I don't think so.
Q. Okay. Have you been involved in any other litigation relating to TCE?
A. No, I have not.
Q. Okay. Have you been involved in any other litigation relating to PCE, vinyl chloride, or benzene?
A. I have not.
Q. Were you also retained as an expert witness in the C-8 litigation?
A. Yes.
Q. Okay. And this was for plaintiffs?
A. Yes.
Q. Okay. Other than the C-8 litigation and the Zantac litigation, have you been involved in any litigation relating to toxic exposures?
A. I have not.
Q. Okay. Are these other cases that you list in your testimony history, other than the Zantac litigation, medical malpractice cases?
A. Yes.
Q. Okay. And I should go back. In the C-8

litigation, were you testifying regarding general causation or specific causation?

A. Specific causation.

Q. And were these kidney cancer cases?

A. Yes.

Q. In the Zantac litigation, did you offer any opinions specific to individual plaintiffs?

A. I did not.

Q. In the C-8 litigation, did you offer specific causation opinions for more than one plaintiff?

A. No.

Q. To the best of your knowledge, were any of the law firms involved in either the C-8 litigation or the Zantac litigation also involved in the Camp Lejeune water litigation?

A. I would say that during one of the discussions we had, one of the attorneys for the Zantac case was present. I don't know what his -- what -- actually what his capacity was in -- in this specific litigation.

Q. Okay. Okay. Did you include a CV with your report?

A. I -- I think it's -- it's attached to it. Well, is it? Yeah, I think -- I think it is, yeah.

Q. Okay. Can you turn to the first page of that CV for me, please.

A. I'm there.

Q. Okay. This CV is dated January 2nd, 2025, correct?

A. Correct.

Q. All right. Have you updated your CV since January of this year?

A. I have not. We generally update it twice a year, so it's about -- it's about to -- due to be updated.

Q. Okay. What updates would you need to make for your CV for the next update?

A. It would be just publications, literature. There -- there's nothing else substantive.

Q. Would any of the publications that you need to update your CV with relate to TCE, PCE, vinyl chloride, or benzene?

A. No.

Q. Would any of those publications relate to toxic exposures?

A. No.

Q. What are some of the publications that you would need to update your CV with?

A. Literature pertaining to outcomes in

molecular biology and kidney and upper tract cancer. There is something in the range of 20 -- 15 to 20 publications.

Q. What is molecular biology?

A. Meaning what are the molecular mechanisms that -- that -- that cause either cancer development or progression or correlate with outcomes.

Q. Other than the publications after January 2nd, 2025, are there any publications that you would have omitted from your CV?

A. Not intentionally.

Q. Is there any other information that you would have excluded from your CV?

A. No.

Q. Have you ever been subject to any disciplinary action or censure by a licensing body?

A. No.

Q. Have you ever been subject to disciplinary action by any court or tribunal?

A. No.

Q. Currently, you're a professor of urology here at University of Texas Southwestern; is that right?

A. That's correct.

Q. And from 2020 to 2021, you were the chair

in urology; is that right?

A. So, no. It's -- it's confusing. So I -- I have -- I have a chairmanship here, meaning somebody donated a bunch of money and then they name a chair after you, which -- so I -- I don't -- I don't know if I'm explaining this properly, but I'm not a -- I'm not a chairman of this department. I just have a Paul Peters endowed chair, which basically means there's an endowment that -- that's given to me, and it's -- we need to correct that because it's -- that's ongoing; it's not just for a year.

Q. Okay. Can you turn to page 2 of your CV for me, please.

A. Yes.

Q. So there's a line that says, "2020 to 2021, Paul C. Peters, M.D., Chair in Urology."

Do you see that?

A. Yes. It should read, "2020 to Present."

Q. Okay.

A. "2020 to Present," yes.

Q. All right. And the chair in urology is a position, but it's not necessarily the chair of the department, right?

A. It's not even a position. It's just -- it just -- it just indicates that you have an

endowment --

Q. Okay.

A. -- an -- an amount of money allocated that could be used for research, essentially.

Q. Okay. What percent of your work is for research versus clinical practice?

A. 120 clinical, 40 percent research. Well, in reality, I -- I think, in fairness, it's -- it's about 90 percent clinical, 10 percent research.

Q. And how do you describe your main research focus?

A. Again, molecular biology and outcomes in kidney and upper tract urothelial cancers.

Q. Okay. I think you -- do you view molecular biology as distinct from the field of toxicology?

A. I think there's overlap, but, yeah, I think they're -- I mean, yes, so there's overlap, but it's a distinct field, yes.

Q. Okay. Do you hold yourself out as a toxicologist?

A. I do not.

Q. Okay. You hold yourself out as a molecular biologist, though, right?

A. I do not.

Q. Not as a molecular biologist?

A. No.
Q. Okay. Do you hold yourself out as an epidemiologist?
A. I do not.
Q. Have you ever been a principal investigator for an epidemiological study?
A. I have not.
Q. Have you published peer-reviewed literature on epidemiology?
A. No.
Q. Do you hold yourself out as a geneticist?
A. No.
Q. Have you ever been a principal investigator for a toxicological study?
A. I have not.
Q. Do you hold yourself out as an expert in environmental health?
A. No.
Q. Do you hold yourself out as an expert in occupational medicine?
A. I do not.
Q. Do you hold yourself out as an expert in statistics?
A. No.
Q. Have you ever published peer-reviewed

literature regarding the effects of TCE on kidney cancer?

A. I have not.

Q. Have you ever published peer-reviewed literature regarding the effects of PCE, vinyl chloride, or benzene on kidney cancer?

A. I have not.

Q. In your practice, have you ever treated patients with kidney cancer who were exposed to water at Camp Lejeune?

A. Not that I know of.

Q. Do you currently practice at a VA center in North Texas?

A. I have privileges there, but I don't actively see patients there or treat them there, meaning that occasional circumstances of call coverage, I may have to go there and take care of -- take care of those patients, but I don't routinely practice there.

Q. All right. Let's say in the past three years, about how many patients would you have seen at the VA clinic in North Texas?

A. Zero.

Q. Okay.

A. Oh, the small caveat that those patients

now have the capacity to come here. So there was -- there was an -- there was an act passed to where they can seek care somewhere else if they're not seen in a timely fashion. So I do -- I do see, actually, quite a bit of -- quite a few VA patients, just not in that setting, here on campus.

Q. The patients that are referred here from VA, do you screen them for Camp Lejeune water exposures?

A. I do not.

Q. Do you screen them for other toxic exposures?

A. I mean, outside of things like smoking, no.

Q. Okay. The veteran patients who are referred here, do they ever ask you about Agent Orange exposures, for example?

A. Do they ask me about Agent Orange? I mean, they -- they sometimes ask if their cancer is Agent Orange-related disease, and I point them to -- to their VA representative to -- to make those determinations.

Q. Okay. You -- do you ever make those determinations yourself?

A. I do not.

Q. Okay. Do you provide training to other

residents or fellows?
A. Yes.
Q. And is that training related to treating kidney cancer?
A. Yes.
Q. Okay. When you train residents or fellows, do you instruct them on the risks of exposure to TCE, PCE, or vinyl chloride?
A. Not specifically. We instruct them that there are occupational exposures that exist, but we don't go into detail about specific chemicals.
Q. Okay. Do you teach them about residential water exposures?
A. I do not.
MR. BU: Could we go off record for about five minutes?
MR. ROBERTS: Sure.
THE VIDEOGRAPHER: We are off the record at 1:51.
(Break taken, 1:51 p.m. to 1:54 p.m.)
THE VIDEOGRAPHER: We are back on the record at 1:54.
BY MR. BU:
Q. Dr. Margulis, did you discuss your deposition testimony with anyone during the break?

A. This break?
Q. Yeah.
A. No.
Q. Okay. Is there anything you've testified to that you'd like to clarify or correct?
A. Not yet.
Q. I forgot to ask, on your CV there's a reference to NCCN bladder/penile cancers guidelines. Do you recall --
A. Yes.
Q. -- that from your CV?
Okay. What is NCCN?
A. It's an -- it's a cancer -- it's an organizational that -- that gives guidelines, among other things -- but provides guidelines for practicing clinicians in terms of how to diagnose, treat, and survey cancer.
Q. Okay.
THE VIDEOGRAPHER: You don't have your microphone on.
BY MR. BU:
Q. What was your role in the NCCN guidelines for bladder and penile cancers?
A. Well, to be -- to be one of the panelists. The way that the guidelines work mainly is to

constantly update treatment recommendations as new clinical data emerges.

Q. Are the guidelines considered reliable by physicians in your field?

A. I don't know what you mean by "reliable." Guidelines are just guidelines. You know, they don't tell you how to practice. They provide maybe some framework to -- to get a head start in terms of -- so, I mean, they -- they're useful. They -- to -- to make general -- general assumptions about care but certainly don't drive your clinical practice.

Q. Okay. Does NCCN also provide guidelines for kidney cancer?

A. Yes.

Q. Do you review those guidelines as part of your clinical practice?

A. Yes.

Q. Do you rely on those guidelines as part of your clinical practice?

A. Again, I mean, you have to define what you mean by "rely." I -- I would consult them, but there are situations where I may not follow the guidelines or treat patients outside of the guidelines.

Q. Okay. You have testified that you did not meet with any other experts. Did you communicate with any other plaintiffs' experts by e-mail or other forms of communication?

A. Not that I can recall.

Q. Okay. During your deposition today, did you refer to any materials on the laptop in front of you?

A. No. I've been looking at unrelated patient stuff.

Q. Okay. Do you feel that your testimony today was complete and accurate to the best of your ability?

A. Yes.

MR. BU: No further questions.

EXAMINATION

BY MR. ROBERTS:

Q. Dr. Margulis, I'm going to try to be brief so we can get out of here this afternoon. My name is Jim Roberts, and, of course, we met prior to the deposition, correct?

A. Yes, Jim, we have.

Q. And let me just start by -- by saying this. You -- you've offered an opinion in this case that more likely than not, Mr. Downs' kidney cancer was

caused by his exposure to water at Camp Lejeune. Fair?

A. That is correct.

Q. All right. Could -- could you walk me through how you made that determination. And feel free to -- to refer to your expert report if you'd like, but just generally tell us how you reached that conclusion.

A. Well, we know he was at Camp Lejeune from February of 1960 to September of '61, if I'm not mistaken; is that correct? During that period of time, we have estimates of what concentrations of these compounds he was exposed to both at work and -- and at home, both PCE and TCE, among others, right? We know that. We have experts that have reconstructed and provided an estimate of his cumulative exposure over -- over those periods of time. Then we can go back to the literature that was discussed, mostly the Bove studies -- they're specifically applicable to the Camp Lejeune case -- which indicate that at the levels of exposure that he sustained, it is more likely than not that those levels of exposure contributed to development of kidney cancer.

Q. Now, during some of his questioning, Mr. Bu

asked you about length of -- of someone's exposure -- do you -- do you recall those questions -- could impact the -- the -- the causation issue and whether or not those chemicals are more likely than not to -- to cause cancer.

Do you -- do you generally recall those questions?

A. I generally do, yes.

Q. Now, would it be fair to say that -- that Mr. Downs was not only working there, he was -- he was living there, correct?

A. That's correct.

Q. Showering there?

A. Drinking water there, showering, yes.

Q. Right. And let me ask you this.

On -- on page 21 of your report, you -- you mention PCE, TCE, and vinyl chloride, correct?

A. Yes.

Q. And did you take into account his exposure to vinyl chloride in coming to your opinions in this case that it's more likely than not, the exposure to the volatile organic compounds at Camp Lejeune caused his kidney cancer?

A. Correct, yes, I did.

Q. All right. Let me ask you -- Mr. Bu handed

you a document that has been marked as Exhibit 9, and it's a -- it's an ATSDR report, Summary of Findings. I think it's from 2007. On page A -- on -- on page A97, do you recall those questions?

A. I do.

Q. He -- and one of them he asked you, "Can ATSDR water modeling results be used to determine the concentration of PCE that my family and I were exposed to on a daily basis?"

You see that question?

A. I do.

Q. And then the answer was, "No," and then there's further information after the "No," correct?

A. Correct.

Q. Were you aware that this was subsequently -- that the ATSDR had a -- had a subsequent addendum that said, "The ATSDR's exposure estimates cannot be used alone to determine whether you or your family suffered any health effects as a result of past exposure to TCE-contaminated water at Camp Lejeune"? Were you aware of that?

A. I was.

Q. Okay. You're aware of the -- the -- the --

A. I know there's a revision to this.

Q. Okay.

MR. ROBERTS: Let's mark this as Exhibit -- what's the next exhibit?

THE STENOGRAPHER: 15.

(Exhibit No. 15 marked.)

MR. BU: Jim, do you have a copy for me?

MR. ROBERTS: Yeah, I do.

MR. BU: Okay. Thank you. Thanks.

MR. ROBERTS: Yeah.

BY MR. ROBERTS:

Q. So, Dr. Margulis, this has been marked as Exhibit 15. Is this the revised ATSDR document that you were referring to?

A. Yes, sir.

Q. All right. And it would be -- would it be fair to say that in -- in coming to your opinions in this case, you didn't just look at the exposure estimates in ADSDR -- ATSDR, correct?

A. Correct.

Q. You -- you've considered Mr. Downs's other potential risk factors for -- for developing kidney cancer, fair?

A. That is correct.

Q. All right. Did -- did you have occasion to see the expert report that was prepared by

Dr. Stadler in this case?
A. I did.
Q. And did Dr. Stadler render an opinion, to your recollection, that -- well, strike that.
Do you recall the questions that Mr. Bu asked you about Mr. Downs' smoking and -- and questions along those lines, his smoking history?
A. I did.
Q. All right. Would it be fair to say that Dr. Stadler did not attribute David Downs' kidney cancer to smoking, did he?
A. Correct.
Q. And what --
A. He did not.
Q. Do you recall that, in fact, Dr. Stadler rendered an opinion that his cause was idiopathic?
A. That is correct.
Q. And what does "idiopathic" mean?
A. Well, he means that -- Dr. Stadler at least thought that there was no known cause for Mr. Downs' kidney cancer.
Q. Okay. Are you aware that Dr. Bove's studies have been peer-reviewed?
A. Yes.
Q. And do you recall that there have been

positive peer reviews of Dr. Bove's studies?

A. Yes.

Q. Okay.

MR. ROBERTS: That's all I've got. Thank you.

FURTHER EXAMINATION

BY MR. BU:

Q. One follow-up.

Is the peer-review process infallible?

A. Nothing's infallible.

Q. Okay. And some peer-reviewed articles may still be methodologically flawed, correct?

A. It's possible.

MR. BU: Okay. Nothing further.

MR. ROBERTS: Nothing further. Thank you.

THE VIDEOGRAPHER: All right. We are off the record at 2:03.

(Deposition concluded at 2:03 p.m.)

CHANGES AND SIGNATURE.

VITALY MARGULIS, M.D. JULY 11, 2025

Reason Codes: (1) to clarify the record; (2) to conform to the facts; (3) to correct a transcription error; (4) other (please explain).

PAGE	LINE	CHANGE	REASON

SIGNATURE

I, VITALY MARGULIS, M.D., have read the foregoing deposition, or have had it read to me, and hereby affix my signature that same is true and correct, except as noted above.

_____

VITALY MARGULIS, M.D.

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

IN RE:	*	CAUSE NO:
	*	7:23-cv-00897
CAMP LEJEUNE WATER	*	
LITIGATION	*	
	*	
This Document Relates To:	*	
All Cases	*	

REPORTER'S CERTIFICATION
DEPOSITION OF VITALY MARGULIS, M.D.
JULY 11, 2025

I, CHRISTY R. SIEVERT, CSR, RPR, in and for the State of Texas, hereby certify to the following:

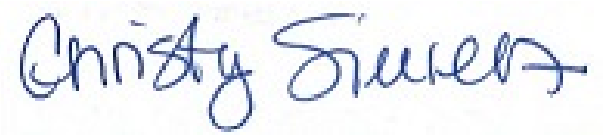
That the witness, VITALY MARGULIS, M.D., was duly sworn by the officer and that the transcript of the oral deposition is a true record of the testimony given by the witness;

I further certify that the signature of the deponent was requested by the deponent or a party and is to be returned within 30 days from date of receipt of the transcript. If returned, the attached Changes and Signature Page contains any changes and the reasons therefor;

I further certify that I am neither counsel for, related to, nor employed by any of the parties or attorneys in the action in which this proceeding was taken, and further that I am not

financially or otherwise interested in the outcome of the action.

Subscribed and sworn to on this the 6th day of August, 2025.



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CHRISTY R. SIEVERT, CSR, RPR
Texas CSR 8172
Expiration Date: 4-30-2027

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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.

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