

Exhibit 593

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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 *

ORAL AND VIDEOTAPED DEPOSITION OF
YAIR LOTAN, M.D.
JULY 14, 2025

DEPOSITION of YAIR LOTAN, 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 14th day of
July, 2025, from 8:57 a.m. to 3:13 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.

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1 P R O C E E D I N G S

2 THE VIDEOGRAPHER: The date is
3 July 14th, 2025. The time is 8:57 a.m. And we are
4 on record.

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

7 MR. BU: Nathan Bu for the United
8 States.

9 MS. JOHNSON: Camille Johnson for the
10 United States.

11 MR. MANDELL: Zach Mandell for PLG.

12 THE WITNESS: Yair Lotan.

13 YAIR LOTAN, M.D.,
14 having been first duly sworn,
15 testified as follows:

16 THE WITNESS: I do.

17 EXAMINATION

18 BY MR. BU:

19 Q. Dr. Lotan, can you please state your name
20 and spell it for the record, please?

21 A. Sure. Yair Lotan, Y-a-i-r, last name is
22 L-o-t-a-n.

23 Q. And you're a physician here at the
24 University of Texas Southwestern at 2001 Inwood
25 Road; is that right?

1 A. That's correct.

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

4 A. Yes.

5 Q. Okay. My name is Nathan Bu. I'm a trial
6 attorney with the Department of Justice. I
7 represent the United States in this lawsuit.

8 The purpose of our time together this
9 morning is to understand the opinions that you're
10 offering in this case and how you came to those
11 opinions.

12 Do you understand that?

13 A. Yes.

14 Q. Okay. To do that, I will ask you some
15 questions and ask that you answer those to the best
16 of your ability.

17 Do you understand that?

18 A. Yes.

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

22 A. No.

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

1 A. No.

2 Q. Okay. Do you currently have any medical
3 condition that might affect your ability to offer
4 accurate and complete testimony?

5 A. No.

6 Q. Have you been deposed as an expert witness
7 in other litigation?

8 A. Yes.

9 Q. About how many times have you been deposed
10 as an expert witness?

11 A. Two times.

12 Q. Okay. When was the first time?

13 A. It was several years ago.

14 Q. And the more recent time?

15 A. Within the last three months or so.

16 Q. Okay. So some of the ground rules may
17 sound familiar, but I would still like to go over
18 some of them.

19 Do you understand that your deposition is
20 being recorded by a court reporter and a
21 videographer?

22 A. Yes.

23 Q. And do you understand that even though we
24 have a videographer, your answers must still be
25 verbal?

1 A. Yes.

2 Q. Okay. Do you understand that you should
3 wait until after a question is finished before
4 answering?

5 A. Yes.

6 Q. Okay. And do you understand that you may
7 request a break unless there is a question pending;
8 if there's a question pending, I'm going to ask that
9 you answer the question before we take a break?

10 A. Yes.

11 Q. Okay. And just so that you're aware, my
12 practice is typically to take a break about every
13 hour.

14 A. Sounds good.

15 Q. Do you understand that if a question is
16 unclear, you can ask me to rephrase the question or
17 tell me that the question is unclear?

18 A. Yes.

19 Q. Okay. If you answer a question, is it fair
20 for me to assume that you understood the question
21 being asked?

22 A. Yes.

23 Q. Okay. Do you understand that if you need
24 to correct an answer, you can do so?

25 A. Yes.

1 Q. And do you understand that if you realize
2 that testimony you previously gave was incorrect or
3 incomplete, you can go back and correct that prior
4 testimony as well?

5 A. Yes.

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

8 A. Yes.

9 Q. All right. And you understand that your
10 testimony today has the same force and effect as if
11 you were testifying in a courtroom with a judge and
12 jury present?

13 A. Yes.

14 Q. Would you agree that physicians who assist
15 in legal proceedings, including as an expert
16 witness, should accurately represent their
17 qualifications?

18 A. Yes.

19 Q. And would you agree that physicians who
20 assist in legal proceedings, including as an expert
21 witness, should testify honestly?

22 A. Yes.

23 Q. Would you agree that physicians who testify
24 as an expert witness must only testify in areas in
25 which they have appropriate training and recent

1 substantive experience and knowledge?

2 A. Yes.

3 Q. Would you agree that physicians who serve
4 as an expert witness must ensure that their
5 testimony appropriately characterizes the theory on
6 which the testimony is based if that theory is not
7 widely accepted in the profession?

8 A. Yes.

9 Q. Do you agree to hold yourself to those
10 standards as best you can in giving your testimony
11 today?

12 A. Yes.

13 MR. MANDELL: Objection.

14 You can answer. It's okay. Just give me
15 two seconds to object if I have to object.

16 A. Yes.

17 (Exhibit Nos. 1 - 3 marked.)

18 BY MR. BU:

19 Q. The court reporter has marked and handed
20 you three exhibits. The first is your report in
21 Fancher, the second is your report in Downs, and the
22 third is your rebuttal report.

23 Do you see those documents?

24 A. Yes.

25 Q. Okay. And you authored all of these

1 reports for this litigation, correct?

2 A. Yes.

3 Q. Okay. Do these reports contain all of the
4 opinions that you've formed in this case to date?

5 A. I can't say that they were for -- all my
6 opinions, but they -- the relevant opinions, yes.

7 Q. What other opinions might not be included
8 in those reports that you're offering in this
9 litigation?

10 MR. MANDELL: I'm going to object and
11 just -- I'm -- I would instruct you not to answer as
12 to opinions in this case outside of David Fancher or
13 David Downs. But if you're talking about other
14 things relative to those two cases, then that's
15 appropriate.

16 A. I think all the relevant opinions regarding
17 these cases are reflected in the report.

18 BY MR. BU:

19 Q. Okay. To the best of your knowledge, are
20 any of the opinions in the Downs or Fancher case
21 incomplete or incorrect?

22 A. No.

23 Q. Okay. In preparing these reports, did you
24 review any epidemiological studies or other
25 scientific literature?

1 A. Yes.

2 Q. Okay. And did you perform a PubMed search
3 in locating those studies?

4 A. Yes.

5 Q. Did you record what search terms you used
6 for your PubMed search?

7 A. I believe it's in my report and we can look
8 specifically. I think that, you know, the main
9 areas of concern were regarding kidney cancer and
10 contaminants such as TCE, PCE, as well as renal cell
11 carcinoma. I don't know if I have every single
12 search term.

13 The other issues that -- I also read the
14 ATSDR report that was relevant to this study.

15 Q. Okay. Did you identify the ATSDR report
16 through your PubMed search or through another mean?

17 A. I think it was probably through another
18 mean. I don't know that's it -- it probably was
19 referenced in some of the other reports.

20 Q. Okay. For your PubMed search, did you also
21 look for literature regarding vinyl chloride?

22 A. No, I didn't specifically look at that, but
23 it was referenced in some of the reports such as
24 Bove and ATSDR.

25 Q. For your PubMed search, did you also look

1 for literature regarding benzene?

2 A. Not specifically for that.

3 Q. Okay. Is it fair to say the only chemicals
4 you did specific searches for on PubMed were TCE and
5 PCE?

6 A. Yes.

7 Q. Okay. And did you do any searches on
8 PubMed for disease outcomes other than kidney
9 cancer?

10 MR. MANDELL: Objection.

11 The same instruction as before. But you
12 can answer as to kidney cancer.

13 A. Renal cell carcinoma as well. I mean,
14 there's several ways to look at kidney cancer.

15 BY MR. BU:

16 Q. How, if at all, is renal cell carcinoma
17 different than kidney cancer?

18 MR. MANDELL: Objection.

19 You can answer.

20 A. Kidney cancer can include patients with
21 cancer of the renal pelvis as well as cancer of the
22 cortex, which is -- renal cell carcinoma usually
23 refers to cancer of the cortex or meat of the
24 kidney. Renal pelvis tumors are the urothelial
25 tumors.

1 BY MR. BU:

2 Q. Okay. Would upper tract urothelial
3 carcinoma be a form of renal pelvis cancer?

4 A. Yes.

5 Q. Okay. And how, I guess, are renal pelvis
6 cancers different than renal cortex cancers other
7 than the location in which they arise?

8 MR. MANDELL: Objection.

9 But you can answer.

10 A. Biologically, there are -- they have some
11 different risk factors, even though there's a lot of
12 commonality. Behaviorally, they also behave
13 differently, depending on their stage and grade.

14 BY MR. BU:

15 Q. When --

16 A. They're also treated somewhat differently
17 as well.

18 Q. Okay. When you say "behaviorally," does
19 that -- are you referring to, like, the
20 aggressiveness of the cancer and the way it
21 continues to develop?

22 A. Yes. I mean, obviously low-grade cancers
23 for one and the other have a little different
24 behavior or different route of spread and
25 recurrence.

1 Q. Okay. Did you review literature related to
2 renal pelvis cancers in your PubMed search for
3 Fancher and Downs?

4 A. Not specifically because they both had
5 renal cell carcinomas.

6 Q. Okay. When you review epidemiological
7 literature or other scientific literature, do you
8 consider the strength of the study's methodology?

9 A. Yes.

10 Q. Okay. What are some of the factors you
11 consider when reviewing a study's methodology?

12 A. I think it depends on the study design.
13 So, you know, if it's a randomized controlled study,
14 I'll look at, you know, how the population was
15 selected, how the sample size was determined. For
16 epidemiologic studies, there's usually different
17 ways to evaluate. Was it case control, was it a
18 meta-analysis in terms of the size of the study, the
19 specificity of the cohort?

20 Q. All else being equal, are randomized
21 controlled studies or randomized controlled trials
22 considered more rigorous than other study designs?

23 A. No. It really depends on the context. So,
24 for example, if you look at this particular context,
25 it's not ethical to, you know, give people

1 carcinogens or contaminants. So you couldn't design
2 a randomized trial, so you really have to depend on
3 epidemiological evidence to look at contaminants'
4 impact on diseases.

5 If you're looking at drugs, you could
6 compare them to placebo if you think the drug might
7 be beneficial. But when you're looking at -- most
8 epidemiologic studies, you can't do a study where,
9 like, half the people smoke and half don't smoke and
10 say, does smoking cause cancer? It wouldn't be
11 ethical.

12 So the fact is that epidemiologic studies
13 by design are almost all going to be real-world
14 experiences and comparison of cases to controls or
15 populations which are similar and -- and not going
16 to be randomized controlled trials.

17 Q. Okay.

18 A. It doesn't mean they're less meaningful or
19 significant.

20 Q. I guess I'm asking at sort of, like, a
21 theoretical or conceptual level, are randomized
22 controlled trials considered to be more rigorous
23 than case control or cohort studies?

24 A. Again, it really depends on the question
25 you're trying to answer. The methodology really

1 depends, you know, on -- the most controlled study
2 is in vitro, but that doesn't -- it may not be
3 relevant to an in vivo population or a human
4 population, even though you have 100 percent control
5 over your cell line in a petri dish.

6 So I can't really say I think what you --
7 you have to start with what's my question and then
8 what the design would be appropriate to answer that
9 question.

10 Q. Okay. Are case control and cohort studies
11 two different types of epidemiological studies?

12 A. Well, yes. I mean, it -- yes.

13 Q. Okay. Is one seen as more rigorous than
14 the other?

15 A. No. Again, it depends on the scientific
16 question you're answering and also the size of the
17 study, is it relevant to the question you're asking,
18 how specific it was.

19 Q. Why does the size of the sample matter in
20 terms of the rigor of the underlying study?

21 A. First of all, I think I should clarify size
22 is just one factor in considering the value of a
23 study. It's just -- generally speaking, a larger
24 study might be more -- more reflective of a
25 population than a smaller study, but it does not

1 necessarily, by definition, make it a more relevant
2 study or a more rigorous study.

3 Q. Okay. You also mentioned population
4 selection as one of your considerations. How -- how
5 is population selection relevant to the rigor of an
6 underlying study?

7 A. Well, the population has to reflect the
8 question you're asking. If you were to try to, you
9 know, assess, you know, the risk of dying and you
10 only looked at children, you're not going to have
11 many people dying in that population, so it wouldn't
12 be relevant. So I think it's very much within the
13 context of the scientific question you're trying to
14 answer.

15 Q. Would it be fair to say that one of the
16 considerations regarding population selection is the
17 study's ability to control for selection bias?

18 MR. MANDELL: Objection.

19 A. Generally speaking, selection bias is
20 something you control when you're doing
21 prospectively, not retrospectively. When you're
22 looking at population studies in epidemiology,
23 you're -- you might try to control for some of the
24 factors, but you generally don't get to control for
25 all the factors.

1 Selection bias is -- really implies you're
2 choosing the population, which is really relevant
3 for prospective, not retrospective studies. Most
4 epidemiologic studies are retrospective, not
5 prospective, again, for the ethical considerations
6 we discussed.

7 BY MR. BU:

8 Q. Okay. Would it be fair to say one of the
9 concerns for retrospective studies is selection
10 bias?

11 A. I don't know that I would use the term
12 "selection bias." There could be a bias in terms of
13 the overall population, but selection bias, again,
14 to me, implies that you are making a choice. But
15 there are obviously limitations in population-based
16 studies that might be inherent in the population.

17 Q. Are there other forms of bias that may
18 limit a study's findings?

19 MR. MANDELL: Objection.

20 A. There are an infinite number of limitations
21 one could consider. I think you would have to look
22 at a given study to decide whether or not it was a
23 limitation or not. I mean, we can imagine many
24 things that could be limitations for anything. You
25 know, if you had a million people, can say they

1 didn't have a million and one people. So, again,
2 it's all contextual.

3 BY MR. BU:

4 Q. Okay. When you were reviewing the
5 literature that you identified either on PubMed or
6 when preparing your report, were there other forms
7 of bias that you considered when determining the
8 rigor of an underlying study?

9 MR. MANDELL: Objection.

10 A. Again, when -- you have to look at a
11 specific study and the scientific question it was
12 asking and say, were the limitations within the
13 context of what it was asking? I don't think you go
14 up front and say, let me imagine all the limitations
15 a study might have. You're looking at -- and
16 often -- like, in this case, you're looking at many
17 studies and trying to draw conclusions based on the
18 entire literature and not on any one given study.
19 Any one given study might have some limitations and
20 other studies would have different limitations, and
21 if they all come up to a similar conclusion, then
22 you might say -- be able to draw a broad conclusion
23 rather than just say -- you know, nitpick, this
24 study has this problem, this study has this problem.
25 Because, again, epidemiologic studies are

1 not prospective randomized trials. You can't
2 control for every variable. Even in prospective
3 randomized trials, you have to make choices about
4 what -- what to control for and what not to control
5 for.

6 BY MR. BU:

7 Q. Okay. Are there any standardized
8 guidelines or criteria that you applied when
9 reviewing the rigor of the underlying studies?

10 A. I mean, I --

11 MR. MANDELL: Objection.

12 But you can answer.

13 A. I think the -- you know, the standard we
14 use is a reasonable degree of medical certainty. We
15 are -- you know, the fact is that you look at the
16 literature and you try to see, you know, what --
17 what conclusions the authors drew and what the
18 results reflect, and then you look at it within the
19 context of the rest of the literature.

20 BY MR. BU:

21 Q. Okay. Are there any standardized
22 guidelines or criteria that help you define a
23 reasonable degree of medical certainty?

24 A. I think that speaks to itself. The
25 reasonable degree of medical certainty is how

1 likewise professionals would review the data and
2 how -- what -- the type of conclusions that they
3 would come up with. But I don't think there's,
4 like, a firm definition that you can apply to that.

5 Q. Okay. Is there a firm definition that you
6 applied for purposes of your reports in Fancher or
7 Downs?

8 MR. MANDELL: Objection.

9 A. No, my -- I try to use the reasonable
10 degree of medical certainty and -- based on my
11 experience and based on my understanding of the
12 literature and based on my understanding of
13 pathophysiology and my 20-plus years of experience
14 as a medical professional and academician.

15 BY MR. BU:

16 Q. Okay. Would it be fair to say that one
17 other factor to consider when evaluating a study's
18 rigor is its statistical power?

19 MR. MANDELL: Objection.

20 A. I think there are many factors to look at,
21 and statistical power would be one factor to
22 consider among many things, you know, sample size,
23 you know, the hazard ratio, the context of the
24 study, and also within the context of the rest of
25 the literature.

1 BY MR. BU:

2 Q. Why would statistical power be a relevant
3 factor?

4 A. Again, there are many relevant factors, and
5 statistical power gives you some indication of how
6 compatible the results in the study are relative to
7 the conclusion.

8 Q. Okay. I guess I should maybe take a step
9 back.

10 What does "statistical power" mean to you?

11 A. I mean, I don't have the exact dictionary
12 definition for it. I think when people do
13 prospective studies, they try to do a sample size
14 calculation to see how many cases versus controls or
15 events do you need to have a statistical significant
16 outcome.

17 Within the context of epidemiologic
18 studies, people often will look at it a little
19 differently because it's not a prospectively
20 designed study. So they're looking at an outcome
21 and trying to assess, you know, how accurate that
22 outcome might be, how compatible the data may be --
23 the results may be with the data that they have.

24 But in terms of statistical significance
25 and power calculations, those usually are priority

1 things you do in prospective studies, not something
2 that you can always apply to a retrospective or
3 population cohort. And many people have shied away
4 from that in terms -- you know, confidence interval
5 and things like when looking at epidemiologic data
6 just because of the fact that it wasn't predesigned.

7 MR. BU: I want to pause one moment.

8 Mr. Videographer, there's, like, some
9 drilling going on. Are you picking up that, or are
10 we okay?

11 THE VIDEOGRAPHER: It's faintly in the
12 background.

13 MR. BU: Okay. All right.

14 MR. MANDELL: Yeah, obviously, I hear
15 it. Is it -- is it affecting the quality of the
16 sound?

17 THE VIDEOGRAPHER: Not really.

18 MR. BU: Okay. All right. Let's just
19 continue, then.

20 MR. MANDELL: Great.

21 BY MR. BU:

22 Q. Okay. Dr. Lotan, you mentioned statistical
23 significance. What does "statistical significance"
24 mean to you?

25 A. Again, generally speaking, one looks at the

1 confidence interval, and people have used, you know,
2 a percentage to reflect what would be potentially
3 something that occurs by chance rather than then
4 because of a specific outcome.

5 Q. By convention, is a 95 percent confidence
6 interval commonly used?

7 A. It is commonly used.

8 Q. Okay. Are there other levels of confidence
9 that you are familiar with when reviewing
10 epidemiological or medical literature?

11 A. Many people will report a trend, even if it
12 doesn't meet the 95 percent confidence interval.

13 Q. Okay. When a trend is reported, is that
14 described using a p-value?

15 A. Sometimes it is, yes.

16 Q. Okay. And is a p-value another way of
17 determining statistical significance?

18 A. Yes.

19 Q. Would it be fair to say that looking for a
20 statistical significance is one way to eliminate
21 chance?

22 MR. MANDELL: Objection.

23 A. It's one way, but the fact is that it's not
24 always the most relevant way to do it for
25 epidemiologic studies.

1 BY MR. BU:

2 Q. Okay. What are some other methods that can
3 be used to rule out chance as an explanation for a
4 study's findings?

5 A. Find an appropriate control and compare one
6 population to another. The other is to do a
7 meta-analysis. So, for example, you can have five
8 or six studies that all may be -- have wide
9 confidence intervals and then combine them to see
10 what the results are and see if they have similar
11 conclusions, or that you could strengthen the result
12 or the conclusion from five smaller studies by doing
13 a meta-analysis of all the studies.

14 So there are several instances where there
15 isn't one sufficiently powered study, and you
16 combine them into a meta-analysis and you find that
17 it -- that the conclusion is similar in all of the
18 studies and then you can draw a conclusion based on
19 that.

20 Q. You have mentioned meta-analysis a few
21 times. Can you briefly describe what a
22 meta-analysis is?

23 A. I'm probably not going to use the proper
24 term. I'm not -- I'm not a statistician. But
25 meta-analysis basically uses the data from the

1 various studies, combines them statistically to see
2 if you -- to see what -- if you would -- if there
3 had been one study, what the results would have
4 been.

5 Q. Is it fair to say that the rigor of a
6 meta-analysis's findings depend on the rigor of the
7 underlying studies being used in that meta-analysis?

8 MR. MANDELL: Objection.

9 A. No, I think that's -- the whole point of a
10 meta-analysis is that you've -- you have five
11 studies then -- that may have slightly different,
12 let's say, hazard ratios and confidence intervals,
13 and you're now combining the data in such a way that
14 -- to try to see what -- whether or not that
15 variability is -- is accurate or not and whether or
16 not the conclusion still holds or doesn't hold.

17 BY MR. BU:

18 Q. Okay. So when you review a meta-analysis,
19 do you also review the rigor of the underlying
20 studies?

21 A. I think you would look at the studies, but
22 -- but I think evaluating the results of each
23 individual study becomes less important when you're
24 looking at the overall conclusion.

25 Q. Are you familiar with the term "disease

1 misclassification"?

2 A. Generally speaking, yes.

3 Q. Okay. And are you familiar with the term
4 "exposure misclassification"?

5 A. Yes.

6 Q. Okay. And are the -- are disease
7 misclassification and exposure misclassification
8 also considerations when looking at the rigor of an
9 underlying study?

10 MR. MANDELL: Objection.

11 A. I think it's one factor among other
12 limitations.

13 BY MR. BU:

14 Q. What does "disease misclassification" mean
15 to you?

16 A. To me, it means that you may have thought
17 that somebody had the disease and they didn't, or
18 they didn't have the disease and you thought they
19 did.

20 Q. And how would disease misclassification
21 affect the rigor of an underlying study?

22 A. It depends on the magnitude. If it was
23 rare, then it would might not affect the study. If
24 it was common, then it might affect the study.

25 Q. Would it be fair to say that if there's a

1 significant degree of disease misclassification, you
2 may find an association when there is, in fact,
3 none?

4 MR. MANDELL: Objection.

5 A. Or vice versa. It depends how significant
6 it was and how strong the association might or might
7 not be.

8 BY MR. BU:

9 Q. And what does "exposure misclassification"
10 mean to you?

11 A. Again, if you think somebody is exposed and
12 they weren't or you thought they weren't exposed and
13 they are.

14 Q. Okay. And exposure misclassification could
15 also affect the validity of a study's outcomes; is
16 that fair to say?

17 A. Depending, again, on the magnitude of the
18 outcome and also on the magnitude of the
19 misclassification.

20 Q. You mentioned before that you apply a
21 reasonable degree of scientific and medical
22 certainty standard in your reports.

23 Do you recall that?

24 A. Yes.

25 Q. Okay. Have you used the phrase "reasonable

1 degree of scientific and medical certainty" in your
2 academic publications?

3 A. It's not -- it's not something that is
4 usually relevant to scientific publications.
5 It's -- it's, I think, implied.

6 And you -- when you write a scientific
7 paper, you spell out your methodology and your
8 results. People can choose whether or not they
9 think that your conclusions later are reasonable or
10 not reasonable. If you appropriately discuss your
11 results in your discussion and identify your
12 limitations, then people, you know, can read that
13 and they make that determination. It's not you that
14 makes that determination.

15 But in general, I use it to design my
16 studies and write my papers, yes.

17 Q. When you describe your study design in your
18 papers, do you use the term "reasonable degree of
19 scientific and medical certainty"?

20 A. Again, that's not something that -- it's
21 not a scientific term in the context of writing a
22 paper. That's -- again, it's implied that when
23 you're doing something scientific that you're going
24 to be reasonable, but that's not something you --
25 you don't write that in your paper. It's not a

1 testimonial.

2 Q. Okay. Do you use the phrase "reasonable
3 degree of scientific and medical certainty" in your
4 clinical practice?

5 A. Again, you practice medicine to a
6 reasonable degree of scientific and medical
7 certainty. People come see me because I'm an expert
8 in, you know, treating cancer and other diseases,
9 urologic diseases, and they can look at my resumé
10 and my 20 years of experience, and that's why they
11 come to see me. And they assume that I'm going to
12 be doing my best to take care of them, which would
13 fall into a reasonable degree of medical certainty.

14 Q. Okay. But this is not a phrase that you
15 specifically use in your clinical practice; is that
16 fair to say?

17 MR. MANDELL: Objection.

18 A. It would be completely out of context.

19 BY MR. BU:

20 Q. Okay. Have you ever used the phrase
21 "reasonable degree of scientific and medical
22 certainty" outside of your work in litigation?

23 A. It does not fall into any contextual thing.
24 I often will tell patients in my best experience,
25 which essentially is by a reasonable degree of

1 medical certainty, when I make recommendations on
2 treatment. Say, in my experience, based on -- I
3 actually will usually quote the literature to them
4 and say, here's a randomized trial that showed
5 improved survival for neoadjuvant chemotherapy
6 followed by surgery versus surgery alone.

7 So I will -- I'll reference the literature
8 and reference my experience. So in a sense, I'm
9 using that terminology, but in the way that a
10 layperson might appreciate it.

11 Q. Okay. Outside of your personal use, are
12 you familiar with the phrase "reasonable degree of
13 scientific and medical certainty" being used in any
14 context outside of litigation?

15 A. Again, within the context of taking care of
16 a patient, when you, quote -- you say, based on my
17 experience and based on the literature, this is my
18 recommendation, that is essentially an expression of
19 reasonable degree of medical certainty. That is how
20 I express it. I don't use the exact terminology.
21 It would sound strange.

22 Q. Okay. In your report, you also discuss a
23 -- sufficient to conclude a causal relationship is
24 "at least as likely as not" standard.

25 Do you recall that?

1 A. Yes.

2 Q. Is that a standard that you are applying in
3 either your Fancher or Downs reports?

4 A. Yes.

5 Q. Okay. And does your understanding of that
6 standard come from the ATSDR?

7 MR. MANDELL: Objection.

8 A. It's straight language, I believe, from the
9 Camp Lejeune Act. Let me confirm that. I quote
10 that public law.

11 Yes, it's on page 5 under "Standards,"
12 (B), "sufficient to conclude that a causal
13 relationship is at least as likely as not."

14 BY MR. BU:

15 Q. Okay. You're looking at page 5 of your
16 Downs report?

17 A. I'm currently on the Fancher report --

18 Q. The Fancher report.

19 A. -- which is Exhibit 1.

20 Q. Okay.

21 A. It's in the Downs report as well. I assume
22 we're on Exhibit 1 first.

23 Q. All right. Other than the language of the
24 statute, did you also look at the ATSDR's Assessment
25 of the Evidence?

1 A. Yes, it's right below that paragraph. It's
2 -- there's a paragraph called "Sufficient evidence
3 for causation" and then followed by that, "Equipoise
4 and above evidence for causation," which is
5 sufficient to conclude that a causal relationship is
6 as at -- at least as likely as not. So basically
7 the ATSDR and the public law state essentially the
8 same thing.

9 Q. Okay. Are you familiar with any other
10 resources in science or medicine that also define
11 these standards?

12 A. Generally speaking, I'm not familiar with
13 the -- the entire public law, et cetera. I mean,
14 the -- essentially when we talk to patients
15 clinically about -- you know, patients often ask,
16 what caused my cancer and you go through a
17 differential diagnosis, you say, here are the likely
18 causes, these are less likely to cause it. And
19 that's part of the -- part of these reports, looking
20 at these specific cases and trying to see what were
21 the likely causes of their cancers.

22 And so as you see in the report, I
23 conclude that their exposures to contaminated water
24 at Camp Lejeune was at least as likely as not to
25 cause their kidney cancer. And I go through the

1 differential diagnosis. I do it with patients all
2 the time if they have other risk factors for cancer
3 and they want to know. So we do it all the time in
4 terms of a differential diagnosis.

5 Q. Okay. Other than -- I guess would it be
6 fair to say you're referring to your personal
7 experience as part of your understanding of what "as
8 likely as not" means?

9 A. Correct.

10 Q. Okay. Other than your personal experience,
11 the ATSDR's Assessment of the Evidence, and the
12 public law, are there other resources that you
13 consulted to determine the meaning of this "as
14 likely as not" standard?

15 MR. MANDELL: Objection.

16 You can answer.

17 A. No, it was fairly self-evident.

18 BY MR. BU:

19 Q. Do you apply any other standards of
20 causation in your Fancher or Downs reports?

21 A. I mean, if you're looking, I mean, I
22 discuss the Bradford Hill criteria, which I help --
23 use to determine the weight of the different risk
24 factors.

25 Q. Okay. Did you consider any other

1 definition for the causation standard in either your
2 Fancher or Downs report?

3 MR. MANDELL: Objection.

4 A. I mean, I think I talk about the fact that
5 the Institute of Medicine also has used this type of
6 standard before in terms of looking at -- at sort of
7 levels of evidence, and they also had something very
8 similar.

9 BY MR. BU:

10 Q. Okay. The Institute of Medicine was
11 looking at the standard to help The Department of
12 Veterans Affairs identify disease presumptions; is
13 that fair to say?

14 A. They reviewed that decision-making process,
15 yes, for veterans.

16 Q. When you refer to a "decision-making
17 process," you're referring to the VA's presumptive
18 service connection process, correct?

19 MR. MANDELL: Objection.

20 A. That's what the Institute of Medicine, I
21 think, was looking at, yes.

22 BY MR. BU:

23 Q. All right. Are you applying any
24 presumptions in your opinions in Fancher or Downs?

25 MR. MANDELL: Objection.

1 A. No. I mean, I'm -- I'm not trying to
2 replicate the VA's decision-making process. I'm
3 trying to look, as mentioned, with a reasonable
4 degree of medical certainty at the causes of cancer
5 for David Fancher and Mr. Downs within the context
6 of their own risk factors and their exposure to
7 contaminated water.

8 BY MR. BU:

9 Q. Okay. Would you agree that the question
10 whether to -- the VA should treat a disease as
11 presumptively service connected is different than
12 determining whether an individual veteran's cancer
13 was caused by an exposure?

14 MR. MANDELL: Objection.

15 A. I suppose I can't speak to what the VA is
16 thinking. All I can say is what I reviewed in the
17 context of what exposures were associated with
18 Mr. Fancher and Mr. Downs getting their cancer.

19 BY MR. BU:

20 Q. Did you independently research the Camp
21 Lejeune Justice Act in preparing your report?

22 A. I looked at parts of it that I thought were
23 relevant. I quoted the most relevant aspects in
24 the -- in the text. I did not read the entire Act.

25 Q. Okay. Did you independently research how

1 an "at least as likely as not" standard is used in
2 other scientific context?

3 MR. MANDELL: Objection.

4 A. Again, I think it -- I use it in terms of
5 clinical decision-making in terms of identifying a
6 differential diagnosis. You know, I think, you
7 know, ironically, the only place I saw it in the
8 literature was one of your experts, Dr. Goodman,
9 referenced it in a -- I think ozone relation to
10 asthma. But I don't recall it being used widely in
11 the literature.

12 BY MR. BU:

13 Q. Okay. Are you aware that the National
14 Academies of Sciences reviewed the VA's presumption
15 decision process?

16 A. I'm sorry, what is the question?

17 Q. Sorry.

18 Are you aware that the National Academies
19 of Sciences reviewed the VA's presumption decision
20 process?

21 MR. MANDELL: Objection.

22 A. Not specifically, no.

23 BY MR. BU:

24 Q. Okay. And are you aware that the National
25 Academies of Sciences, in reviewing the VA's

1 presumption decision process, reviewed the "at least
2 as likely as not" standard?

3 A. No, I'm not aware about that.

4 Q. Okay. Are you familiar with the National
5 Academies of Sciences?

6 A. By name, yes.

7 Q. Okay. What is the National Academies of
8 Sciences?

9 A. It's an organization of scientists.

10 Q. Have you reviewed other literature from the
11 National Academies of Sciences as part of your
12 academic or clinical work?

13 A. They have a proceedings through the
14 National Academies of Sciences. I published a paper
15 there many years ago, so -- it's a journal. But I
16 don't know of official reports that they've
17 produced, but they do have a journal. It's peer
18 reviewed.

19 Q. Is the work done by the National Academies
20 of Sciences generally seen as reliable by
21 professionals in your field?

22 MR. MANDELL: Objection.

23 A. I -- I don't know that many professionals
24 in my field are necessarily tracking them. I
25 suppose you would have to look at it on a

1 study-by-study basis.

2 BY MR. BU:

3 Q. Okay. Is the National Academies of
4 Sciences considered a reputable organization by
5 professionals in your field?

6 MR. MANDELL: Objection.

7 A. I think they're generally considered
8 reputable, yeah.

9 BY MR. BU:

10 Q. Okay.

11 (Exhibit No. 4 marked.)

12 MR. MANDELL: This is 4?

13 MR. BU: This is 4, yeah.

14 BY MR. BU:

15 Q. So the court reporter has handed you,
16 Dr. Lotan, what's been marked Exhibit 4. This is
17 the National Academies of Sciences' review of the
18 Department of Veterans Affairs' presumption decision
19 process.

20 Do you see that?

21 A. Yes.

22 Q. Okay. And this presumption decision
23 process refers to the same process that IOM
24 developed its standards to assist the VA with,
25 right?

1 A. I'm not fully aware of that. If you're
2 saying so, I don't -- I haven't read anything from
3 the IOM saying specifically that they reviewed this
4 document.

5 MR. MANDELL: Can I just -- Doc, why
6 don't we clip the other exhibits so that you don't
7 lose your pages just so -- let's keep it all
8 together. Thanks.

9 BY MR. BU:

10 Q. Well, I think earlier when you were
11 discussing the "as likely as not" standard, you
12 mentioned IOM discussing that standard or similar
13 standards.

14 Do you recall that?

15 A. Yes.

16 Q. Okay. And the reason that IOM was
17 discussing those standards was to assist the VA in
18 its presumption decision process; is that right?

19 MR. MANDELL: Objection.

20 A. Again, I saw that reference in the ATSDR
21 report. I didn't read the IOM report nor did I read
22 the VA presumption. This was, again, in the
23 statute, so that's why I was aware of it, and it was
24 in the ATSDR report. But I did not read the IOM
25 report. And, again, I didn't read the VA report. I

1 just thought that that was among -- as you
2 mentioned, among the areas where it has been
3 referenced.

4 BY MR. BU:

5 Q. Okay. Can you turn to page 10 of Exhibit 4
6 for me, please?

7 A. Okay.

8 Q. Do you see towards the bottom of page 10 in
9 italics, "The National Academies of Sciences reports
10 the committee concludes that the term 'equipoise'
11 denotes a lack of consensus across the medical
12 community and that the term as required by law to be
13 used in the presumption decision process is
14 inconsistent with the current scientific use of it."

15 Did I read that correctly?

16 A. Yes.

17 Q. Okay. And it is your understanding that
18 "equipoise" and "at least as likely as not" refer to
19 the same standard?

20 MR. MANDELL: Objection.

21 A. Within the context that it was stated in
22 the statute or ATSDR report -- actually, in the
23 statute they don't say that at all. But I think
24 within the context of -- it's my understanding "at
25 least as likely as not" and "equipoise" are similar

1 concepts.

2 BY MR. BU:

3 Q. Okay. Is it your understanding that ATSDR
4 defines "equipoise," at least in part, as "at least
5 as likely as not"?

6 A. Yes, that's how it's stated.

7 Q. Okay. And do you have any reason to
8 disagree that the term "equipoise" denotes a lack of
9 consensus across the medical community?

10 MR. MANDELL: Objection.

11 A. I don't agree with that comment. I don't
12 know -- first of all, I didn't read this whole
13 report. It's hundreds of pages long.

14 But my other comment would be that I don't
15 know -- I've never filled out a survey asking me
16 what I thought equipoise was. I don't know that the
17 medical -- what they mean by "medical community."
18 And so no, I can't -- I don't necessarily agree with
19 the statement.

20 BY MR. BU:

21 Q. Okay. Do you have any reason to disagree
22 with the conclusion that this term, as required by
23 law to be used in the presumption decision process,
24 is inconsistent with the current scientific use of
25 it?

1 MR. MANDELL: Objection.

2 A. I'm sorry, rephrase that. I just want to
3 make sure I'm understanding what you're asking.

4 BY MR. BU:

5 Q. Sure.

6 Do you have any reason to disagree with
7 the second part of that conclusion, that the term,
8 as required by law to be used in the presumption
9 decision process, is inconsistent with the current
10 scientific use of it?

11 MR. MANDELL: Objection.

12 A. I guess what I would state is I don't agree
13 with the statement. I'm not really sure that this
14 statement either says what the scientific use of it
15 is or -- and, again, I don't know exactly what they
16 mean by the presumptive decision-making process. So
17 I can't -- I don't -- I can't agree that this is
18 inconsistent with the current scientific use.

19 BY MR. BU:

20 Q. Okay. What is your understanding of the
21 current scientific use of the term "equipoise"?

22 MR. MANDELL: Objection.

23 A. I think, again, it really depends on the
24 context where people are using it. I mean, I --
25 it's not something that we commonly use in the

1 scientific literature. We use it in decision-making
2 when we're discussing with patients, you know,
3 what's more likely or less likely to have been the
4 cause of their diagnosis. But it's not something
5 that, you know, we write a paper and go, you know,
6 there's equipoise for this or that. It's something
7 that more comes up within a medical context rather
8 than used in a scientific context. And, again, you
9 have to consider what context it's being used at
10 rather than -- rather than how the term is exactly
11 used.

12 So, again, without knowing what -- the
13 presumptive decision-making process, I can't say
14 it's consistent or not consistent with the
15 scientific use. And, again, the scientific use also
16 varies by context.

17 BY MR. BU:

18 Q. Is equipoise a standard that you have used
19 when diagnosing a patient?

20 MR. MANDELL: Objection.

21 A. We use medical tests, you know, imaging,
22 biopsies, to diagnose patients. Equipoise is a part
23 of our thought process, but it is not a test to make
24 a diagnosis.

25 Again, when you're making a differential

1 diagnosis about a cause, you might be thinking about
2 it in that context, but you wouldn't be -- nobody is
3 using equipoise to determine if somebody has cancer
4 or not. You do some imaging, cystoscopy, biopsy,
5 that kind of stuff.

6 BY MR. BU:

7 Q. Okay. Would you ever make a diagnosis
8 using an equipoise standard, for example, it is at
9 least as likely as not that you have this form of
10 cancer?

11 A. Again --

12 MR. MANDELL: Objection.

13 But you can answer.

14 A. Again, we -- we use objective tests to
15 determine diagnosis. If you're thinking about -- so
16 if I'm thinking -- trying to compare two
17 treatments -- so there's equipoise between these
18 treatments in terms of outcomes. And then we can
19 talk about, you know, how do we want to do it if two
20 things are, you know, let's say equivalent or -- but
21 we don't make a diagnosis based on that. We think
22 about -- we think about it in a completely different
23 context.

24 BY MR. BU:

25 Q. When you say "we don't make a diagnosis

1 based on that," are you saying we don't make a
2 diagnosis based on an "at least as likely as not"
3 standard?

4 MR. MANDELL: Objection.

5 A. I'm saying it doesn't apply to that
6 standard. A diagnosis is made based on a test. A
7 decision-making is based maybe on balancing --
8 balancing outcomes or balancing factors. It's more
9 relevant in that context.

10 BY MR. BU:

11 Q. Okay. I apologize, I just want to make
12 sure that the record is clear. When you say it is
13 more relevant in that context, what do you mean?

14 A. The term "equipoise" is more relevant to
15 the context of, you know, differential diagnosis or
16 a decision process, but it is not a way to make a
17 diagnosis.

18 Q. Okay. Thank you. You can set Exhibit 4 to
19 the side.

20 I should have asked earlier, would you
21 agree that a correlation between exposure and
22 disease is not necessarily the same as exposure
23 causing disease?

24 A. Yes.

25 Q. Okay. And part of determining whether an

1 association is causal would include evaluating
2 whether the association could be explained by chance
3 or bias; is that fair to say?

4 A. Yes.

5 Q. All right.

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

8 THE VIDEOGRAPHER: All right. We are
9 off the record at 9:54.

10 (Break taken, 9:54 a.m. to 10:03 a.m.)

11 THE VIDEOGRAPHER: We are back on the
12 record at 10:03.

13 BY MR. BU:

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

16 A. No.

17 Q. Okay. Is there anything you've testified
18 to today that you would like to clarify or correct?

19 A. No.

20 Q. Okay. Would you agree that medicine is not
21 an exact science?

22 MR. MANDELL: Objection.

23 A. I think certain aspects of it are exact and
24 certain aspects of it are not exact.

25 BY MR. BU:

1 Q. Okay. What are some of the aspects of
2 medicine that you view as an exact science?

3 A. I think if you look at drugs, they have
4 exact chemical formulas, those are fairly immutable.
5 A certain drug is always going to have that formula,
6 for example.

7 Q. Okay. Would you agree that diagnosing a
8 patient is rarely an exact science?

9 MR. MANDELL: Objection.

10 A. No, I don't think I agree with that. I
11 think the fact is that if you look at -- if you get
12 a biopsy and it has a pathology report, there's very
13 high in terms of -- you know, very little
14 variability between pathologists. Many pathologists
15 would agree it's cancer, and I would say that's
16 fairly exact.

17 BY MR. BU:

18 Q. Do you view the treatment of a patient as
19 an exact science?

20 MR. MANDELL: Objection.

21 A. I think the -- I think there's guidelines
22 that tell you how you should treat a patient. If
23 you follow the guidelines, you could be doing that
24 exactly. Whether or not that's the perfect
25 treatment for every patient, that, we don't know.

1 So being able to follow a certain treatment plan,
2 you can do that perfectly.

3 BY MR. BU:

4 Q. Okay. In your practice, are there any
5 guidelines that you refer to?

6 A. Sure. I mean, the American Urological
7 Association guidelines, you know, give you guidance
8 for many treatments, the NCCN guidelines. There's a
9 variety of guidelines that you could use as more of
10 a framework of how to treat a patient. Obviously,
11 you have to individualize it.

12 Q. And why do you refer to guidelines from
13 either AUA or NCCN?

14 A. Well, generally, they're developed by
15 experts based on the best available knowledge.

16 Q. Okay. In your practice, do you offer any
17 guarantees to your patients?

18 A. Guarantee I'll do my best to take care of
19 them.

20 Q. What about regarding diagnosis or
21 prognosis?

22 A. Again, I'll do the best job I can to get
23 the right diagnosis, and once I have that diagnosis,
24 I'll give them the best information available in
25 terms of their prognosis and treatment.

1 Q. Okay. Would you agree that the best
2 information available is not the same as perfect
3 information?

4 A. Generally speaking, that's probably fair.
5 I mean, we -- we try to improve our care, but I
6 think it just depends on what the disease is.

7 Q. Okay. Would it be fair to say that the
8 science is still developing regarding the causes of
9 cancer?

10 A. I think that that's, you know, a broad
11 term. I would say there's generally well-known
12 causes of cancer. The -- but I'm sure we're going
13 to find other things. Genetic susceptibility, for
14 example, we're having new discoveries on who might
15 be more likely to get it. But some things are well
16 known. I don't think we're ever going to discover
17 that cigarettes are good for you.

18 Q. Okay. How would you describe what cancer
19 is to a layperson?

20 A. Generally speaking, cancer is either
21 uncontrolled growth of cells or a lack of typical
22 inhibitions to growth. So cells that don't die when
23 they should die.

24 Q. And how would you describe how cancer forms
25 to a layperson?

1 A. Generally, there are alterations to cells,
2 typically to genetic/epigenetic, that can be induced
3 by viruses, et cetera, or carcinogens that will
4 cause the cells to behave inappropriately, again,
5 leading to inappropriate growth or lack of death.

6 Q. When you say "alterations to cells" that
7 may be genetic, are you referring to mutations?

8 A. Yes.

9 Q. And what is an epigenetic alteration to a
10 cell?

11 A. Excuse me?

12 Q. What is an epigenetic alteration to a cell?

13 A. Methylation of DNA, for example.

14 Q. Okay. And how -- how would you explain
15 methylation's role in cancer formation?

16 A. I mean, it's highly variable, but if it --
17 if you have methylation of certain parts of the DNA,
18 maybe they become more active and lead to growth
19 that you didn't want.

20 Q. Okay. When you refer to lack of
21 inhibition, are you also referring to DNA repair?

22 A. That's one aspect of it.

23 Q. Okay. Would it be fair to say one aspect
24 of cancer formation is the body's ability to repair
25 mutations?

1 A. "The body" is a general term. We're
2 talking on a cellular basis. The body's job is -- I
3 mean, the cell either repairs itself or fails to
4 divide when it should and then the -- both -- and
5 then that stops the process. If the cell that can't
6 repair itself can't continue to grow, that -- that's
7 okay also, it won't cause cancer. The body also has
8 a way, you know, of using its immune system to
9 identify aberrant cells and get rid of them that
10 way.

11 Q. Okay. Would you agree that the cause of
12 cancer is multifactorial?

13 A. Sometimes it is; sometimes it isn't. I
14 mean, if you have a -- if you inherent a gene that
15 has a growth factor component, that's -- you --
16 there might be only one factor that caused it --
17 that mutation and then most -- almost everybody is
18 going to get cancer. So in some cases, it's
19 multifactorial and in some cases, it's, you know,
20 one inherited defect, for example.

21 Q. When you say "almost everyone is going to
22 get cancer," are you referring to --

23 A. No, no, almost everybody with that specific
24 mutation.

25 Q. Okay.

1 A. A dominant mutation might cause almost
2 everybody to get that disease, then it's
3 unifactorial -- usually it's just that one factor.

4 Q. Okay. Are those types of genetic mutations
5 common?

6 MR. MANDELL: Objection.

7 A. I don't know that we can speak quite
8 broadly. There are -- there are -- none of them are
9 so common, but some of them are more common than
10 others.

11 BY MR. BU:

12 Q. Okay. And there are different types of
13 cancer, correct?

14 A. Yes.

15 Q. All right. And one type that we've
16 discussed is renal cell carcinoma?

17 A. Yes.

18 Q. Okay. And there are different sorts of
19 subtypes of renal cell carcinoma; is that fair to
20 say?

21 A. Yes.

22 Q. And clear cell is one of those subtypes?

23 A. Yes.

24 Q. All right. What are some other subtypes of
25 renal cell carcinoma other than clear cell?

1 A. Papillary.

2 THE STENOGRAPHER: I'm sorry?

3 THE WITNESS: Papillary.

4 BY MR. BU:

5 Q. What are -- sorry, strike that.

6 Do clear cell renal cell carcinomas and
7 papillary renal cell carcinomas have different
8 clinical characteristics?

9 A. Not necessarily, no. They're both going to
10 present as renal masses.

11 Q. Do they have different prognostic
12 significance?

13 A. Depends on the stage and grade.

14 Q. Okay. Do they have different etiologies?

15 MR. MANDELL: Objection.

16 A. No, not necessarily, not well defined.

17 BY MR. BEYER:

18 Q. Okay.

19 A. Some are inherited more often than others.
20 Like Von Hippel-Lindau leads more to clear cell, for
21 example.

22 THE STENOGRAPHER: I'm sorry, what
23 leads?

24 THE WITNESS: Von Hippel-Lindau. It's
25 a syndrome for kidney cancer, inherited.

1 BY MR. BU:

2 Q. Is clear cell the most common subtype of
3 renal cell carcinoma?

4 A. Yes.

5 Q. And would it be fair to say that clear cell
6 accounts for roughly 70 percent of renal cell
7 carcinomas?

8 A. I think that's fair.

9 Q. And as part of your report for Fancher and
10 Downs, did you research the possible risk factors
11 for renal cell carcinoma?

12 A. Yes.

13 Q. Okay.

14 A. It's in my differential diagnosis.

15 Q. And what are the risk factors that you
16 considered?

17 A. Age, sex, smoking history, BMI. Those
18 would be the common risk factors.

19 Q. Okay. Would you agree that hypertension is
20 also a risk factor for renal cell carcinoma?

21 A. It's a very weak one, but it is one.

22 Q. Okay. And if I say "RCC," do you
23 understand that to mean renal cell carcinoma?

24 A. You can say "RCC."

25 Q. Okay. Is diabetes a risk factor for RCC?

1 A. It's a weak one. Can be.

2 Q. Is chronic kidney disease a risk factor for
3 RCC?

4 A. Yes.

5 Q. Is chronic use of painkillers a risk factor
6 for RCC?

7 A. I'm not aware of that being a risk factor.

8 Q. Okay. What about chronic use of NSAIDs?

9 A. NSAIDs can increase your risk.

10 Q. Okay.

11 A. Again, relatively minimal, but it can.

12 Q. How do you determine whether the increased
13 risk is relatively minimal?

14 A. Generally, using the literature.

15 Q. Is there increased incidence or increased
16 risk that you're looking to when determining whether
17 the increased risk is minimal?

18 A. I think there's two different ways to look
19 at it. You can look at it on a population basis and
20 you can look at it on an individual basis. So
21 something that might be in a population-based study,
22 you know, might have some association that may not
23 be very relevant in an individual if they have other
24 risk factors that are much more significant in terms
25 of the relative risk.

1 But yes, usually you would want to see
2 data from the literature to support whether or
3 not -- whether or not it is a risk factor and what
4 the magnitude might be.

5 Q. I guess what I'm asking is whether there's
6 a sort of magnitude that you're looking for when
7 determining whether a risk factor is significant
8 enough to consider in your differential diagnosis?

9 MR. MANDELL: Objection.

10 A. I mean, in general, in the literature, I
11 think there are epidemiologic studies, and you want
12 to see -- I think the standard people usually look
13 at is -- you know, around 10 percent increased risk
14 would be sort of a standard where you would think
15 that that might be clinically significant.

16 BY MR. BU:

17 Q. Okay. Is chronic inflammation a risk
18 factor for RCC?

19 A. I haven't read literature on chronic
20 inflammation specifically.

21 Q. Okay. Can you pull out your Downs report?
22 This is Exhibit 2.

23 And you had mentioned that you view age as
24 a risk factor; is that right?

25 A. That's correct.

1 Q. Okay. Can you turn to page 15 for me,
2 please?

3 A. Which page? I'm sorry.

4 Q. 15.

5 A. This Downs report I think has my CV on it.
6 Is that correct?

7 MR. MANDELL: The pages are
8 double-sided.

9 THE WITNESS: They're double-sided?
10 Okay. Hold on a second.

11 MR. MANDELL: It got me the first
12 time.

13 A. Okay. Yes, on page 15.

14 BY MR. BU:

15 Q. In the middle of the first paragraph of
16 Section XI, there's a sentence beginning, "The
17 incidence increases steadily with age. . ."

18 A. Uh-huh.

19 Q. Do you see that?

20 A. Yes.

21 Q. Okay. And you write, "The incidence
22 increases steadily with age, with a peak age at
23 diagnosis in the USA of 64 years."

24 A. Correct.

25 Q. Okay. When you say "a peak age at

1 diagnosis," you're -- are you referring to the
2 number of diagnoses made or the rate at which those
3 diagnoses are made?

4 A. I think -- I mean, I would have to look at
5 Reference 26. I believe they're referring to the
6 actual number rather than the percentage, but I
7 would have to look at that reference --

8 Q. Okay.

9 A. -- to see exactly what they mentioned, what
10 they used.

11 Q. And the number of -- the absolute number of
12 diagnoses made would be a different measurement than
13 the incidence at which those diagnoses are made,
14 correct?

15 MR. MANDELL: Objection.

16 A. The incidence is the number. If you're
17 talking about the rate of a particular -- like, of
18 all 64-year-olds in the U.S. relative, then that
19 would be a different -- different number than how
20 many 64-year-olds had that disease --

21 BY MR. BU:

22 Q. Okay.

23 A. -- I believe in this context. But, again,
24 I would have to look at Reference 26 to be sure.
25 They're looking at just a numerical number.

1 Q. Okay. Do you consider Agent Orange to be a
2 risk factor for kidney cancer?

3 A. No.

4 Q. All right. And why not?

5 A. I think if we go further in my report, I
6 looked at the studies associated with it, and there
7 was no association. Let me find -- let me find the
8 page.

9 Under the "Differential Diagnosis," if you
10 look on page 23 on the top, Table 8, those were the
11 studies that I found. And those studies were --
12 reached statistical significance in determining the
13 relationship between Agent Orange exposure and renal
14 cancers.

15 Q. And why did you consider whether the
16 studies reached statistical significance in
17 determining a relationship between Agent Orange
18 exposure and renal cancers?

19 A. That was one factor. The other factor was
20 the number of cases that were found in each of these
21 studies, very few of them were found to have kidney
22 cancer at all.

23 Q. Okay. Why was one of the factors you
24 considered whether the studies were able to reach
25 statistical significance?

1 MR. MANDELL: Objection.

2 A. I think as you know, that is one factor
3 that we look at in terms of the compatibility of the
4 study with the results. So I thought it was
5 important to at least consider that among other
6 various studies -- various factors, excuse me.

7 BY MR. BU:

8 Q. Okay. Would it be fair to say that because
9 the studies were not able to reach statistical
10 significance, we are unable to rule out chance as an
11 explanation for any associations found?

12 MR. MANDELL: Objection.

13 A. Statistical significance really shouldn't
14 be used to try to prove a null hypothesis. In
15 general, I would just say it just doesn't support --
16 it's just one factor when -- we look at to try to
17 see whether or not the relative risk is compatible
18 with the data.

19 So if you don't find a good association in
20 the confidence interval, you know, is why maybe it's
21 not compatible with the conclusion. But I wouldn't
22 say that you can state that the opposite, which is
23 just because you don't have statistical
24 significance, that now you don't have an
25 association.

1 BY MR. BU:

2 Q. Okay. Would it be fair to say that if you
3 don't have statistical significance, the results may
4 be consistent with the null hypothesis?

5 MR. MANDELL: Objection.

6 A. I think you would have to look at the
7 hazard ratio and then also all the other supporting
8 data that goes along with it and any meta-analyses.
9 As we talked about, any individual study may only --
10 may not be representative of the entire literature,
11 so I think you would have to look at it within that
12 context.

13 BY MR. BU:

14 Q. Okay. Did you look for any meta-analyses
15 regarding Agent Orange exposure in renal cancers?

16 A. I didn't find any meta-analyses.

17 Q. Okay. Did you look at the hazard ratios
18 for the studies examining Agent Orange exposure and
19 renal cancer?

20 A. I did.

21 Q. Okay. How did you consider the hazard
22 ratios in determining whether Agent Orange is
23 capable of causing renal cancer?

24 A. I wanted to see if there was a positive
25 association or not.

1 Q. Did any of the studies that you found find
2 a positive association?

3 A. Two of eight -- well, I would say two of
4 eight were over 1.1.

5 Q. Why is a 1.1 threshold relevant to
6 determining whether Agent Orange exposure causes
7 renal cancer?

8 MR. MANDELL: Objection.

9 A. Why is that threshold -- well, I would say
10 that -- that if you're -- it's not a positive
11 association if it's not over 1. So that's the main
12 thing I was looking for.

13 BY MR. BU:

14 Q. Would a risk ratio of 1.1 be a positive
15 association?

16 MR. MANDELL: Objection.

17 A. By definition, it's over 1, so it is a
18 positive association. Whether or not it would be
19 deemed relevant would be within the context of other
20 studies as well. If there was a trend where all the
21 studies were positive, then it could be significant.

22 BY MR. BU:

23 Q. Is there any reason to think that a risk
24 ratio of 1.1 by itself would not be significant?

25 MR. MANDELL: Objection.

1 A. I don't think anybody really looks at any
2 one study by itself and tries to determine a
3 significant association or not. The whole concept
4 of the significance is whether or not it follows a
5 trend and is consistent, not just one given study.

6 BY MR. BU:

7 Q. Okay. Let me ask it this way: Did one of
8 the studies that you found looking at Agent Orange
9 exposure and renal cancer report a risk ratio of
10 1.1?

11 A. There was one study -- such study that
12 looked at renal pelvis cancers.

13 Q. Okay. And earlier you excluded the study
14 from those you identified finding an association --
15 a significant association, I'm sorry, between Agent
16 Orange exposure and renal cancer; is that correct?

17 MR. MANDELL: Objection.

18 A. Wait, rephrase that.

19 BY MR. BU:

20 Q. Sure.

21 So there's one study that found a risk
22 ratio of 1.1, correct?

23 A. Yes.

24 Q. And earlier in your testimony, you focussed
25 on two of the eight studies which found risk ratios

1 greater than 1.1; is that correct?

2 A. Yes.

3 Q. Okay. So why do you treat the study that
4 found a risk ratio of 1.1 differently than the other
5 two studies that found positive associations?

6 MR. MANDELL: Objection.

7 A. I don't necessarily treat it differently.
8 I mean, I looked at the entire literature within the
9 context that most of the studies found no
10 association. The 1.1 would be a weak association.

11 BY MR. BU:

12 Q. Okay. Would it be fair to say that a 1.1
13 risk ratio equates to a 10 percent increased risk?

14 A. That's what it means, yes.

15 Q. Okay. And a 1.1 risk ratio -- never mind.
16 Withdrawn.

17 You mentioned that you also considered the
18 number of cases in these studies.

19 Do you recall that?

20 A. Yes.

21 Q. All right. And why is the number of cases
22 included in these studies relevant to determining
23 whether Agent Orange exposure can cause renal
24 cancer?

25 A. I think it just speaks to the size of

1 the -- the sample size and whether or not it was
2 going to be -- I mean, again, it's one -- one aspect
3 that we look at in terms of trying to figure out if
4 this is representative.

5 If you think about the fact that there are
6 millions of people, for example, who went to
7 Vietnam, soldiers that is, you know, or who were
8 exposed to Agent Orange -- I don't know the exact
9 number of soldiers. Actually, probably a million
10 would be too much. But if you only find a small
11 number of exposed cases, it may not represent the
12 entire population.

13 Q. And in your report, you set a threshold of
14 30 exposures; is that correct?

15 MR. MANDELL: Objection.

16 A. I did write 30 exposures. It wasn't
17 necessarily a threshold, it was just a commentary on
18 the size of the studies.

19 BY MR. BU:

20 Q. Okay.

21 A. But it's not -- it was arbitrary.

22 Q. Are you aware of any guidelines or criteria
23 for the number of exposures that would need to be
24 included in a study for it to be considered
25 reliable?

1 A. No, this was just my -- it's my experience
2 and my -- my observation, but not a scientific --
3 not one based on a specific scientific threshold
4 that's been published or widely published.

5 Q. Okay. Would it be fair to say that there's
6 a relationship between the number of cases included
7 in a study and the likelihood that the findings will
8 reach statistical significance?

9 A. Not necessarily. If there's a very strong
10 association, even a small number of cases will
11 demonstrate that.

12 Q. If the association is weaker, are you more
13 likely to need more cases to detect an association
14 at statistically significant levels?

15 MR. MANDELL: Objection.

16 A. Again, it depends on the context, and it
17 also depends on the comparison cohort, right,
18 because you're comparing it to somebody else. And
19 so the context of the study will make a difference.
20 BY MR. BU:

21 Q. Okay. All else being weak -- sorry, all
22 else being equal, are weaker associations more
23 difficult to detect at statistically significant
24 levels than stronger associations?

25 A. Yes.

1 Q. Okay. And all else being equal, would you
2 need a larger study with more cases to detect weak
3 associations than to detect strong associations at
4 statistically significant levels?

5 MR. MANDELL: Objection.

6 A. You would probably need either larger or
7 more studies, potentially.

8 BY MR. BU:

9 Q. Okay. Were there any guidelines or
10 criteria that you considered when developing your
11 list of risk factors?

12 A. When I look at my risk factors, you know, I
13 look to the literature. So, for example, we
14 enumerated a variety of known risks for kidney
15 cancer and I used those in my differential
16 diagnosis. And I also used the patient's history,
17 looking at what they may or may not have been
18 exposed to.

19 Q. Okay. Would you agree that many patients
20 with these risk factors never develop kidney cancer?

21 A. Yes, I think that by and large, very
22 well-known carcinogens do not cause cancer in every
23 single person.

24 Q. And would you agree that many patients with
25 kidney cancer have no identifiable risk factors?

1 A. I think I -- some patients with kidney
2 cancer have no identifiable risk factors. I don't
3 know if -- "many" just is not a percentage. There
4 are many people with kidney cancer, so by
5 definition, we don't know the cause in quite a few
6 of them.

7 Q. In your clinical practice, about what
8 percentage of your patients with kidney cancer would
9 you estimate have no identifiable risk factors?

10 MR. MANDELL: Objection.

11 A. I think that that would be hard to
12 estimate. I've been practicing over 20 years.

13 BY MR. BU:

14 Q. Okay. Would you say that it's more than
15 5 percent?

16 MR. MANDELL: Objection.

17 A. I think that identifiable risk factors,
18 it's probably more than 5 percent, but I would say
19 it's probably not the majority.

20 BY MR. BU:

21 Q. Okay. Would you say that it's more than
22 25 percent?

23 MR. MANDELL: Objection.

24 A. Again, I don't think I want to speculate
25 here under oath. I don't know my exact numbers and

1 it's been a long -- I've been practicing medicine
2 for a long time.

3 BY MR. BU:

4 Q. Okay. Would you agree that obesity,
5 hypertension, and smoking are the most common --
6 commonly found risk factors for kidney cancer
7 patients?

8 A. In the U.S., yes, those are highly
9 prevalent conditions.

10 Q. Okay. Would it be fair to say that the
11 other risk factors make up a significantly smaller
12 percentage of kidney cancer cases in the U.S.?

13 MR. MANDELL: Objection.

14 A. You're not defining "other," I mean, so I
15 don't know that I can say that with any certainty.
16 I would say that those that you mentioned are
17 well-known risk factors. There are other well-known
18 risk factors, but, again, for any individual
19 patient, the impact of other risk factors may be
20 very high.

21 BY MR. BU:

22 Q. Okay. At a population level, do identified
23 environmental exposures make up a significant
24 portion of kidney cancer cases in the United States?

25 A. In the United States as a whole, no.

1 Q. And in the United States as a whole, do
2 diabetes, chronic kidney disease, chronic NSAID use
3 make up a significant portion of kidney cancer
4 cases?

5 A. I don't think you can lump them together.
6 Most patients are not chronic NSAID users, and many
7 patients with chronic kidney disease -- I mean, you
8 could have very mild chronic kidney disease, you can
9 have severe chronic kidney disease, and they don't
10 confer the same risk for kidney cancer that I'm
11 aware of.

12 Q. All right.

13 A. And the risks are actually remarkably low.
14 Most patients with chronic kidney disease don't
15 get -- don't get kidney cancer.

16 Q. Okay. Can you turn to page 15 of your
17 Downs report?

18 A. Yes.

19 Q. All right. In that first paragraph of
20 Section XI, about maybe halfway through the
21 paragraph, there's a line beginning, "50 percent of
22 KC pathogenesis. . ."

23 Do you see that?

24 A. It doesn't begin -- I see something --

25 Q. The line begins "50 percent of KC

1 pathogenesis. . ."

2 THE STENOGRAPHER: 50 percent of what?

3 I'm sorry?

4 MR. BU: KC pathogenesis.

5 A. Yeah, but that's in the middle of the
6 sentence. Okay. Yes, okay.

7 BY MR. BU:

8 Q. Yeah. Do you -- for that sentence, you
9 write, "Previously established risk factors for
10 development of KC, including excess body weight,
11 history of hypertension, and smoking, were thought
12 to contribute to up to 50 percent of KC
13 pathogenesis." Correct?

14 A. Yes.

15 Q. Okay. And "KC pathogenesis" just means
16 causes of kidney cancer; is that fair to say?

17 A. Yes.

18 Q. Okay. And excess body weight, history of
19 hypertension, and smoking are the most common
20 explanations in the United States for kidney cancer
21 formation, correct?

22 MR. MANDELL: Objection.

23 A. On a population basis, yes, not an
24 individual basis.

25 BY MR. BU:

1 Q. All right. On a population basis, would it
2 be fair to say that roughly 50 percent of kidney
3 cancer formation have no established risk factors?

4 MR. MANDELL: Objection.

5 A. No, I think there are environmental
6 exposures, occupational exposures, people drink
7 water at Camp Lejeune. I mean, there are -- there's
8 other carcinogens out there that can cause cancer.

9 BY MR. BU:

10 Q. At a population level, do you have opinions
11 about what percentage of cases in the United States
12 are caused by these other environmental or
13 occupational exposures?

14 A. No, I -- I think that we don't have
15 specific metrics at this time. It doesn't mean that
16 we won't at some point know what level orange
17 pollution means versus normal air or the impact of
18 other dietary factors or other carcinogens that we
19 take in.

20 Q. Would you agree that the presence of a risk
21 factor does not necessarily mean that a patient will
22 develop cancer?

23 A. Yes.

24 Q. Would you agree that a patient may still
25 develop cancer in the absence of any risk factors?

1 A. Yes.

2 Q. All right. Would you agree that just
3 because a carcinogen is capable of causing a disease
4 does not mean that it did, in fact, cause the
5 disease in a patient?

6 MR. MANDELL: Objection.

7 A. I think that's -- that's pure speculation.
8 There would be no way to know for sure that it
9 didn't cause a disease. If you were exposed to
10 something and then you had the disease, there's --
11 there's a good chance that that's what caused it.
12 There's no way to prove what exactly caused it, but
13 you can say it more likely than not caused it.

14 BY MR. BU:

15 Q. Would you agree that the same risk factor
16 may affect different patients in different ways?

17 A. Yes, there's certainly potential
18 susceptibility to certain risk factors, yes.

19 Q. Okay. So, for example, would you agree
20 that smoking for one pack-year may increase
21 Patient A's cancer risk more than the same one
22 pack-year smoking history for Patient B?

23 A. Yes.

24 Q. Would you also agree that risk factors
25 often have a dose-response relationship?

1 A. They can, but, again, within the context of
2 individuals. You mentioned Person A may get cancer
3 with one pack and Person B, it may take ten packs
4 for him to get cancer.

5 Q. What does a dose-response relationship mean
6 to you?

7 A. Well, that there is a relationship between
8 a dose and the outcome. In this case, maybe more
9 tobacco may increase your risk for cancer more than
10 less tobacco.

11 Q. Okay. Put another way -- so, for example,
12 would it be fair to say that a ten packs-year
13 smoking history is likely to have a greater
14 increased risk of kidney cancer than a one pack-year
15 smoking history?

16 A. We just mentioned that it depends on the
17 individual. And each carcinogen might be different.
18 I mean, you know, there's some poison, I don't know,
19 cyanide or snake venom, you only need a small amount
20 to kill you. You don't -- it doesn't matter if
21 you've got a large amount or a small amount, it
22 might still -- a small amount may be sufficient to
23 have the exact same result as a large amount. So
24 it's completely dependent on the individual and on
25 the carcinogen or poison, et cetera.

1 Q. Okay. All else being equal, though, we
2 would expect a ten-year smoking history -- I'm
3 sorry, a ten pack-year smoking history to increase
4 kidney cancer risk more than a one pack-year smoking
5 history; is that fair to say?

6 MR. MANDELL: Objection.

7 A. I don't know that it's fair to say that
8 specifically. In fact, if you look at the PLCO,
9 there wasn't a huge difference between people based
10 on smoking history. There was some difference. But
11 tobacco may be -- if you said specifically for
12 tobacco, more tobacco is more likely to cause cancer
13 than less tobacco. For other chemicals, I don't
14 know that we have very good data for that.

15 BY MR. BU:

16 Q. Okay. Are there carcinogens that you're
17 aware of where the risk of cancer decreases with
18 increasing dose?

19 MR. MANDELL: Objection.

20 A. I'm not a toxicologist, so I don't know
21 that it's even relevant for me to comment on that.

22 BY MR. BU:

23 Q. Okay. Would you agree that cancer-forming
24 mutations can occur randomly?

25 A. Any mutation can occur randomly.

1 Q. Okay. And "any mutation" would include
2 cancer-forming mutations, correct?

3 A. Yes.

4 Q. And do cancer-forming mutation -- and
5 cancer-forming mutations do, in fact, occur
6 randomly; is that fair to say?

7 A. Again, any mutation can occur randomly.
8 But I think the -- but in terms of cancer,
9 carcinogens increase the likelihood that you will
10 form cancer-forming mutations. So I think that you
11 have to give it context.

12 Q. Would you agree that our -- sorry.
13 Would you agree that our bodies naturally
14 create carcinogens as well?

15 A. Naturally create carcinogens.

16 Q. For example, as by-products of, like,
17 metabolic processes?

18 A. I suppose the answer is -- I think you have
19 to take it within the context. I mean, if you just
20 drank water, you wouldn't create carcinogens from
21 water. If you're suggesting that our food supply
22 has a lot of things that are processed that might
23 lead to carcinogens, that's a whole different
24 question.

25 But if you just sat here, our body is --

1 my body right now, without any intake of anything
2 else, is not creating carcinogens. However, as
3 humans, we take in a lot of substances that can
4 cause carcinogens, but -- because of the processes
5 that they're made, et cetera.

6 Q. In your opinion, is a risk for a health
7 outcome the same thing as a cause of a health
8 outcome?

9 MR. MANDELL: Objection.

10 A. I think you have to look at it within the
11 context. Generally, I mean, smoking is a risk and
12 can cause cancer. So it just depends on the
13 analogy. I wouldn't want to drink benzene. That
14 would be a cause of a health outcome, or vinyl
15 chloride or TCE or PCE. These are volatile organic
16 compounds. They can be a cause. So in that
17 context, yes, a risk can be a cause.

18 BY MR. BU:

19 Q. Okay. Are there contexts in which a risk
20 might not be a cause?

21 MR. MANDELL: Objection.

22 A. Yes, I mean, if I drive too fast and
23 there's an accident, maybe it was because it was
24 raining that day and maybe I -- other days that --
25 driving too fast wouldn't cause an accident. But

1 you have to take it within a context. Certain
2 things would be and certain things may be a
3 component, but they may not be the direct cause.

4 BY MR. BU:

5 Q. Okay. I guess following up with this
6 example of, you know, a car accident, would it be
7 fair to say part of that context includes
8 considering other possible risk factors, like rain?

9 A. Yeah, I think you have to -- again, if
10 you're making a differential diagnosis, then you
11 have to weigh the likelihood of things occurring,
12 which one was more likely the cause than the other
13 cause? I mean, if somebody was minimally speeding
14 and it was torrential rain, torrential rain may have
15 been more likely the cause than the minimal
16 speeding.

17 Q. And when you're determining whether the
18 speeding is the cause or the rain is the cause, are
19 you looking at whether the speeding by itself
20 explained the accident versus --

21 MR. MANDELL: Objection. Sorry.

22 A. I think we're going a little bit beyond
23 where my analogy is going. I think the fact is,
24 yes, I'm not a motor vehicle expert and I'm sure
25 there would be experts that look at any accident and

1 try to weigh the factors. We use Bradford -- you
2 know, like, the Bradford Hill as a framework to try
3 to weigh factors when we look at differential
4 diagnosis. That's a better probably place to focus
5 than these particular cases when we're trying to
6 weigh -- you know, look at Mr. Fancher. You know,
7 he didn't have real other risk factors other than
8 drinking water at Camp Lejeune. So that has a heavy
9 weight, and the other things that don't exist, no
10 other risk factors or no other significant risk
11 factors, have a very low weight. That's how we kind
12 of look at it in terms of relevant terms.

13 And I apologize for getting us distracted
14 by card accidents. I think that --

15 BY MR. BU:

16 Q. No, that's -- I'm just trying to understand
17 the distinction that you're drawing, if any, between
18 something that increases the risk of an event like
19 speeding and something that causes the event.

20 MR. MANDELL: Objection. It's. . .

21 A. Yeah, I think that's going to be difficult
22 to continue in that analogy context. I think the
23 fact is that risk factors can be causal. How much
24 they impact the cause or how much they weigh against
25 the cause, that probably is more variable.

1 BY MR. BU:

2 Q. Okay. Would it be fair to say that in
3 determining whether a risk factor was a cause, you
4 also consider the magnitude of the risk?

5 A. Yes, again, in a differential diagnosis,
6 you try to weigh how much a factor was relative to
7 other factors in trying to determine which was more
8 likely or not the cause.

9 Q. Okay.

10 A. Or as likely as not in this case.

11 Q. Would it be fair to say that when
12 determining whether a risk is a cause of a health
13 outcome, you also would need to consider the
14 background risk of that health outcome?

15 A. I think that that is very contextual. For
16 some things we know what the background risk might
17 be and for some things, we don't. So if the
18 background risk applies to every single person and
19 then the causative risk only applies to a certain
20 population, then I think that may not be a factor at
21 all because it applies to everybody equally. But if
22 for some reason the background risk was only in one
23 background and not in the other background, then
24 it's a separate risk.

25 Q. Earlier when you say "that may not be a

1 factor at all," you're referring to --

2 A. The background risk may not be a factor at
3 all.

4 Q. Okay. So just so that I'm clear, your
5 opinion is that background risk is not a factor if
6 the background risk is the same for everyone in a
7 population?

8 MR. MANDELL: Objection.

9 A. What I'm saying is that if it applies
10 equally, it may not be -- it may not be a
11 significant contributor relative to a separate
12 identifiable risk that only applies to a certain
13 population.

14 I'm sure we're going to get to the Bove
15 studies, but looking at two populations that are
16 very similar in background, even if you say, well,
17 men are a risk factor for kidney cancer and most
18 soldiers are men, it's no longer a factor if you
19 compare two groups of men. Then you can look at the
20 contaminated water in isolation and don't have to
21 worry about the fact that they were all men and men
22 might be at slightly higher risk for kidney cancer
23 than women.

24 So -- so that's how you have to look at
25 background risk. If it was all men compared to all

1 women and then there was another factor that you're
2 trying to identify, you have to take into
3 consideration that being a man might increase your
4 risk relative to being a woman, then that background
5 may be a factor.

6 BY MR. BU:

7 Q. Okay. Are you familiar with the term
8 "idiopathic"?

9 A. Yes.

10 Q. All right. What does "idiopathic" mean to
11 you?

12 A. It's usually a term for exclusion when you
13 don't know -- where you've excluded all known causes
14 and you are left with no known disease etiology or
15 pathogenesis.

16 Q. Would you agree that having no known cause
17 is not the same thing as a disease having no cause
18 at all?

19 MR. MANDELL: Objection.

20 A. You may have to state that again.

21 BY MR. BU:

22 Q. Sure.

23 An idiopathic disease is still caused by
24 something; is that fair to say?

25 A. I think that it's -- that's not the term

1 for it. Once you -- if you have an idiopathic
2 disease and you find the cause, it's no longer
3 idiopathic, it's now a disease with a known cause.
4 It's a term for exclusion. You don't use that
5 term as -- you don't say lung cancer could be caused
6 by smoking or idiopathic. That's not the correct
7 use of the term "idiopathic."

8 Q. Okay.

9 A. You can say this -- we know what causes
10 lung cancer. We know the pathogenesis of lung
11 cancer, we know the mechanism of lung cancer. If
12 somebody has a symptom and nobody can figure out why
13 they have the symptom, you go, well, this patient
14 may have an idiopathic disease. They're very rare
15 because most -- but it's not part of the
16 differential diagnosis. The moment you have a known
17 risk factor or a cause, "idiopathic" is an
18 inappropriate term.

19 Q. So that I'm clear, when you say "term for
20 exclusion," you mean it's not a factor to consider
21 in the differential, it's just the result of a
22 differential; is that fair to say?

23 MR. MANDELL: Objection.

24 A. It's a result of a differential that --
25 where you could not find any cause, which is why

1 it's extremely rare for us to have idiopathic
2 diseases. There -- most diseases have a known
3 cause, a known mechanism. And so you don't use --
4 you don't use the term "idiopathic" unless there's
5 literally no known cause for the disease and you're
6 trying to -- to identify that as a specific
7 characterization of the disease. But the moment you
8 know what causes it, it loses the term "idiopathic."

9 BY MR. BU:

10 Q. Okay. But to determine what causes a
11 disease, you would apply a differential diagnosis or
12 differential etiology, correct?

13 A. Yes.

14 Q. Okay. And when you're going through that
15 differential, idiopathic is not one of the causes
16 you exclude, it is the result of being unable -- or
17 unable to identify any other potential cause; is
18 that fair to say?

19 A. No. You wouldn't even say the word
20 "idiopathic." So let's say somebody has -- you
21 know, let's say they have kidney cancer, and let's
22 say they're not a smoker and they're not diabetic
23 and they don't have high blood pressure, they don't
24 have an idiopathic kidney cancer. They just don't
25 have a recognized -- maybe they don't have a

1 recognized cause, but it's not idiopathic kidney
2 cancer. That's not a term. You might say we don't
3 know the exact risk factor, maybe -- maybe it was
4 occupational, maybe it was environmental, maybe it
5 was something that was not on the list, but it
6 doesn't become an idiopathic disease. That's not a
7 thing.

8 Q. Okay. All right. And the list of
9 recognized causes is not the same as the list of all
10 possible causes of kidney cancer; is that fair to
11 say?

12 A. Yes.

13 Q. And the science is continuing to identify
14 new possible causes of kidney cancer; is that fair
15 to say?

16 A. I don't know of specific research that's
17 doing studies looking for new unique causes, but I
18 think that over time we do identify additional --
19 additional causes and susceptibilities, et cetera.

20 Q. Okay. Would it be fair to say that some of
21 these cases with no recognized cause may be caused
22 but an unidentified or unknown environmental
23 exposure?

24 A. I mean, we can speculate on anything. I
25 guess the answer is, yes, it could be due to some

1 unknown -- or yet unknown factor. You could say
2 that about almost anything, though.

3 Q. Okay. In your report, you refer to kidney
4 cancer as the seventh most commonly diagnosed
5 malignancy overall in 2023.

6 Do you recall that?

7 A. Yes.

8 Q. All right. Would it be fair to say that
9 there are about 80,000 new cases of kidney cancer
10 every year?

11 A. Yes.

12 Q. Okay. And would you agree that there are
13 roughly, you know, between 14 and 16 new kidney
14 cancer cases for every 100,000 people each year?

15 A. I think that's accurate.

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

17 A. Yes.

18 Q. What is SEER?

19 A. It's a cancer -- it's kind of a national
20 cancer registry. It's made up of several different
21 registries across the country.

22 Q. Okay. And do you refer to SEER data in
23 your reports in Fancher and Downs?

24 A. I would have to look very specifically if
25 we report specifically to that. That may be the

1 Reference 26, but I would have to look.

2 Q. On page 24 of your Downs report, do you
3 refer to SEER data?

4 A. Yes, for age-adjusted rates, yes.

5 Q. And why do you refer to SEER data to
6 determine age-adjusted rates of kidney cancer
7 incidence?

8 A. Because they report it. Not every registry
9 reports that.

10 Q. Okay. Is SEER data considered reliable by
11 professionals in your field?

12 A. Yes.

13 Q. Okay. And you consider SEER data reliable,
14 correct?

15 A. It depends on what information you're
16 looking for. It usually lags by about four or five
17 years, so it might not be the most up-to-date,
18 reliable data, but for some things it's -- it's
19 useful.

20 Q. Okay.

21 MR. BU: Can we pull Tab 5, please?
22 Or actually, I'm sorry, no, 17.

23 (Exhibit No. 5 marked.)

24 BY MR. BU:

25 Q. I have handed you what's -- what's been

1 marked Exhibit 5. This is a printout of SEER data
2 related to kidney and renal pelvis cancer.

3 Do you see that?

4 A. Uh-huh.

5 Q. And would you have reviewed this data or
6 similar data in preparing your report for Downs?

7 A. Probably something similar.

8 Q. Okay. And can you turn to page 2 for me,
9 please, of that printout?

10 A. Okay.

11 Q. All right. And SEER reports the lifetime
12 risk of developing kidney and renal pelvis cancer as
13 1.8 percent for men and women; is that right?

14 A. Yes.

15 Q. All right. And would it be fair to
16 characterize 1.8 percent as the background risk of
17 developing kidney and renal pelvis cancer?

18 MR. MANDELL: Objection.

19 A. No.

20 BY MR. BU:

21 Q. Why not?

22 A. Because many of these patients would have
23 had risk factors that might have contributed to
24 getting their cancer. The -- I'm not sure what the
25 background risk would be for somebody who was not

1 exposed to any carcinogen.

2 If you were to try to say what are the
3 odds that somebody who had, you know, the best
4 genetics and the best lifestyle, whether or not they
5 would get kidney cancer at the same rate, I don't
6 think any of us would know. This is the average
7 rate for an American who was born probably 70 or
8 80 years ago, not even us, right, because the
9 average age is 65.

10 So it's not even really relevant to you or
11 me. We were -- because this is average rate right
12 now, lifetime, but this is -- you know, that's the
13 problem with some of these registries, they lag, and
14 they're also based on events that are happening in,
15 you know, mostly older patients. So the average
16 person who is born now might have a completely
17 different background risk, if you will.

18 Q. Okay. Are you offering any opinions about
19 what the background risk would be for any individual
20 in this litigation?

21 A. No, not what the background risk is, no.

22 Q. All right. Do you have any reason to
23 disagree that the lifetime risk of developing cancer
24 is approximately 1.8 percent for men and women in
25 the United States?

1 A. I would state exactly what this was, that
2 based on the 2018 to 2021 data, that was the risk at
3 the time. And, again, that probably is a moving
4 target.

5 But if you look individually, like -- at
6 somebody like Mr. Fancher, at age 39 -- he would not
7 have been at a 1.8 risk of having kidney cancer at
8 age 39. I can say, quite frankly, he should have
9 been dramatically lower risk if he had had no
10 exposure to a carcinogen. Because at age 39, he
11 was -- you know, that -- when the average age is 65,
12 he was 26 younger than the -- 6 years younger than
13 the average age and didn't have other risk factors.

14 So you have to look at individual context.
15 The background risk based on SEER is probably not a
16 very relevant number to look at.

17 Q. Do you have an opinion about what
18 Mr. Fancher's kidney cancer risk would have been at
19 age 39 absent any carcinogen exposures?

20 A. Should have been nearly zero. But I don't
21 have the exact -- I'm sure there are some statistics
22 that look at the risk at that age for men under the
23 age of 40 with no risk factors, and they're
24 incredibly low on the -- for an individual.

25 Q. What facts or data do you consider when

1 determining that Mr. Fancher's risk of developing
2 cancer at 39 absent carcinogen exposures would be
3 nearly zero?

4 A. I mean, I think there are age incidence
5 rates even in SEER -- and even in my report for
6 Mr. Downs that you quoted, you know, the risk for
7 per hundred thousand is -- actually was, I think,
8 less than one in a thousand. I can pull it up
9 specifically because I reference it somewhere there.

10 Well, this was specifically looking at the
11 PLCO, but it was .6 for men over the age of 70.
12 Even these were smokers, it was .6 per thousand
13 patient person years. I mean, that's a very low
14 risk. So the fact is it -- almost no man under the
15 age of 40 gets kidney cancer. I couldn't tell you
16 the exact percentage, something that could probably
17 be found, but it's exceedingly rare.

18 Q. Okay. When you're referring to the PLCO
19 data, you mentioned a patient year. What is a
20 patient year?

21 A. That had to do with how they followed
22 patients in the study. So if you follow the patient
23 for two years in the study, that would be two
24 patient years.

25 Q. Okay. And incidence per patient year is

1 different than lifetime risk; is that fair to say?

2 A. Yes.

3 Q. Okay.

4 A. But the incidence, nonetheless, is
5 exceedingly low for men under the age 40, for
6 example. Even for men the age of 80, it's still not
7 common. It's still very rare in a population of 300
8 million. Of those 80,000 cases, only a small
9 percentage were men who were diagnosed over the age
10 of 80.

11 MR. BU: All right. I think this is a
12 good spot to take a break. Could we go off record,
13 please?

14 THE VIDEOGRAPHER: We are off the
15 record at 11:06.

16 (Break taken, 11:06 a.m. to 11:14 a.m.)

17 THE VIDEOGRAPHER: We are back on the
18 record at 11:14.

19 BY MR. BU:

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

22 A. No.

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

25 A. No.

1 MR. BU: Can you pull Tab 8, please?
2 (Exhibit No. 6 marked.)

3 BY MR. BU:

4 Q. The court reporter has handed you what's
5 been marked Exhibit 6. This is a 2014 study by
6 Frank Bove titled, "Evaluation of mortality among
7 Marines and Navy personnel exposed to contaminated
8 drinking water at USMC base Camp Lejeune."

9 Do you see that?

10 A. Yes.

11 Q. Okay. And earlier you had referred to some
12 of the Bove studies.

13 Do you recall that?

14 A. Yes.

15 Q. Is this one of the Bove studies that you
16 considered in formulating your opinions in Fancher
17 and Downs?

18 A. Yes.

19 Q. All right. And I guess I should first ask,
20 why did you consider the Bove studies in formulating
21 those opinions?

22 A. They're directly relevant to the question
23 of whether or not contaminated water contributed to
24 kidney cancer risk.

25 Q. Okay. Can you turn to page 7, Table 4 for

1 me, please?

2 A. Yes.

3 Q. And Table 4 describes the standardized
4 mortality ratios for different disease end points;
5 is that correct?

6 A. Yes.

7 Q. And one of those disease end points is
8 kidney cancer; is that correct?

9 A. Yes.

10 Q. All right. And this table reports the
11 standardized mortality ratio for kidney cancer for
12 the Camp Lejeune cohort as 1.16; is that right?

13 A. Yes.

14 Q. The confidence interval for that
15 standardized mortality ratio crosses 1; is that
16 correct?

17 A. Yes.

18 Q. And so by conventional standard, this would
19 mean that the standardized mortality ratio is not
20 found to be statistically significant; is that fair
21 to say?

22 MR. MANDELL: Objection.

23 A. I don't think I look at it as -- in terms
24 of the statistical significance from that
25 standpoint. It's more an issue of whether or not

1 the data is compatible with the hazard ratio being,
2 you know, a 16 percent increased risk for mortality.
3 It basically states that the range is from 57
4 percent increase to negative 16 percent, but it
5 doesn't necessarily mean that every point in those
6 is equally, likely. In fact, the most likely is a
7 positive association of a 16 percent increase.

8 BY MR. BU:

9 Q. Okay. But there's still some probability
10 that the 16 percent increase is explained by chance
11 or random error; is that fair to say?

12 MR. MANDELL: Objection.

13 A. I don't think we look at the data in terms
14 of that. I think that the way I look at the data
15 is, how does it fit within the context of all the
16 other literature relative to contamination or
17 exposures to TCE and risk of cancer? And it's a
18 positive association, which goes along with most of
19 the rest of the literature.

20 BY MR. BU:

21 Q. And the number of observed kidney cancer
22 cases in this study was 42; is that correct?

23 A. Yes.

24 Q. Okay. And I should be clear, the number of
25 observed kidney cancer cases for the Camp Lejeune

1 cohort was 42?

2 A. Forty-two deaths from kidney cancer.

3 Q. Okay. And the number of expected deaths
4 from kidney cancer for the Camp Lejeune cohort was
5 about 36; is that correct?

6 A. Based on this, yes.

7 Q. All right. So would it be fair to say that
8 absent any toxic exposure, we would still expect to
9 see some kidney cancer-related deaths among Marines
10 at Camp Lejeune?

11 A. Yes.

12 Q. All right. The -- even if there were no
13 toxic exposures, the number of kidney cancer-related
14 deaths would not be zero; is that fair to say?

15 A. Yes.

16 Q. Okay. Can you turn to the next page,
17 Table 5?

18 Table 5 reports hazard ratios; is that
19 correct?

20 A. Yes.

21 Q. Okay. And the hazard ratio reported for
22 kidney cancer-related deaths is 1.35; is that
23 correct?

24 A. Yes.

25 Q. And the confidence interval for this hazard

1 ratio also crosses 1; is that correct?

2 A. Yes.

3 Q. All right. And the p-value is reported as
4 0.19; is that correct?

5 A. That's what it states.

6 Q. All right. And a p-value of 0.19 would, by
7 convention, be considered not statistically
8 significant; is that fair to say?

9 MR. MANDELL: Objection.

10 A. I think, again, we have to look at the
11 context of this study. This was an epidemiologic
12 study and it is consistent with a trend
13 demonstrating an increased risk of dying of kidney
14 cancer for soldiers at Camp Lejeune versus Camp
15 Pendleton, and consistent with a lot of the other
16 literature suggesting that contaminants in the
17 water, such as TCE, increased your risk for getting
18 kidney cancer or dying of kidney cancer.

19 The fact that it crossed the area of 1 is
20 not proof that there is no association. In fact,
21 there's a consistent association with kidney cancer
22 mortality and exposures in Camp Lejeune.

23 BY MR. BU:

24 Q. Okay. This study did not include everyone
25 who was exposed to water at Camp Lejeune between

1 1953 and 1987; is that correct?

2 A. Correct.

3 Q. Okay. And, in fact, they looked at
4 exposures from 1975 to 1985; is that correct?

5 A. In this study, yes.

6 Q. All right.

7 A. They modelled the exposures for people
8 below -- before that. But in this -- other people
9 have modelled it. But in this study, yes, it was --
10 it was just for that decade.

11 Q. Okay. And this study, the Camp Lejeune
12 cohort would have been exposed to water no earlier
13 than 1975 and no later than 1985; is that correct?

14 A. Correct.

15 Q. Okay. And is the duration of an exposure
16 relevant to determining whether that exposure could
17 cause disease?

18 A. Again, it depends on the exposure. Some
19 exposure -- as we have discussed, very short or
20 small exposure might be sufficient to cause a
21 disease, and for other exposures, the duration and
22 the intensity may make a difference.

23 Q. Okay. Is duration one of the factors that
24 you consider when determining whether an exposure
25 causes disease?

1 MR. MANDELL: Objection.

2 A. I consider the literature that discusses
3 duration as a potential factor. For some diseases,
4 it's a factor for diseases and for some diseases,
5 it's not a factor.

6 BY MR. BU:

7 Q. Is the duration of an exposure, in your
8 opinion, a factor in determining whether exposure to
9 Camp Lejeune water causes disease?

10 A. No, not necessarily. Some -- some of the
11 contaminants cause cancer even with a short duration
12 and some cause cancer -- had an increasing rate of
13 cancer with a longer duration. But not all of them
14 had monotonic -- well, relationship to monotonic
15 exposures and even relatively smaller exposures were
16 sufficient to increase your risk for cancer.

17 Q. What is a monotonic exposure?

18 A. Well, it's a -- I mean, it's the
19 relationship between the exposure such that a larger
20 exposure leads to more of the disease.

21 Q. Okay. Generally speaking, if there's a
22 true causal association, we would expect to see a
23 monotonic relationship between exposure and disease;
24 is that fair to say?

25 MR. MANDELL: Objection.

1 A. No. No. What you would like to see is
2 that a population that was not exposed had less
3 likelihood of a disease than a population that was
4 exposed. Within the population that was exposed,
5 the degree of exposure may or may not be related to
6 the disease.

7 MR. BU: Can we pull Tab 20, please?

8 MS. JOHNSON: Yes.

9 (Exhibit No. 7 marked.)

10 BY MR. BU:

11 Q. The court reporter has handed you what has
12 been marked Exhibit 7. This is a supplemental table
13 from Bove's 2014 Marine study.

14 When you were preparing your reports in
15 Fancher and in Downs, did you review the
16 supplemental tables that were attached to Bove's
17 2014 study?

18 A. I reviewed this supplemental table.

19 Q. Okay. And why did you review this
20 supplemental table in preparing your reports?

21 A. I wanted to see whether or not their degree
22 of exposure was associated with a higher risk of
23 kidney cancer.

24 Q. Okay. When you refer to a "degree of
25 exposure," you're referring to the low, medium, and

1 high exposure categories that Bove created for these
2 supplemental tables; is that correct?

3 A. Yes.

4 Q. All right. And those low, medium, and high
5 exposure categories are determined in -- or, I'm
6 sorry, those low, medium, and high exposure
7 categories are measured in microgram-per-liter
8 months; is that correct?

9 A. I think we would have to go to Table 6 in
10 the Bove report and -- yes, they're
11 microgram-per-liter months.

12 Q. Okay.

13 A. That's Table 6.

14 Q. And a microgram-per-liter month is a
15 measure of cumulative exposure; is that fair to say?

16 A. It's a cumulative concentration of
17 exposure, yes.

18 Q. Okay. The supplemental table, Exhibit 7,
19 also reports hazard ratios at different levels of
20 exposure for the different chemicals; is that
21 correct?

22 A. Yes.

23 Q. And it also reports hazard ratios for TVOC,
24 which would be all chemicals combined; is that
25 correct?

1 A. Yes.

2 Q. Let's start with the TVOC table. I think
3 that's page 1.

4 A. Yes.

5 Q. All right. None of the relationships
6 reported for kidney cancer-related deaths are
7 statistically significant, correct?

8 A. I can't say that. What I can say is that
9 they all had a positive association with kidney
10 cancer ranging from a 42 percent increased risk of
11 kidney cancer mortality to a 54 percent risk of
12 kidney cancer mortality. They're consistent with
13 each other.

14 Q. All of the reported hazard ratios
15 include -- have a confidence interval that includes
16 1; is that fair to say?

17 A. Yes.

18 Q. Okay. And the number of cases included for
19 each exposure group is either 10 or 11; is that
20 correct?

21 A. Yes. I mean, that's -- these types of
22 studies are not really designed based on breaking
23 down every little portion. If you want to do that,
24 you can, but it makes it hard to do -- to look at
25 the individual subset number and be concerned about

1 it.

2 On the other hand, when you see consistent
3 hazard ratios and specificity, so, for example,
4 other diseases did not necessarily show an
5 association, but kidney cancer had a consistent
6 association, suggests to you that -- that there's at
7 least, you know, coherence in the data.

8 Q. Okay. So is your opinion that this -- the
9 findings in Bove 2014 do not support a causal
10 association between Camp Lejeune water and cancers
11 other than kidney cancer?

12 MR. MANDELL: Objection.

13 A. No.

14 MR. MANDELL: And I would just
15 instruct you that to the extent that you have
16 opinions on cancers other than kidney cancer or
17 specific to Downs and Fancher, I would state --
18 don't state that, but you can answer as to kidney
19 cancer.

20 A. Yeah, I'm -- yeah, I was going to say, I'm
21 going to focus on the kidney cancer. Didn't look at
22 other cancers.

23 BY MR. BU:

24 Q. Okay. But in looking at kidney cancer, you
25 consider specificity, correct?

1 A. I think when you look at trends related --
2 or coherence among chemicals -- so, for example, for
3 kidney cancer, every chemical had a positive
4 association that -- that tells me that there's good
5 coherence. But, again, I didn't specifically look
6 at the other cancers, so I shouldn't comment on
7 those.

8 Q. Okay. Is coherence the same as
9 specificity?

10 A. No.

11 Q. Okay.

12 A. Specificity would mean that, you know, a
13 cancer can cause one disease -- a carcinogen can
14 cause one disease, but not another.

15 Q. All right. So in determining whether Bove
16 2014 supports a conclusion that exposure to Camp
17 Lejeune water causes kidney cancer, did you consider
18 specificity in Bove 2014?

19 A. It was -- no, it was not a major
20 consideration. I didn't -- I didn't specifically
21 look at every other cancer or benign disease that
22 was associated with these chemicals.

23 Q. Okay. All right. Can you turn to page 7
24 for me, please?

25 A. Same report?

1 Q. Same report, yes.

2 And the tables on this page report hazard
3 ratios related to cumulative exposure to TCE; is
4 that correct?

5 A. Yes, correct.

6 Q. And similar to the hazard ratios reported
7 for TVOC, the hazard ratios reported for TCE also
8 all include confidence intervals that include 1; is
9 that fair to say?

10 A. That's correct. Again, all the hazard
11 ratios are positive and -- anywhere from a 21
12 percent to a 54 percent increased risk of kidney
13 cancer mortality.

14 Q. Okay. The 21 percent increased risk, are
15 you referring to the hazard ratio for the medium
16 exposure category?

17 A. Yes.

18 Q. Okay. And so this study found that the
19 lowest -- the lowest risk was associated with the
20 medium exposure category; is that fair to say?

21 A. No, I don't think you can look at these in
22 isolation the way they're -- it's designed. What it
23 does suggest -- suggest is that even a low exposure
24 is sufficient to cause kidney cancer. All -- I
25 think the main takeaway is that they all have a

1 positive association, but not necessarily looking at
2 these -- you can't compare medium to low
3 specifically based on the way this study was done.

4 Q. If you can't compare the medium -- I'm
5 sorry, when you say "you can't compare medium to low
6 specifically," you mean you can't compare the 1.21
7 hazard ratio for medium exposure to the 1.54 hazard
8 ratio for low exposure?

9 MR. MANDELL: Objection.

10 A. I don't think it was designed to look to
11 see if that's -- that -- I don't think you can draw
12 a conclusion that medium is -- was less harmful than
13 low. I think you can draw the conclusion that even
14 low exposure increased your risk.

15 BY MR. BU:

16 Q. And for TCE, the hazard ratio is reported
17 as greatest for the low exposure category; is that
18 correct?

19 A. Again, I don't think you can necessarily
20 compare one group to the other. These were somewhat
21 arbitrary, you know, divisions here, I think, they
22 try to do it -- the way they did it. But I think
23 you can say that all of the exposures were
24 associated with an increased risk for kidney cancer
25 mortality, which is consistent with the other

1 chemicals in the TVOC.

2 Q. Okay. What do you mean when you say these
3 were arbitrary divisions?

4 A. Well, I think Dr. Bove made the decision on
5 how to divide the -- the rates of exposure. I don't
6 know that there was a specific formula that was --
7 that's used for any particular contaminant.
8 Usually, you divide by quarter or tertiles and --
9 just to distinguish one from the other.

10 But I think that one could argue could low
11 exposure have been 1 microgram per liter, more or
12 less. I think that -- in that part, it was
13 arbitrary. I think the key to see from this is that
14 no matter which exposure a Marine fell into, he was
15 at higher risk of kidney cancer than if he was at
16 Camp Pendleton.

17 Q. Okay. Is it your opinion that these
18 tables -- is it your opinion that these tables tell
19 us how much higher that risk is for each exposure
20 category?

21 A. No, I think that they -- they're part of
22 the big picture that you're definitely at a higher
23 risk. And the data is what it is based -- in this
24 particular study. But when you take it into the
25 context of multiple studies and meta-analyses

1 showing that, for example, TCE will increase your
2 risk for kidney cancer, then you say this is overall
3 quite supportive of that -- of that overall picture
4 that supports the fact that TCE is a carcinogen and
5 that it is associated with kidney cancer.

6 Q. Okay. For the TCE exposures, the number of
7 cases for each exposure category was between 8 and
8 11; is that correct?

9 A. Yes.

10 Q. And smoking is a potential confounding
11 variable when measuring deaths related to kidney
12 cancer; is that fair to say?

13 A. It's a potential one, yes.

14 Q. All right. And so is obesity?

15 A. It would be a confounder, maybe not a
16 significant one, but it is -- it could be a
17 confounder.

18 Q. Okay. Do you know whether this study
19 controlled for smoking as a confounding variable?

20 A. It controlled for smoking-related disease
21 like COPD, but they did not have the actual smoking
22 rates for each individual soldier.

23 Q. Okay. And would you agree that not
24 directly controlling for smoking is a limitation in
25 this study?

1 MR. MANDELL: Objection.

2 A. I think any given study has -- does its
3 best to limit, you know, any limitations. I think
4 the fact is that were -- that using a similar group
5 as a control can significantly help. They have very
6 similar backgrounds and exposures, and they did the
7 best that they could to limit confounders. Like I
8 said, controlling for smoking-related diseases is --
9 and cardiovascular diseases was a good way to try to
10 limit that.

11 BY MR. BU:

12 Q. Would you agree that the potential for
13 exposure misclassification is a limitation of this
14 study?

15 A. I would say that if anything, it biased
16 against the results of the study because there's no
17 way that a soldier at Camp Pendleton drank
18 contaminated water from Camp Lejeune, but it's
19 possible a soldier at Camp Lejeune drank
20 uncontaminated water and then got counted.

21 So if anything, it biased in the opposite
22 direction from an association. So the association
23 might be stronger if you were able to fully capture
24 every soldier who just drink water at Camp Lejeune
25 rather than diluted it with maybe water or liquids

1 that were not contaminated. So it's a bias, but it
2 may have worked against -- against the association,
3 which was already positive. It may have been more
4 positive.

5 Q. Okay. Would it be fair to say your opinion
6 is any exposure misclassification in Bove 2014 would
7 bias towards the null?

8 A. Again, I don't believe that -- that the
9 null is -- is probably the right way to look at it
10 because -- but I would say that if anything, it
11 would have weakened the positive association that
12 was already there. And if that -- if we could
13 identify only the soldiers who only drank
14 contaminated water, it may have been a stronger
15 association.

16 Q. Mr. Downs would not have been included in
17 the cohort for this study; is that correct?

18 A. Correct.

19 Q. All right. And that's because Mr. Downs
20 was not exposed to water at Camp Lejeune between
21 1975 and 1985?

22 A. Correct.

23 Q. All right. And the levels of contamination
24 between 1975 and 1985 may have been different than
25 the levels of contamination when Mr. Downs was at

1 Camp Lejeune in the early 1960s; is that fair to
2 say?

3 A. I'm not a toxicologist and -- nor did I do
4 the modelling for the exposures at that time, so I
5 can't say that it would have been different. But
6 there are people that modelled the exposures for
7 contaminated water at the time.

8 Q. Okay. Did you consider whether the levels
9 of contamination in the early 1960s were comparable
10 to the levels of contamination from 1975 to 1985?

11 MR. MANDELL: Objection.

12 A. I've used the expert reports that were
13 given to me with the modelling based -- that --
14 about what the contamination levels would have been
15 at that time.

16 BY MR. BU:

17 Q. Did the reports that you reviewed in
18 preparing your report in Downs describe the levels
19 of contamination in the early 1960s?

20 A. Yes. There was -- in the Downs report,
21 there were estimates for monthly exposures to
22 various chemicals that he would have been exposed
23 to.

24 Q. Okay. And did the reports that you
25 reviewed in preparing Downs also describe levels of

1 contamination between 1975 and 1985?

2 A. I specifically looked at the years for when
3 Mr. Downs was there and Mr. Fancher were there.

4 Q. Okay. Other than the years that
5 Mr. Fancher and Mr. Downs were at Camp Lejeune, did
6 you look at levels of contamination at Camp Lejeune
7 for any other time periods?

8 A. No.

9 Q. All right. Did you review any data
10 describing levels of contamination over time from
11 1953 to 1987?

12 A. No. Specifically related to Mr. Downs and
13 Mr. Fancher.

14 Q. Okay. When you refer to those levels of
15 contamination for Mr. Downs and Mr. Fancher, are you
16 referring to Dr. Reynolds' expert report?

17 A. That was the -- yeah, that was the report
18 that I was looking at.

19 Q. Okay. Were there other expert reports that
20 you considered when determining the levels of
21 contamination at Camp Lejeune that were relevant to
22 each plaintiff?

23 A. No, I mostly focused on those reports.

24 Q. Okay. Did you also consider a civilian
25 mortality study that Dr. Bove conducted in 2014 in

1 preparing your reports?

2 A. Yes.

3 Q. And the findings for the civilian mortality
4 study were also not statistically significant; is
5 that correct?

6 MR. MANDELL: Objection.

7 A. Can I see that report?

8 BY MR. BU:

9 Q. Sure.

10 MR. BU: Can you pull Tab 9?

11 (Exhibit No. 8 marked.)

12 A. So if you're referring to Table 3, again,
13 it was a positive association with an increased risk
14 for kidney cancer mortality among civilians. Again,
15 the risk ranged from 267 percent higher to
16 48 percent lower.

17 Again, you know, the -- the overall trend
18 of an increased risk of cancer mortality was
19 consistent with all the other reports suggesting an
20 increased risk or supporting an increased risk for
21 kidney cancer mortality for those who were exposed
22 to contaminated water at Camp Lejeune compared to
23 Camp Pendleton where they were not exposed.

24 BY MR. BU:

25 Q. Okay. Mr. Downs was not a civilian at Camp

1 Lejeune; is that correct?

2 A. No, he was not, but he worked, I think, in
3 mail service, so -- but he was not a civilian.

4 Q. Okay. And Mr. Fancher also was not a
5 civilian; is that correct?

6 A. That's correct.

7 Q. All right. Neither Mr. Downs nor
8 Mr. Fancher would have been included in this cohort
9 study; is that correct?

10 A. In the civilian cohort study, no.

11 Q. Okay. Looking, again, at Table 3, the
12 number of observed kidney cancer-related deaths was
13 seven; is that correct?

14 A. Correct.

15 Q. And the number of expected kidney
16 cancer-related deaths was 5.4, correct?

17 A. Correct.

18 Q. So in this study, there were -- there were
19 less than two kidney cancer-related deaths more --
20 than were otherwise expected; is that fair to say?

21 MR. MANDELL: Objection.

22 A. Can I go back and just add a clarification
23 to the -- I think you asked a similar question about
24 the -- the military service men. If I remember
25 correctly, only a small percentage of -- of men were

1 over the age of 65 where they would have even been
2 expected to get kidney cancer. Only about
3 12 percent had died, which means that it -- looking
4 at mortality may have been premature.

5 And while the number -- the delta here is
6 small, which I think is the point you're trying to
7 make, it probably significantly underestimates the
8 ultimate impact of this contaminated water on
9 mortality because not enough patients probably have
10 reached the age where they're going to get kidney
11 cancer and not enough patients have reached the age
12 where they might die of their disease. And so I
13 think the focus should be on the increased risk, not
14 on the absolute difference here because it is
15 consistent with all the other studies showing an
16 increased risk, and so I think that's something that
17 we should focus on.

18 BY MR. BU:

19 Q. Okay. But, again, the number of observed
20 deaths in this case was less than two more than were
21 expected for the Camp Lejeune civilian cohort; is
22 that correct?

23 MR. MANDELL: Objection.

24 A. Again, a much smaller population. I think
25 they only had 4,000 people compared to the number of

1 soldiers. So I think that it's a significant
2 increase relative to the entire cohort that you're
3 looking at. I wouldn't want to be one of those
4 guys.

5 BY MR. BU:

6 Q. Is it your understanding that the reported
7 expected number of disease-related deaths does not
8 take into account the age of the cohort?

9 A. I'm not sure exactly how they -- how they
10 came about the expected. I think the more relevant
11 comparison group would be the Camp Pendleton, which
12 is the reference, which would be the fair comparison
13 rather than an expected group.

14 Q. If the standardized mortality -- sorry, let
15 me take a step back.

16 A standardized mortality ratio is
17 different than an absolute mortality ratio; is that
18 fair to say?

19 A. Yes.

20 Q. All right. And the standardized mortality
21 ratio is often adjusted for -- for demographic
22 confounders; is that fair to say?

23 MR. MANDELL: Objection.

24 A. It depends on the study, how they
25 standardize it.

1 BY MR. BU:

2 Q. All right. If the standardized mortality
3 ratio in this study was adjusted for age, then the
4 reported expected number of deaths would likely be
5 adjusted for age as well; is that correct?

6 MR. MANDELL: Objection.

7 A. If -- they should state how they made the
8 adjustment, but yes.

9 BY MR. BU:

10 Q. All right. You can set that to the side.
11 Did you also consider a 2018 morbidity
12 study conducted by the ATSDR?

13 A. Yes.

14 Q. And why did you also consider that 2018
15 morbidity study?

16 A. Tried to consider -- I thought it was
17 relevant to evaluating causes of kidney cancer and
18 Camp Lejeune.

19 Q. The 2018 morbidity study also did not
20 report any statistically significant associations;
21 is that correct?

22 A. Do you have that study?

23 Q. Yeah.

24 MR. BU: It is 19, yes. Thank you.

25 (Exhibit No. 9 marked.)

1 A. Do you know which page this is on?

2 BY MR. BU:

3 Q. I think you can flip towards the back to
4 the tables. And we can start with table -- let's
5 start with Table 7. And just let me know when
6 you're there.

7 MR. MANDELL: Do you have a page at
8 the bottom by any chance?

9 MR. BU: 76.

10 THE WITNESS: 76.

11 MR. MANDELL: Thank you.

12 A. So in this study, the -- it looks like
13 kidney cancer exposure was elevated for medium and
14 high exposures.

15 BY MR. BU:

16 Q. Okay. And those hazard ratios -- or, I'm
17 sorry, these are odds ratios, correct?

18 A. Those are odds ratios.

19 Q. Generally speaking, an odds ratio and a
20 hazard ratio are reporting the same thing; is that
21 fair to say?

22 A. Yes.

23 Q. Okay. The odds ratios that are reported on
24 Table 7 are not statistically significant for any of
25 the exposure categories; is that correct?

1 A. No, I --

2 MR. MANDELL: Objection.

3 A. As we talked about, it's -- you know,
4 you're looking at a likelihood range and how
5 compatible the data is. It's consistent with all
6 the other reports that show an increased association
7 of TCE with the risk of kidney cancer, very
8 consistent with all the prior reports.

9 BY MR. BU:

10 Q. Okay. And the cohort for this study was
11 also those exposed to water at Camp Lejeune between
12 1975 and 1985; is that correct?

13 A. I would have to look back, but I believe
14 so.

15 Q. All right. And similarly, because the
16 cohort is limited to that time period, Mr. Downs
17 would not be included --

18 MR. MANDELL: Nathan, I don't mean to
19 interrupt you. I think he said he was looking.

20 Are you still looking, Doc?

21 THE WITNESS: No, I think I'm okay.

22 MR. MANDELL: Okay. Sorry about that.

23 MR. BU: No, it's fine.

24 BY MR. BU:

25 Q. So for similar reasons, Mr. Downs would not

1 have been included in the cohort for this 2018 study
2 either; is that fair to say?

3 A. Yes.

4 Q. Did you also consider a 2024 cancer
5 incidence study that Dr. Bove conducted?

6 A. Yes.

7 Q. And why would you have considered that 2024
8 cancer incidence study?

9 A. It was additional information about
10 exposure at Camp Lejeune.

11 Q. Is a cancer incidence study different than
12 a mortality or morbidity study?

13 A. Well, incidence is different than
14 mortality. Mortality means you died of the disease.
15 Incidence means you -- you got the disease.

16 Q. Okay.

17 A. Or diagnosed with the disease, yeah.

18 Q. When measuring kidney cancer as a health
19 outcome, do you consider incidence or morbidity to
20 be a more robust way of determining whether there's
21 increased risk?

22 MR. MANDELL: Objection.

23 A. No, I think you have to look at the entire
24 literature and then draw conclusions. I mean, I
25 think that mortality is obviously a very important

1 end point, but if you are dealing with a disease
2 like skin cancer, almost nobody dies, you wouldn't
3 just look at mortality. You might not -- you would
4 find -- you may not find that sunlight increases
5 your risk of dying of skin cancer, even though it
6 significantly increases the risk of getting skin
7 cancer. So it really depends on the disease.

8 BY MR. BU:

9 Q. Does kidney cancer have a high survival
10 rate?

11 A. Depends on the stage when it's diagnosed.

12 Q. As a whole -- well, let me take a step
13 back.

14 The epidemiological studies that you
15 looked at, did any of them distinguish kidney
16 cancers by the stage at which they were diagnosed?

17 A. SEER statistics certainly tell you the
18 likely mortality based on stage of diagnosis.

19 Q. Okay. Do the Bove or ATSDR studies that
20 you looked at distinguish kidney cancers by the
21 stage at which they were diagnosed?

22 A. I don't think so.

23 Q. Okay. Those studies looked at all kidney
24 and renal pelvis cancers; is that fair to say?

25 A. Yes.

1 Q. All right. And for all kidney and renal
2 pelvis cancer, would it be fair to say the survival
3 rate is greater than 70 percent?

4 A. No, I think that's -- are you talking
5 about, like, just kidney cancer survival in general?

6 Q. Yes.

7 A. It varies by which year you look at.
8 Because as many as a third present with metastatic
9 disease. Their survival is shifting because of
10 newer therapies. But most patients with metastatic
11 disease end up dying of their disease if they don't
12 die of something else. Early stage disease survival
13 tends to be better than 80 percent. So it just
14 depends on when you were diagnosed and which
15 population you're looking at.

16 Q. Okay. Do you consider disease
17 misclassification to be a more significant issue for
18 mortality or morbidity studies compared to an
19 incidence study?

20 MR. MANDELL: Objection.

21 A. Yeah, I don't know if I have a good
22 reference frame to answer that question.

23 BY MR. BU:

24 Q. Okay. The hazard ratios that were reported
25 in the 2024 cancer incidence study were also not

1 statistically significant for kidney cancer; is that
2 correct?

3 A. I assume you're going to give me a copy.

4 Q. Yeah, we can.

5 MR. BU: Can we pull Tab 10, please?

6 And this is Exhibit 10?

7 THE STENOGRAPHER: Yes.

8 (Exhibit No. 10 marked.)

9 MR. MANDELL: I was waiting for those
10 to match up. They actually did match up on this
11 one.

12 A. So, again, this shows a consistent
13 increased rate, but -- so fairly consistent with all
14 the other studies.

15 BY MR. BU:

16 Q. And when you say this shows a fairly
17 consistent increased rate, what are you looking at?

18 A. I'm looking at the hazard ratio -- well,
19 the adjusted hazard ratio for kidney cancer.

20 Q. And that's reported -- I'm sorry, the
21 adjusted hazard ratio for kidney cancer is reported
22 on Table 3 on page 7?

23 A. Yes.

24 Q. All right. The 2024 cancer incidence study
25 also includes more cases than the other studies that

1 we looked at; is that correct?

2 A. Yes.

3 Q. And the total number of kidney and renal
4 pelvis cancer cases for the Camp Lejeune cohort in
5 the 2024 study was 710; is that right?

6 A. Yes.

7 Q. The 2024 cancer incidence study also
8 reported hazard ratios for different subtypes of
9 kidney and renal pelvis cancer; is that right?

10 A. Yes.

11 Q. And the hazard ratios reported for clear
12 cell only kidney cancer was less than 1; is that
13 correct?

14 A. It is .97.

15 Q. And this would mean that for the 2024
16 cancer incidence study, there were fewer than
17 expected clear cell only kidney cancers in the Camp
18 Lejeune cohort; is that fair to say?

19 A. I don't know if I would say that because
20 the renal cell and clear cell carcinoma was more.
21 It was 1.03. So I'm not sure that you can look
22 specifically at one subcategory and draw conclusions
23 from that.

24 Q. And both Mr. Downs and Mr. Fancher had
25 clear cell; is that correct?

1 A. Yes.

2 Q. So they would be included in either the
3 clear cell only or renal cell and clear cell
4 carcinoma categories; is that fair to say?

5 A. Or kidney and renal pelvis category.

6 Q. Okay. Okay. Are you aware of any
7 statistically significant associations that were
8 found between exposure to Camp Lejeune water and
9 kidney cancer?

10 MR. MANDELL: Objection.

11 A. The way you say that suggests that -- I
12 mean, there are many studies that show a positive
13 association with kidney cancer and kidney cancer
14 mortality. So within the context of all the
15 meta-analyses and the various studies from Camp
16 Lejeune, I would say they're all positive
17 associations with increased risk.

18 BY MR. BU:

19 Q. Okay. Are you aware of any positive
20 associations that were reported and also found to be
21 statistically significant?

22 MR. MANDELL: Objection.

23 A. Again, I don't typically look at the term
24 "statistical significance" within this contents
25 (sic). I would say that the positive results --

1 there's a range of compatible results and then
2 there's the hazard ratio, which gives you the best
3 result. And within that range, there are either a
4 significant increase -- or much more significant
5 increase or a slight decrease, but they're all
6 compatible, but they're not equivalent results.

7 The continuous and consistent trend of an
8 increased risk of either cancer or incidence for
9 mortality that goes across all the reports basically
10 suggests a positive causality there, or at least as
11 likely as not that these chemicals cause these
12 kidney cancers, that part is consistent.

13 BY MR. BU:

14 Q. Let me ask more specifically. Are you
15 aware of any associations between Camp Lejeune water
16 and kidney cancer where the confidence interval does
17 not include 1?

18 A. I think I would have to look at all these
19 sub-tables. I'm not sure that I would -- can state
20 that none of them had an association above or below
21 1. I know they were all positive. We can -- I can
22 look at those and see if there's any that met your
23 confidence interval consideration.

24 Q. Okay. What are the associations that you
25 would have looked at as relevant to Mr. Downs or

1 Mr. Fancher?

2 A. Well, the reports talk about the
3 associations with the various reports made to the
4 ATSDR. There's various meta-analyses that look at
5 the association of TCE and occupational exposures,
6 for example, and obviously the Bove studies,
7 among -- among others.

8 Q. All right. Let's do this, then. Let's go
9 back to the beginning. Let's start with Exhibit 7.
10 This is the supplemental table.

11 All right. And we already discussed the
12 associations for TVOC and TCE. I think on page 9,
13 there are tables referring to PCE.

14 Do you see that?

15 A. Yes.

16 Q. And none of the associations between PCE
17 and kidney cancer-related deaths include a -- have a
18 confidence interval that excludes 1; is that
19 correct?

20 A. Yes, but they all have positive
21 associations, anywhere from 40 to 82 percent
22 increased risk of cancer mortality for those exposed
23 to PCE.

24 Q. Okay. And you can take a second to look at
25 Exhibit 7. Are there any other associations that

1 are reported to be statistically significant as they
2 relate to kidney cancer?

3 MR. MANDELL: Objection.

4 A. Again, they're all positive associations
5 with all of them having increased risk. They do all
6 go above and below 1.

7 BY MR. BU:

8 Q. Okay. Would you agree that it's possible
9 to find a statistically significant association by
10 chance?

11 A. I mean, statistically significant -- you
12 can have a positive association and a negative
13 association. Yes, I think that there can always be
14 a chance association.

15 Q. All right. So there can be a chance
16 association. I'm asking, can there be a chance
17 statistically significant association?

18 A. I think it depends on what you're looking
19 at in terms of statistical significance. I mean,
20 even with a 95 percent confidence interval, there's
21 a 5 percent chance that any one given study might
22 have a chance associated with that outcome. That's
23 why you look at the entire literature and look for
24 trends and -- rather than look at any individual
25 study.

1 Q. So would it be fair to say at a 95 percent
2 confidence interval, you would expect to find 1 out
3 of 20 measured associations to be statistically
4 significant?

5 A. No, it means that if you found an
6 association, there's a 1 in 20 chance that it was
7 related to a chance event rather than a causative
8 event. You can have 20 associations and none of
9 them are by chance.

10 Q. Right.

11 If you have 20 associations where there's
12 no true causal association, would it be fair to
13 expect one of those to be reported as statistically
14 significant at a 95 percent confidence interval?

15 MR. MANDELL: Objection.

16 A. No, that's not how I interpret a 95 percent
17 confidence interval. I mean, it's actually saying
18 that, you know, what are the likelihood that
19 something might have occurred by chance. But -- but
20 that's not even always the correct case.

21 So let's say you have something that the
22 hazard ratio is 10 and it ranges from 8 to 20. That
23 doesn't -- it means, yes, it might be 8, it might be
24 20, and there's a range of compatibility, but it's
25 very unlikely to be minus 2. It's not like there's

1 a 5 percent chance it's minus 2. Okay?

2 So -- so you can't just sort of say
3 there's -- if you had 10 values, all of them have a
4 hazard ratio of 10, you can't say for sure that 1 of
5 them is by chance and that it could have been
6 negative. It depends on magnitude, it depends on
7 the study design. You have to look at it within the
8 context. And, again, it's also the reason that we
9 don't usually rely on any one given study. We look
10 at the trend and -- to see if it's consistent
11 results over multiple studies, different settings,
12 et cetera.

13 BY MR. BU:

14 Q. Okay. Can you go to page 10 of your -- I
15 think we can use your Downs report. This is
16 Exhibit 2.

17 MR. MANDELL: You said page 10?

18 MR. BU: Page 10, yeah.

19 A. Okay.

20 BY MR. BU:

21 Q. And at the top of that page, the second
22 full paragraph, you write, "The Camp" -- I'm sorry,
23 the second paragraph, you write, "The Camp Lejeune
24 epidemiology provides the best and most compelling
25 evidence of the levels that are sufficient to cause

1 kidney cancer; however, other epidemiology studies
2 in different contexts provide relevant information
3 as well."

4 Did I read that correctly?

5 A. Yes.

6 Q. Okay. Why, in your opinion, do the Camp
7 Lejeune epidemiology provide the best and most
8 compelling evidence?

9 A. Because it specifically looked at soldiers
10 and compared them -- who were exposed to the
11 carcinogen and compared them to soldiers who were
12 not exposed to the carcinogen.

13 Q. In determining whether the Camp Lejeune
14 epidemiology provides the best and most compelling
15 evidence, were there other factors you considered
16 other than the population being studied?

17 A. Well, the exposure obviously was important.
18 The fact that they were exposed to contaminated
19 water at Camp Lejeune, that was probably just as
20 important a factor, if not more important, than the
21 population that they used to compare against, which
22 was unexposed. So. . .

23 Q. All right. Did you consider whether the
24 Camp Lejeune epidemiology was limited by potential
25 exposure misclassification?

1 A. Yeah, I mean, I considered many factors in
2 looking at these analyses. And as mentioned,
3 exposure misclassification, if anything, would have
4 weakened the effect, not -- so it was a
5 consideration, but if anything, like I said, it
6 would have made it less positive than it already
7 was.

8 Q. Did you consider whether the Camp Lejeune
9 epidemiology controlled for confounders like
10 smoking?

11 A. Yes, we talked about it controlled for
12 other smoking-related diseases like COPD and
13 cardiovascular disease. Plus, they also used a very
14 similar population that had a similar rate of other
15 risk factors so that it was a good comparison
16 cohort, similar culture, similar type of training,
17 activities, et cetera.

18 Q. Did you consider the potential for disease
19 misclassification in the Camp Lejeune epidemiology?

20 A. I considered it. The truth is that there
21 would be no reason to think that there would be a
22 greater disease misclassification than the Camp
23 Pendleton cohort, so I didn't think that it was
24 going to be a major factor in outcomes.

25 Q. Are there any other factors that you

1 considered in determining whether the Camp Lejeune
2 epidemiology provides the best and most compelling
3 evidence?

4 MR. MANDELL: Objection; asked and
5 answered.

6 But you can answer it again.

7 A. Again, a similar population, similar
8 context in terms of activity, background with the
9 major difference being ingestion/inhalation exposure
10 to contaminated water at Camp Lejeune.

11 BY MR. BU:

12 Q. And you reviewed other epidemiology studies
13 in other contexts; is that right?

14 A. Yes.

15 Q. Okay. And you also reviewed the general
16 causation reports of Dr. Hatten and Dr. Bird; is
17 that correct?

18 A. Yes.

19 Q. Did you review other general causation
20 reports in preparing your own reports in Fancher or
21 in Downs?

22 A. No.

23 Q. Okay. So to be specific, did you review
24 the report of a Dr. Timothy Mallen?

25 A. No.

1 Q. Did you review the report of a Dr. Michael
2 Freeman?

3 A. No.

4 Q. All right. When you reviewed the report
5 for Dr. Hatten, was there anything in that report
6 that you disagreed with?

7 MR. MANDELL: Objection.

8 A. I didn't review it to try to judge it for
9 accuracy, I tried to review it to get information
10 about exposures and about the various contaminants.
11 I'm not qualified to -- to critique or review all
12 the -- you know, their level of expertise.

13 BY MR. BU:

14 Q. Was there anything in Dr. Bird's report
15 that you disagreed with when you were reviewing that
16 report?

17 A. Again, I wasn't reviewing it to be
18 agreeable or disagreeable. I wasn't judging it. I
19 was just using data from it.

20 Q. Is there one report that you would give
21 more or less weight to?

22 A. No. Again, that's not how --

23 MR. MANDELL: Objection.

24 THE WITNESS: Sorry.

25 A. That's not how I was reviewing those

1 reports.

2 BY MR. BU:

3 Q. Would you agree that the epidemiological
4 literature is better established for TCE and kidney
5 cancer than the other chemicals at issue in this
6 litigation?

7 A. No, I don't think you can look at the
8 literature specifically for one chemical or another.
9 And so -- and I didn't judge it for all -- for all
10 the contaminants, so I can't really speak to that.

11 Q. I'm sorry, what do you mean you didn't
12 judge it for all of the contaminants?

13 A. I mean, I didn't look specifically at -- do
14 a big search on benzene and vinyl chloride, for
15 example, to say that that's more extensive. And the
16 Camp Lejeune, you can't really ferret out
17 necessarily one exposure to another because many of
18 the soldiers were exposed to multiple contaminants
19 at the same time.

20 Q. Okay. For purposes of this litigation, are
21 you opining that vinyl chloride causes kidney
22 cancer?

23 MR. MANDELL: Objection.

24 A. Yeah, I -- like I said, I didn't do a major
25 search. I can say that based on the Bove papers,

1 there was a positive association with kidney cancer
2 and vinyl chloride.

3 BY MR. BU:

4 Q. Okay. A positive association does not by
5 itself establish that exposure causes disease,
6 right?

7 A. A positive association in the context -- in
8 the proper context of an individual who has been
9 exposed to it and doesn't have other risk factors
10 and then develops the disease could, yes.

11 Q. Are you opining that either Mr. Fancher or
12 Mr. Downs' exposures to vinyl chloride specifically
13 caused their kidney cancer?

14 MR. MANDELL: Objection.

15 A. Again, neither of them was exposed only to
16 vinyl chloride, so you can't look at it in isolation
17 in that context and say that that was a specific
18 cause. I think I can certainly say it's a
19 contributor because it is an organic chemical
20 compound, but to the extent -- that's not something
21 that can be stated based on these cases.

22 BY MR. BU:

23 Q. All right. To the best of your knowledge,
24 outside of the Camp Lejeune studies, is vinyl
25 chloride recognized as a cause of kidney cancer?

1 A. Again --

2 MR. MANDELL: Objection.

3 A. -- since I didn't do a thorough search, I
4 can't state the evidence outside of this context.

5 BY MR. BU:

6 Q. Okay. Are you opining that benzene causes
7 kidney cancer?

8 A. Again, I did not do a thorough search
9 specifically on benzene and kidney cancer.

10 Q. All right. Setting aside the thoroughness
11 of your search, are you opining in this litigation
12 whether benzene causes kidney cancer?

13 MR. MANDELL: Objection.

14 A. I think that I state quite clearly in my
15 report that -- that, you know, there was exposure to
16 benzene. Not both of them. I believe it was just
17 Mr. Fancher and not Mr. Downs, but it could have
18 been a contributing factor. But there were other
19 exposures like TCE and PCE that were -- that may
20 have been more likely the cause. But, again, you
21 can't weigh one chemical to another when you're
22 exposed to all of the chemicals at the same time.

23 BY MR. BU:

24 Q. All right. Are you opining that PCE by
25 itself causes kidney cancer?

1 MR. MANDELL: Objection.

2 A. Again, I think that the -- that it was a
3 contributing factor, but it wasn't an isolated
4 exposure for either defendant.

5 BY MR. BU:

6 Q. Do you distinguish at all the contributions
7 to kidney cancer risk between the different
8 chemicals?

9 MR. MANDELL: Objection.

10 A. I think mechanistically, they -- they're
11 all either known carcinogens or potential
12 carcinogens. Their metabolites often are similar,
13 so you can't really necessarily differentiate which
14 one would be the most likely causative agent. I
15 think there's more -- plenty of data that as likely
16 or not, these contaminants were the cause of the
17 kidney cancer for both of these -- both of these
18 patients.

19 BY MR. BU:

20 Q. When you say that they're all known
21 carcinogens, are all four of these chemicals known
22 carcinogens for kidney cancer specifically?

23 MR. MANDELL: Objection.

24 A. Again, without having reviewed the entire
25 literature on benzene or vinyl chloride, I can't say

1 specifically for that. And I would say that I said
2 known or probable. So I think there's, you know,
3 different ways that the EPA classifies carcinogens,
4 but I'm not a toxicology expert. All I can say is
5 that based on the review of these cases and the
6 literature, that as likely as not, these are the
7 cause of the cancer for these patients.

8 BY MR. BU:

9 Q. Okay. When you were reviewing the
10 literature related to PCE, did you review a
11 monograph by IARC?

12 A. I don't necessarily recall.

13 Q. Okay. Can you turn to your citations in
14 Downs? This would be page 28 of that report.

15 Do you see --

16 A. Oh, International Agency for Research on
17 Cancer. Okay. Yes. I think I referenced that,
18 yes. I think it was referenced among, yeah, the
19 exposure reviews, yes. I don't know that I read the
20 whole thing, but yes.

21 Q. Okay. The International Agency for
22 Research on Cancer is also referred to as "IARC"; is
23 that fair to say?

24 A. Yeah, I don't -- it usually doesn't come up
25 in conversation, but yes.

1 Q. Okay. If I refer to "IARC," will you
2 understand that means the International --

3 A. I will now --

4 Q. -- Agency for Research on Cancer?

5 A. -- yes. Yes.

6 Q. Okay. When you reviewed the IARC
7 monograph, did you review the section on
8 tetrachloroethylene?

9 A. You would have to pull the report for me to
10 tell you. I don't recall every report that I read.

11 Q. Okay.

12 MR. BU: Can we pull Tab 4, please?
13 (Exhibit No. 11 marked.)

14 BY MR. BU:

15 Q. The court reporter has handed you what has
16 been marked Exhibit 11. This is an excerpt from the
17 IARC monograph and it is the section on
18 tetrachloroethylene.

19 A. Okay.

20 Q. So you can take a second to review this
21 excerpt. My question is whether you would have
22 reviewed the section on tetrachloroethylene in
23 preparing your report in Fanher and Downs.

24 A. I have to look at the section. This is
25 obviously too long to review completely right now.

1 I may have seen a reference to it, but I probably
2 didn't read all 3- or 400 pages of this report.

3 Is there a specific page that you're
4 wanting me to comment on?

5 Q. Well, before we comment on specific pages,
6 I want to know whether you would have reviewed
7 IARC's -- IARC's report on tetrachloroethylene
8 specifically in preparing your report?

9 A. I did not read this whole report, no.

10 Q. Okay. Do you know whether you would have
11 reviewed sections of IARC's tetrachloroethylene
12 report?

13 A. It's possible that I would have looked at
14 some -- some of the sections, especially if they're
15 referenced in a different context. Mostly I looked
16 at it to see how they classified the different
17 carcinogens more so than reading all the data on
18 each carcinogen.

19 Q. Can you turn to page -- I think it's 237 of
20 the excerpt for me? And I'm sorry, if you flip --
21 flip back, this is a section describing IARC's
22 conclusions reviewing studies of cancer in humans.

23 And on 237, IARC reports that there's no
24 consistent pattern -- sorry. IARC reports, "No
25 consistent pattern of elevated risk was observed for

1 cancer of the kidney."

2 Did I read that correctly?

3 A. On page 237?

4 Q. Yeah.

5 A. I don't see where you're looking.

6 Q. It is at the end of the first paragraph on
7 the left-hand side.

8 A. Okay. Yes, no consistent -- right.

9 Q. And one factor to consider in determining
10 whether an exposure causes disease would be
11 consistency; is that fair to say?

12 MR. MANDELL: Objection.

13 A. It is one factor amongst others, but yes.

14 BY MR. BU:

15 Q. And then we can jump ahead to IARC's
16 conclusions on page 329.

17 MR. MANDELL: I don't think I have
18 that page.

19 MR. BU: No?

20 MR. MANDELL: Mine ends at 326, but I
21 -- unless I'm missing some.

22 A. Mine also ends at 326.

23 MR. BU: Okay. That's my mistake
24 then.

25 BY MR. BU:

1 Q. All right. You can set that aside for a
2 second, then.

3 A. Speaking of which, I would have to look to
4 see which -- which studies they actually reviewed
5 and how they came to their conclusions before I
6 could agree with any of their conclusions.

7 Q. Okay. Do you know whether IARC concluded
8 that PCE is a cause of kidney cancer?

9 A. I don't know if they concluded that
10 specifically.

11 Q. All right. For purposes of your report in
12 Fancher or Downs, did you consider IARC's
13 conclusions as they relate to PCE and kidney cancer?

14 MR. MANDELL: Objection.

15 A. I don't know -- I don't think I used their
16 report specifically.

17 BY MR. BU:

18 Q. Okay. Did you also review the ATSDR's
19 Assessment of the Evidence?

20 A. Yes.

21 Q. All right. And the ATSDR in its Assessment
22 of the Evidence also reviewed the epidemiological
23 literature related to PCE and kidney cancer; is that
24 correct?

25 A. They did in their 2017 report, yeah. I

1 don't have it in front of me, but. . .

2 MR. BU: Could we pull Tab 6?

3 (Exhibit No. 12 marked.)

4 MR. MANDELL: Did you -- are we
5 looking at a specific page or. . .

6 BY MR. BU:

7 Q. Dr. Lotan, is this the document you would
8 have considered when preparing your report in
9 Fancher and Downs?

10 A. Yes.

11 Q. Okay. And why did you consider the ATSDR's
12 Assessment of the Evidence?

13 A. Again, it was one of the reports that was
14 made regarding exposures and cancer at Camp Lejeune.

15 Q. And regarding PCE specifically, ATSDR
16 concluded that there was below equipoise evidence
17 for causation; is that correct?

18 THE STENOGRAPHER: Below what? I'm
19 sorry.

20 MR. BU: Sorry, below equipoise.

21 A. Do you have a specific location that you're
22 commenting on?

23 BY MR. BU:

24 Q. Sure. Can you take a look at page 13 of
25 that exhibit?

1 A. They -- that's what they say in the
2 conclusions, yes.

3 Q. All right. And do you have any reason to
4 disagree with ATSDR's conclusion that the evidence
5 of causation for PCE and kidney cancer is below
6 equipoise?

7 MR. MANDELL: Objection.

8 A. I think if you actually look at the data
9 from the Bove studies, you would find an increased
10 association with patients -- with patients who were
11 exposed to PCE where they had an increased
12 association with kidney cancer and kidney cancer
13 mortality. So I'm not sure that I completely agree
14 with their conclusion that it's not a contributor
15 and not as likely to cause kidney cancer.

16 BY MR. BU:

17 Q. Could TCE exposures be a confounding
18 variable when determining whether PCE exposure
19 causes kidney cancer?

20 MR. MANDELL: Objection.

21 A. I think you would have to look at
22 individual patients. So, for example, if you had a
23 patient who had no other exposures other than PCE
24 and they developed kidney cancer, then I think that
25 there's as likely as not a chance that PCE was the

1 cause. I think that we don't have sort of the same
2 way of taking these soldiers and isolating one
3 versus the other, and so I don't think it's possible
4 to say if you only had that exposure, is that the
5 risk based just on the Bove data.

6 BY MR. BU:

7 Q. Okay.

8 A. In the same report, though, if you look
9 at -- there's -- under the individual tables,
10 there's the Pesch paper where there was an increased
11 risk for PCE; the 2017 study on page 16 where a
12 cumulative exposure was associated with a positive
13 hazard ratio for kidney cancer in PCE.

14 So it's not that there aren't any studies
15 that support it, and I think that you have to look
16 at it in terms of just an individual patient's data
17 and try to -- in order to draw a conclusion if that
18 was the cause.

19 Q. Okay. You would agree that you could not
20 consider the Pesch study in isolation, correct?

21 A. I don't think you consider any study in
22 isolation.

23 Q. Right. You would have to consider whether
24 that study is consistent with the broader
25 literature?

1 A. Yes.

2 MR. BU: All right. I think we can
3 stop there. Can we go off record, please?

4 THE VIDEOGRAPHER: We are off the
5 record at 12:32.

6 (Break taken, 12:32 p.m. to 1:05 p.m.)

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

9 BY MR. BU:

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

12 A. No.

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

15 A. No.

16 Q. Okay. Before we broke for lunch, we were
17 discussing some of the literature regarding PCE.

18 Do you recall that?

19 A. Yes.

20 Q. All right. And you reviewed other
21 literature relating to TCE and PCE to determine --
22 or in formulating your reports in Fancher and in
23 Downs; is that correct?

24 A. Yes.

25 Q. And the other literature regarding PCE

1 describes some of the additional levels at which PCE
2 exposure or TCE exposure has been found to be
3 associated with kidney cancer; is that right?

4 A. Most of them don't really specify a level
5 other than increased exposure and compare a
6 population that had an increased exposure either
7 from occupation, for example. Quantifying the exact
8 level was not something that most reports did.

9 Q. Other than the levels of exposure that are
10 reported in the Bove studies, are there other levels
11 of exposure that you rely on in formulating your
12 opinions in Fancher or Downs?

13 MR. MANDELL: Objection.

14 You can answer.

15 A. No, there's not a specific level that I --
16 that I used from any other given study.

17 BY MR. BU:

18 Q. Okay. Are there exposures from other
19 studies that you compare Mr. Fancher or Mr. Downs'
20 exposure to in formulating your opinions?

21 A. No.

22 Q. Okay. So, for example, did you review an
23 occupational study by Moore in 2010?

24 A. Yes.

25 Q. You're not comparing Mr. Fancher or

1 Mr. Downs' exposures to the occupational exposures
2 described in Moore; is that correct?

3 MR. MANDELL: Objection.

4 A. Not directly, no.

5 BY MR. BU:

6 Q. Okay. And your understanding of Mr. Downs'
7 and Mr. Fancher's exposures -- withdrawn.

8 Do you yourself quantify Mr. Downs' or
9 Mr. Fancher's exposures?

10 A. Yes, in terms of the concentration and --
11 to try to determine sort of their -- how they fit in
12 maybe with the Bove study.

13 Q. Okay. And how do you determine whether
14 those exposures fit in with the Bove study?

15 A. I looked at their micrograms-per-liter
16 months and then looked at Table 6, for example, in
17 the Bove study to see if they fell into a low,
18 medium, or high exposure rate.

19 Q. All right. Is one part of determining the
20 microgram-per-liter month exposure identifying the
21 concentration of a contaminant in the water at Camp
22 Lejeune in a given month?

23 A. Yes.

24 Q. Okay. And that would also be the
25 contamination in the water at Camp Lejeune for a

1 specific water system; is that right?

2 A. Yes. It depended on Tarawa Terrace or
3 Hadnot Point, for example.

4 Q. Where -- what facts or data do you consider
5 in determining the levels of contamination at one of
6 those water systems at a given point in time?

7 A. I use the modelling that was obtained from
8 Kelly Reynolds' report.

9 Q. Other than the levels of contamination --
10 or the concentrations of contamination, what else do
11 you consider in determining the microgram-per-liter
12 month exposure?

13 A. Well, the --

14 MR. MANDELL: Objection.

15 A. I mean, there's different levels at
16 different months, so you have to use that as a
17 cumulative -- a cumulative exposure or a cumulative
18 concentration.

19 BY MR. BU:

20 Q. Does Dr. Reynolds report TVOC cumulative
21 exposures?

22 A. I believe it does. Let me confirm.

23 The report specifically -- the report that
24 I had really looked more at the individual
25 concentrations for each contaminant.

1 Q. Dr. Reynolds does not report TVOC
2 cumulative exposures, correct?

3 A. I would have to look at her report again.
4 But on a month-to-month basis, I used the exposure
5 data for each contributing contaminant.

6 Q. Okay. Can you turn to page 15 of your
7 Downs report, Exhibit 2?

8 A. Yes.

9 Q. The first sentence reads, "Ingestion of TCE
10 in the range of 4,200 ppb to 10,700 ppb is clearly a
11 substantial exposure."

12 Did I read that correctly?

13 A. Yeah, but we submitted an errata and that
14 should be -- that should be micrograms, not parts
15 per billion.

16 Q. Right. How do you define -- or withdrawn.
17 Do you offer a definition for what
18 constitutes a substantial exposure?

19 A. I don't define it -- I don't put in a
20 specific definition, but it's based on several
21 factors, like duration of exposure, intensity of
22 exposure, amount of exposure, things like that.

23 Q. Are there any resources or guidelines that
24 you consulted in determining what constitutes a
25 substantial exposure?

1 A. This was, you know, my judgment based on
2 sort of the medical evidence in terms of how much I
3 thought would be exposure. And certainly when I
4 look at the amount of exposure that led to kidney
5 cancer, it definitely felt -- well, definitely fell
6 within that range of what I thought was a
7 substantial exposure.

8 Q. Did you review studies that determined
9 whether a certain microgram amount of TCE exposure
10 can cause kidney cancer?

11 A. I don't think there is -- you know, we
12 talked about earlier it's not ethical to test
13 different ranges of a chemical and then see if it
14 causes cancer. I don't think one can say that there
15 is a minimal range that's safe or recommended dose.
16 Clearly, the levels that were consumed or -- you
17 know, that both Mr. Fancher and Mr. Downs were
18 exposed to were -- were what I thought substantial
19 in terms of the likelihood that they caused the risk
20 for their cancer.

21 But to answer your question, is there a
22 number that I could say this number is good, right
23 above that it's bad? There's no literature to
24 support that.

25 Q. Later on in that same paragraph on page 15,

1 you write, "This is substantial by any metric."

2 Do you see that?

3 A. Yes.

4 Q. What metrics did you consider in
5 determining whether an exposure is substantial?

6 A. Again, I used several different metrics,
7 duration of exposure, concentration of the chemical,
8 cumulative -- cumulative dose that they ingested.

9 Q. But there are no specific resources you
10 consulted to determine, for example, what duration
11 of exposure would be substantial; is that fair to
12 say?

13 MR. MANDELL: Objection.

14 A. I would say that I'm making my opinions
15 based on a reasonable degree of medical certainty.
16 And so when I consulted the entire literature and
17 tried to compare this exposure to what I thought was
18 a relevant exposure, that was the metric I used.

19 BY MR. BU:

20 Q. For duration, what are the relevant
21 exposures you would have considered -- or you would
22 have compared Mr. Downs' or Mr. Fancher's exposures
23 to?

24 A. I don't know that there's a set duration,
25 but I think that there is certain considerations,

1 you know, in terms of -- you know, if they had been
2 there a few days, I would have said that's probably
3 not substantial. Whether or not I can tell you
4 31 days, 61 days, 100 days, what that -- what makes
5 it substantial, it's a combination of the fact that
6 they consumed liters of this contaminated water.
7 They were inhaling it, it was contacting their skin
8 when they were showering, and that the
9 concentrations were -- were quite high. Those all
10 contributed to my opinion that it was a substantial
11 exposure.

12 Q. Okay. Were there any specific metrics you
13 relied on to determine what intensity of exposure is
14 substantial?

15 A. Again, no specific metric, just a -- when I
16 look at the cumulative concentration relative to the
17 literature, relative to, you know -- and relative to
18 what was subsequently found to cause kidney cancer,
19 that's how I felt that it was substantial.

20 Q. When you say "relative to the literature,"
21 are you comparing the concentrations to those
22 described in the Bove and ATSDR Camp Lejeune
23 studies?

24 A. Well, the -- the Bove gave some parameters
25 for how to define "exposures," and since all the

1 exposures for TCE were all associated with kidney
2 cancer and both Mr. Fancher and Mr. Downs were
3 exposed to a significant amount of TCE, there was --
4 there wasn't a need to sort of think of what would
5 the lowest have been. It was irrelevant. They were
6 both exposed to a large amount of contaminants and
7 what I consider a substantial amount that
8 contributed to them getting kidney cancer.

9 Q. The low exposure category in the Bove
10 studies is a range of microgram-per-liter month
11 exposures; is that right?

12 A. Yes.

13 Q. And that range starts at 1
14 microgram-per-liter month; is that right?

15 A. Yes.

16 Q. Okay. Is it your opinion that any exposure
17 equal to or greater than 1 microgram-per-liter month
18 is substantial?

19 A. I'm not trying to make a call for a general
20 population. I think that both Mr. Downs and
21 Mr. Fancher had substantially higher levels than 1.
22 So it's not my -- I don't have any way to assess
23 whether or not 1 or 2 mattered, but it wasn't really
24 relevant to my analysis.

25 Q. Okay. And you're not expressing an opinion

1 about how much greater than 1 a plaintiff's exposure
2 would need to be to qualify as, quote, substantial,
3 are you?

4 A. No.

5 Q. Okay. You do not identify a threshold
6 amount of exposure to these chemicals whereby an
7 individual is more likely than not to develop kidney
8 cancer; is that correct?

9 A. I think that the better way to say it is
10 I'm not defining where you might be safe, and
11 certain individuals might be getting -- could get
12 very little exposure and develop kidney cancer
13 because they're susceptible to a chemical. So I
14 think it's more important to -- you know, to note
15 that, you know, we don't have a way of saying, yes,
16 you should -- this is the amount that you should get
17 of this toxin and you'll be safe, and this is an
18 amount where you're not safe.

19 What I can say is that neither of them got
20 a small amount. They're not near that lower
21 threshold. And I think based on that, they're as
22 likely as not to have gotten their kidney cancer
23 from these contaminants, but I'm not -- I'm not able
24 to speak to a, quote/unquote, safe level of a
25 carcinogen.

1 Q. Okay. You would agree that very low levels
2 of exposures are less likely to be the cause of a
3 disease, right?

4 A. No. That's only in the case when you have
5 a monotonic relationship. And as we can see from
6 the Bove studies, patients at low exposure were
7 nearly at the same risk as patients medium or high
8 exposure for developing kidney cancer.

9 So I don't -- so that would only be true
10 if there was a dose-response where more would be
11 required to get the disease. But in this case, it's
12 quite possible that low levels would be sufficient
13 to cause kidney cancer in the -- you know, so -- so
14 I guess the answer is no, I don't agree with that.

15 Q. Okay. And is it your opinion that the Bove
16 studies do not show a dose-response relationship
17 between Camp Lejeune water exposure and kidney
18 cancer?

19 MR. MANDELL: Objection.

20 A. It's -- I would say that it was -- not
21 every -- every drug showed that relationship. Some
22 of them did, some of them did not.

23 BY MR. BU:

24 Q. When you say "every drug," you mean every
25 chemical?

1 A. Every chemical, yes.

2 Q. Okay.

3 A. So some of the toxins did have it, some
4 didn't. Like we just mentioned, TCE did not at all
5 -- at the low, medium, and high exposures, they all
6 had an increased risk of getting -- of dying of
7 kidney cancer.

8 Q. Do you quantify the level of increased risk
9 of getting kidney cancer based on these exposures
10 for either Mr. Fancher or Mr. Downs?

11 A. If you're talking about the individual
12 cases, I would say that I can say with confidence
13 that they're as likely as not or more to have --
14 that these chemicals caused it. But in terms of
15 quantifying the exact risk, that's not relevant to
16 an individual. They a hundred percent got kidney
17 cancer. It's an all-or-none game. They either did
18 or did not.

19 So they a hundred percent got kidney
20 cancer, so -- so -- and you can't, like, just
21 suddenly say, well, what was that increase? Because
22 it's all an increase relative to what? If you don't
23 have any other risk factors like Mr. Fancher, then
24 all of the risk was because of these chemicals, as
25 best as I can tell, because there were no competing

1 risks.

2 So what you're asking is a competing risk,
3 and I can't do a competing risk, nor can I do a
4 competing risk of one chemical versus another
5 because they were exposed to multiple chemicals.

6 Q. Can you do a competing risk compared to
7 background risk?

8 MR. MANDELL: Objection.

9 A. You -- no, because as we talked about, you
10 don't know the exact background risk for any given
11 individual. You know in general for a population
12 what the overall lifetime risk is, but for an
13 individual, that doesn't translate the same, because
14 different individuals may have their own background
15 individual risk factors, their own behaviors, their
16 own exposures.

17 So to say an average risk is X doesn't
18 apply to an individual very well. And as we
19 mentioned, it's temporal. So really, for a
20 70-year-old, it's equivalent to people who were born
21 70 years ago and not necessarily the people who were
22 born today.

23 BY MR. BU:

24 Q. So would it be fair to say to reach your
25 opinions in Downs, you do not rely on a comparison

1 between the Camp Lejeune water-related risks and
2 Mr. Downs' background risk, if any?

3 MR. MANDELL: Objection.

4 A. No, I -- what I'm trying to do is I -- when
5 I compare patients from Camp Lejeune to Camp
6 Pendleton, I can -- because those are, you know,
7 good controls, I can see that there's an increased
8 risk -- for those people who were exposed to TCE and
9 PCE and TVOC, an increased risk of getting kidney
10 cancer.

11 Then when I can look at Mr. Downs
12 specifically and I look at his risk factors and -- I
13 can say is it likely because of, you know, the
14 various risk factors he has, which he has almost
15 none other than being older. But, you know, the
16 fact is that this is his main carcinogen that he is
17 exposed to, and so as likely as not, that is the
18 cause of his kidney cancer.

19 But I'm not suddenly -- I can't take that
20 in isolation, but I use the rest of the background
21 data, like the Bove studies, to see was something
22 that he was exposed to associated with an increased
23 risk for kidney cancer, which it was? And now
24 within the context of his specific situation, does
25 he have other risk factors that are more likely than

1 the TCE, for example, to cause the kidney cancer? I
2 don't see those. So I think TCE is as likely as not
3 the cause of his kidney cancer.

4 BY MR. BU:

5 Q. Okay. For the Bove studies, even though
6 the Camp Pendleton population had some incidence of
7 kidney cancer or some incidence of kidney
8 cancer-related death, correct?

9 A. Yes.

10 Q. All right. And before, we had discussed
11 even if there were no contamination at Camp Lejeune,
12 you would still expect to see some number of kidney
13 cancer-related deaths, correct?

14 A. I would expect it to be similar to Camp
15 Pendleton, but it was higher than Camp Pendleton.
16 So that's the -- that's the associated one -- that's
17 the increase that is associated with the difference
18 between the two, which is a contaminated water.

19 MR. MANDELL: Just note my objection.
20 Sorry, I was a little late there.

21 THE WITNESS: Sorry.

22 MR. MANDELL: That's okay.

23 BY MR. BU:

24 Q. How do you determine whether Mr. Downs'
25 kidney cancer is related to the increased risk from

1 Camp Lejeune exposures versus part of the expected
2 incidence of kidney cancer?

3 A. Well, I -- you can take known risk factors,
4 look at the incidence rates for those and their
5 association, and then you look at -- you know, and
6 you look -- you try to weigh them as to the
7 likelihood of somebody developing a disease.

8 So when you say what -- what were the
9 potential risk factors for Mr. Downs to get kidney
10 cancer, okay, he was -- he was a man who was
11 82 years old. Did he have other risk factors? Some
12 questionable smoking history 40 or 50 years before
13 that really didn't contribute much. Did he have
14 other risk factors from occupation? He wasn't
15 particularly overweight. He wasn't -- he didn't
16 have other contributing factors, he didn't have
17 chronic kidney disease, and yet he had a risk factor
18 in contaminated water.

19 So when you say, okay, you know, he had
20 baseline risks and then he had this carcinogen that
21 increased your risk somewhere between 20 and
22 50 percent more, that was at least as likely as not
23 the cause of his kidney cancer since he didn't have
24 other things that should have caused or could have
25 caused his kidney cancer. So that's how I kind of

1 weigh the evidence.

2 Q. Okay. When you weigh that evidence -- I'm
3 sorry, because I'm still not clear on this -- do you
4 quantify Mr. Downs' baseline risk?

5 A. Yeah, his baseline risk is literally just
6 an average 82-year-old man who had no exposure to
7 any carcinogen.

8 Now, we don't have that exact comparison,
9 so we have to extrapolate from the data we do have,
10 which is data on -- for the Bove studies showing an
11 increased risk, data from meta-analyses that show
12 that TCE is a carcinogen that increases your risk
13 for kidney cancer.

14 So like every differential diagnosis
15 you're trying to weigh the different factors, and
16 the standard that we're looking at is as likely as
17 not. And since most 82-year-old men don't get
18 kidney cancer, it's actually a very, very low
19 incidence, the exposure to the contaminants weighs
20 heavily, in which case, that -- I use my opinion,
21 like I said, to the best of my, you know, medical
22 certainty, that the TCE and other contaminants were
23 as likely as not the cause of his kidney cancer
24 lacking other major contributors.

25 Q. And you also describe Mr. Downs' increased

1 risk as 20 to 50 percent. How did you come to that
2 conclusion?

3 MR. MANDELL: Objection.

4 You can answer. Unless I instruct you not
5 to answer, you can go ahead answer.

6 A. No, I'm using a broad range from the
7 literature that shows the relative risk/hazard
8 ratios from different studies. Again, there's not,
9 like, one number, except that the trend is that
10 almost all the studies you look at have a positive
11 increased association with kidney cancer of
12 approximately that magnitude. I'm not giving it a
13 specific number.

14 BY MR. BU:

15 Q. Okay. Would you agree that it's unlikely
16 Mr. Downs' Camp Lejeune water exposures doubled his
17 risk of developing kidney cancer?

18 MR. MANDELL: Objection.

19 A. I wouldn't say it's unlikely. You know, I
20 think that, again, you're trying to put a specific
21 value, and that's not -- that's not probably the
22 appropriate way to look at it. I think that the
23 question is whether or not there's an increased risk
24 and whether or not it -- relative to other competing
25 risks suggests, that it is as likely as not the

1 cause of his kidney cancer. There really aren't
2 other significant competing risks. And so using
3 that broad reasoning, it's as likely as not the
4 cause of his kidney cancer.

5 BY MR. BU:

6 Q. Okay. I guess what I'm asking --

7 A. "It's" being the contaminants.

8 Q. When you say Mr. Downs' increased risk is
9 20 to 50 percent, you're not opining that his
10 increased risk is 100 percent; is that fair to say?

11 MR. MANDELL: Objection.

12 A. No, all these confidence intervals, as you
13 mentioned, have a pretty broad range. And it's
14 possible that his risk is more, but also you
15 shouldn't broadly use the population for an
16 individual.

17 And, again, his risk is -- of the
18 contaminated water is relative to his other risks.
19 If you had a person who had significant other risk
20 factors, maybe it was less likely to contribute, but
21 in his case and using the data that suggests quite
22 strongly that contaminants increase your risk for
23 kidney cancer, I can draw the conclusion that it's
24 as likely as not the cause of his kidney cancer.

25 BY MR. BU:

1 Q. Do any of the Camp Lejeune studies report a
2 relative risk of 2 or greater?

3 MR. MANDELL: Objection.

4 A. When you look at ranges versus hazard
5 ratios, the ranges can encompass the doubling of
6 risk, but -- just the same that we don't sit there
7 and say that it may be 5 percent less or 200 percent
8 more, we use the hazard ratios as the most accurate
9 way to represent the increased risk for population.

10 For an individual, it's different. In an
11 individual, you're not using that calculation at
12 all. You're weighing his differential diagnosis,
13 what might have caused his cancer. And since this
14 is the main carcinogen that he was exposed to and
15 developing kidney cancer, that is the one that's as
16 likely as not the cause.

17 BY MR. BU:

18 Q. Okay. Do you know how Dr. Reynolds
19 determined the levels of contamination at Camp
20 Lejeune during the times Mr. Downs and Mr. Fancher
21 were there?

22 A. These were level -- well, these were levels
23 that were modelled.

24 Q. And they were modelled by the ATSDR; is
25 that correct?

1 A. I don't know exactly who modelled the --
2 the ones that were prior to '75, but -- but she used
3 modelled levels, probably. I just referred to her
4 reports.

5 Q. Okay. Did you review the water model
6 itself by the ATSDR?

7 A. No.

8 Q. Okay. Did you review reports by any expert
9 witnesses in the field of water modelling or
10 geohydrology?

11 A. No.

12 Q. Okay. Do you know whether the metric of
13 total mass of ingested chemicals, such as micrograms
14 or milligrams of ingestion, is commonly used in the
15 field of toxicology?

16 A. I am not familiar with the toxicology
17 literature, no.

18 Q. Do you know whether total mass of ingested
19 chemicals either in micrograms or milligrams is a
20 standard exposure metric in risk assessment?

21 MR. MANDELL: Objection.

22 A. I'm not familiar enough with the literature
23 to comment on whether that's common or not.

24 BY MR. BU:

25 Q. Are you aware of whether risk assessment

1 guidelines include body weight as a factor in
2 determining dose?

3 A. I'm not familiar with those guidelines.

4 Q. Okay. In your clinical practice, is body
5 weight ever used to determine an appropriate dose
6 for a patient?

7 A. Generally not.

8 Q. Dr. Reynolds only accounts for ingestion
9 exposures; is that correct?

10 A. I believe so.

11 Q. And you opine that the plaintiffs would
12 also have had inhalation and dermal exposures; is
13 that correct?

14 A. Yes.

15 Q. Okay. Are you aware of any calculations or
16 quantifications of the plaintiffs' inhalation
17 exposures?

18 A. I'm not.

19 Q. Okay. Are you aware of any calculations
20 determining the plaintiffs' dermal exposures?

21 A. No.

22 Q. Are you expressing any opinions about the
23 magnitude of those inhalation or dermal exposures?

24 A. No. I think I would comment that -- that
25 the -- I was able to draw conclusions that their

1 ingestion was more than adequate to be a causative
2 agent without having to look at calculations about
3 inhalation or dermal exposures, which would have
4 been additive, not protective.

5 Q. Did you consider how the risks of dermal
6 exposures differ from the risks of ingestion
7 exposures?

8 MR. MANDELL: Objection.

9 A. I -- no, I didn't consider what the
10 magnitude is. I'm not an expert in that.

11 BY MR. BU:

12 Q. Okay. Did you consider how the risks of
13 inhalation exposures differ from ingestion
14 exposures?

15 MR. MANDELL: Objection.

16 A. No. Again, if anything, they would be
17 additive.

18 BY MR. BU:

19 Q. Can you turn to pages 10 and 11 of your
20 Downs report, Exhibit 2?

21 A. Okay.

22 Q. And on pages 10 and 11, you provide a quote
23 from an ATSDR publication describing the levels of
24 chemicals in the water at Camp Lejeune; is that
25 correct?

1 A. Yes.

2 Q. And you included in that quote a discussion
3 of MCLs.

4 Do you see that?

5 A. Yes.

6 Q. What is your understanding of what an MCL
7 is?

8 A. Well, it's a regulatory standard for
9 maximum contaminant levels for different chemicals.

10 Q. Did you consider the MCLs in determining
11 whether Mr. Fancher or Mr. Downs' exposures caused
12 their kidney cancer?

13 A. No, not directly. I really used their
14 cumulative concentration exposures and -- and not
15 the MCLs. But they far exceeded those, so it was
16 not particularly relevant for me.

17 Q. Do you know how the MCLs are established?

18 A. No.

19 Q. Okay. And you're not expressing any
20 opinion about the health risks associated with the
21 MCLs specifically, are you?

22 A. No.

23 Q. Okay. Do you know whether people in the
24 general population are exposed to TCE through
25 background?

1 A. I don't know.

2 MR. MANDELL: Objection.

3 BY MR. BU:

4 Q. Okay. Did you consider background levels
5 of TCE exposure in developing your opinions in
6 Fancher or Downs?

7 MR. MANDELL: Objection.

8 A. Only within the context that the Camp
9 Pendleton group was a control group and they would
10 have had whatever the background level presumably
11 was at the time, but not specifically.

12 BY MR. BU:

13 Q. And you do not compare either Mr. Fancher's
14 or Mr. Downs' exposures to TCE to reasonable
15 background levels of exposure to TCE, do you?

16 MR. MANDELL: Objection.

17 A. I'm not comparing it to that, no, because I
18 have the measurements of what they were exposed to.

19 BY MR. BU:

20 Q. Okay. Did you consider whether TCE is
21 widely detected in ambient air?

22 MR. MANDELL: Objection.

23 A. No, I don't have any information on that
24 one way or another.

25 BY MR. BU:

1 Q. Did you consider whether TCE can be found
2 in low concentrations in other water supplies other
3 than Camp Lejeune?

4 A. Well, again --

5 MR. MANDELL: Objection.

6 A. -- the -- the control group is Camp
7 Pendleton. So whatever background exposures there
8 were, they should be accounted for in that control
9 group.

10 BY MR. BU:

11 Q. Okay.

12 A. Whether or not it's in the air or the
13 water.

14 MR. BU: Can we pull 15?

15 (Exhibit No. 13 marked.)

16 BY MR. BU:

17 Q. The court reporter has handed you what's
18 been marked Exhibit 13. This is the ATSDR's
19 toxicological profile on TCE.

20 Did you review -- have you reviewed this
21 document before?

22 A. I don't believe so.

23 Q. Okay. You're -- you are familiar, though,
24 with the ATSDR, correct?

25 A. Yes.

1 Q. Okay. Can you turn to page -- I'm sorry --
2 322 of that exhibit for me, please?

3 A. Okay.

4 Q. And ATSDR is describing the levels of TCE
5 that are monitored or estimated in the environment.
6 On page 322, in the section beginning 6.4.1, they
7 report that, "Trichloroethylene is widely detected
8 in ambient air."

9 Do you see that?

10 A. Yes.

11 Q. Do you have any reason to disagree with
12 that statement?

13 MR. MANDELL: Objection.

14 A. I mean, I haven't read the whole report.
15 I'm seeing a few lines later, it says most measured
16 values for -- is less than 1 ppb. So it seems like
17 a minute amount is being detected, but I don't --
18 again, I don't have any other raw data or anything
19 else to review.

20 If I look at the chart on 323, I mean,
21 it's, like, 0.03 ppb. I mean, it's just -- I guess
22 it depends what the threshold of your machine to
23 detect it, but 0.03 parts per billion is nearly
24 nonexistent.

25 BY MR. BU:

1 Q. Okay. Ppb is a measure of concentration;
2 is that correct?

3 A. Parts per billion.

4 Q. Okay. Is -- so in water at least, a ppb is
5 sometimes equated with a microgram per liter; is
6 that correct?

7 A. Yes.

8 Q. All right. Do you know whether that
9 conversion also holds true when the medium is air?

10 MR. MANDELL: Objection.

11 A. I'm not an expert in fluid concentrations
12 and whether or not they treat air as a fluid or not.
13 But 0.03 parts per billion would be small in any
14 measuring tool, I believe.

15 BY MR. BU:

16 Q. Okay. Can you turn to page 335?
17 Do you see this second full paragraph
18 beginning, "Assuming a typical air concentration"?

19 A. Yes.

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

25 Did I read that correctly?

1 A. You read it correctly.

2 Q. Do you have any reason to disagree that the
3 average daily air intake of TCE can be estimated at
4 11 to 33 micrograms per day?

5 MR. MANDELL: Objection.

6 A. Well, I don't know they -- they're starting
7 off with a sentence of an assumption. So I'm not
8 really sure what the typical air concentration of
9 100 to 500 ppt -- I actually don't even know what
10 "ppt" stands for, to be honest with you. Is that
11 parts per trillion? What does the "t" stand for?
12 BY MR. BU:

13 Q. Yeah, let's assume that "ppt" stands for
14 parts per trillion.

15 A. But I don't know. I mean, that's -- this
16 is a report from 1981 or 1982 and -- I guess the
17 answer is I'm not -- I don't have the expertise to
18 tell you what a breathing rate of 20 meters cubed
19 per -- air per day and the average daily -- to say
20 if this is a correct number or not.

21 Q. Okay. ATSDR goes on to report that,
22 "Average daily water intake of trichloroethylene can
23 be estimated at 2 to 20 micrograms per day, assuming
24 a typical concentration range of 2 to 7 ppb and
25 consumption of 2 liters water per day."

1 Did I read that correctly?

2 A. You read it correctly.

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

6 MR. MANDELL: Objection.

7 A. Again, I don't have a report to look at
8 that. I'm not sure where they draw the typical
9 concentration from. I don't know what the -- that
10 that's the estimate that would be correct. I'm not
11 sure that -- actually, I can tell you the fact that
12 most -- most people don't drink 2 liters of water a
13 day. That's the eight glasses of water that doctors
14 tell you to drink, but most people don't do that.
15 So that part, I would say I don't agree with at all.
16 That's probably not most Americans.

17 But in any case, this is -- the background
18 you're referring to, whether or not it's accurate or
19 not, I can't say. But this is what people at Camp
20 Pendleton would have been drinking, and yet they
21 still had -- when you look at the Camp Lejeune where
22 they drank contaminated water, they still had a
23 significantly higher rate of kidney cancer than the
24 background at Camp Pendleton. So regardless of what
25 the number actually is, people in Camp Lejeune still

1 had a significantly more, you know, exposure to TCE
2 than the background would have been.

3 BY MR. BU:

4 Q. Would you agree that for purposes of risk
5 assessment, it's reasonable to assume that someone
6 consumes 2 liters of water per day?

7 MR. MANDELL: Objection.

8 A. No, I think that you have to look at the
9 actual population. And soldiers at Camp Lejeune may
10 have drank quite a bit more, the average person who
11 sits in an air-conditioned office maybe drank quite
12 a bit less.

13 BY MR. BU:

14 Q. Okay. Did you consider whether TCE is also
15 detected in common food products?

16 A. I didn't consider that beyond, as I
17 mentioned, that the comparison group would have been
18 eating what -- the same food as the -- you know, in
19 Camp Pendleton as they were eating in Camp Lejeune.
20 There's no evidence that they had dramatically
21 different diets or consumption or breathing
22 different air.

23 Q. Okay. Do you consider microplastic
24 particle exposure to be a risk factor for kidney
25 cancer?

1 A. I don't have -- I've not read the
2 literature on microplastic and kidney cancer.

3 Q. What about nanoplastic particle exposures?

4 A. Same about that, I haven't read that.

5 Q. All right.

6 A. It's certainly not well recognized.

7 Q. Can you turn to page 15 of your Downs
8 report for me, please?

9 A. Go ahead.

10 Q. Do you see the paragraph at the bottom of
11 page 15 beginning, "Furthermore, it has been
12 consistently proven"?

13 A. Uh-huh.

14 Q. Okay. And the second sentence of that
15 paragraph, you write, "Furthermore, research has
16 shown that microplastic or nanoplastic particle
17 exposure causes toxicologic damage to the kidneys
18 via oxidative stress and inflammation."

19 Did I read that correctly?

20 A. Yes.

21 Q. All right. Why is microplastic or
22 nanoplastic particle exposure relevant to
23 understanding the causes of kidney cancer?

24 A. It's among the potential causes of kidney
25 cancer. It's not necessarily -- I mean, if you're

1 trying to be thorough and trying to list all the
2 potential causes of kidney cancer, then that is one
3 of the potential causes.

4 Q. Are microplastics and nanoplastics commonly
5 found in the environment?

6 A. I'm not an expert in microplastic or
7 nanoplastic, and also I can't say what the -- how
8 much of it was around in the 1960s and '70s that may
9 have -- you know, so I wouldn't be able to make a
10 comment on that.

11 Q. Would the exposure had to have been in the
12 '60s or the '70s to explain Mr. Fancher or
13 Mr. Downs' cancers?

14 MR. MANDELL: Objection.

15 A. Not necessarily, no.

16 BY MR. BU:

17 Q. And why not?

18 A. Well, I mean, it doesn't have to correspond
19 with exactly when they were in Camp Lejeune.

20 Q. Is there an established latency for kidney
21 cancer?

22 A. No. You never know when -- the day the
23 first cancer cell arises until they become
24 clinically evident. So no, we don't know that for
25 any given cancer.

1 Q. Is latency a consideration in
2 epidemiological studies?

3 A. It is one consideration.

4 Q. All right. Why do epidemiological studies
5 consider latency when measuring association between
6 exposure and disease?

7 A. Because exposure has to lead to some change
8 -- cellular changes that subsequently lead to
9 cancer, so -- but there's not a set time period for
10 which that can happen. But if you went to Camp
11 Lejeune and the next day you had cancer, it would be
12 hard to associate that.

13 So that's -- there needs to be some time
14 for the cancer to develop. What the minimum
15 threshold, I don't think anybody knows. But we --
16 but it's -- there's probably a minimum threshold.

17 Q. Do you know whether epidemiological studies
18 often use a 10- to 20-year latency when measuring
19 associations between exposure and cancer?

20 MR. MANDELL: Objection.

21 A. Are you asking me why they do it?

22 BY MR. BU:

23 Q. Whether you're familiar with --

24 A. I don't know that there's a set amount. I
25 think people do some things for convenience, but I

1 don't know that there's any scientific rationale why
2 they say it has to be a specific minimum amount.
3 There is no specific minimum amount that I've seen
4 any paper write, oh, yeah, we can tell that it was
5 three days ago or three years ago or ten years ago
6 that they first -- had their first cancer cell that
7 subsequently grew.

8 Q. Are you aware of any chemical test that can
9 be used to determine whether a kidney cancer was
10 caused by a toxic exposure?

11 A. No.

12 Q. Are you aware of any blood tests or tissue
13 sample tests that can be used to determine whether a
14 kidney cancer was caused by toxic exposure?

15 A. No.

16 Q. Are you aware of any other tests, including
17 biomarker tests, that would indicate whether a
18 kidney cancer was related to toxic exposures?

19 A. No, but I wouldn't expect it based on what
20 you see. Cancers are heavily mutated, and the --
21 what precedes a cancer development would not
22 necessarily impact what mutations you developed
23 unless you had an inherited mutation where you would
24 say, I know I'm looking for a specific gene. But
25 even if you had a susceptibility gene, it wouldn't

1 tell you what activated it or what caused it.

2 So this -- I mean, while I understand your
3 line of questioning, it's not something that I think
4 we would ever find. I don't -- you know, I think
5 that you can -- you can clinically find out what the
6 person was exposed to, but when you look at the
7 cancer directly, you wouldn't know what exactly the
8 trigger was in most cases.

9 Q. And you wouldn't know what the trigger was
10 in Mr. Fancher or Mr. Downs' case either; is that
11 fair to say?

12 MR. MANDELL: Objection.

13 A. I think it's a completely different
14 question. The trigger there is -- the question
15 there is: What are the relative risks for them
16 developing cancer? And you're, again, not saying I
17 can pinpoint this is the exact thing, what you're
18 saying is this is the most likely thing. That's the
19 relevant question.

20 And in their cases, when you look at their
21 chemical exposure and the association with cancer
22 and the fact that they got that cancer, you can say
23 with quite a bit of certainty that they're as likely
24 as not getting this cancer because of their exposure
25 to this carcinogen.

1 BY MR. BU:

2 Q. Okay.

3 A. Looking at their tumor and then doing some
4 sort of assay is not possible currently.

5 Q. I'm sorry, you mean looking at their tumor
6 or doing an assay --

7 A. Once you see that they have a clear cell
8 carcinoma, trying to backtrack and say, was it --
9 what was the direct cause is not currently possible
10 with any testing.

11 Q. Okay. Are there any clinical features of
12 kidney cancer that are characteristic of a toxic
13 exposure?

14 A. Not for kidney cancer that I'm aware of.

15 Q. Okay. Outside of this litigation, have you
16 ever diagnosed a patient with chemically induced
17 kidney cancer other than smoking?

18 MR. MANDELL: Objection.

19 A. You suggest that smoking is a rec- -- has
20 some features that we can recognize differently than
21 other toxins. The answer is no, there is no case
22 where you can look at the pathology and know the
23 etiology. You can surmise -- or estimate the
24 potential causes based on the clinical history and
25 the relevant literature, but it's not a pathologic

1 finding, including smoking.

2 BY MR. BU:

3 Q. Setting aside, you know, the pathologic
4 findings, have you ever told a patient, the likely
5 cause of your kidney cancer was a chemical exposure
6 other than smoking?

7 A. For kidney cancer specifically, I'm trying
8 to think. You're asking about chemical exposure?

9 Q. Yes.

10 MR. MANDELL: I'm going to object to
11 the question.

12 But you can answer.

13 A. Yeah, I don't know. I mean, it's been
14 20 years. I don't know that I have -- that I have
15 done that. I have -- yeah, I would say I don't
16 know.

17 BY MR. BU:

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

20 A. Not that I can recall.

21 And if we take a step back, I think I have
22 seen some people on supplements who have had upper
23 tract urothelial carcinoma and renal pelvis tumors
24 that I think were caused by those. So I guess the
25 answer is yes.

1 Q. When you say "were caused by those" --

2 A. That I thought were maybe related to
3 aristolochic acid or some other chemical. So I
4 think -- so for upper tract, if we're going to --
5 since we're going to include that in renal cancers,
6 I'll modify that answer because I have seen some
7 patients on Chinese herbs that I think had the
8 exposure.

9 THE STENOGRAPHER: And what was the
10 acid you said?

11 THE WITNESS: Aristolochic.

12 MR. BU: I don't know if you can read
13 that. A-r-i-s-t-o-l-o-c-h-i-c.

14 THE STENOGRAPHER: Thank you.

15 MR. MANDELL: I think I would have
16 needed to Google. . .

17 BY MR. BU:

18 Q. Have you ever treated a kidney cancer
19 patient following an exposure to either PCE, vinyl
20 chloride, or benzene?

21 A. I think that's going to be a difficult
22 question to answer. I've treated patients who have
23 worked in the petrochemical industry here in Texas.
24 I wouldn't be able to say that I was doing a
25 differential diagnosis about the cause of treating

1 their cancer. It's possible that they may have been
2 exposed to hydrocarbons or other chlorinated
3 substances that contributed to their kidney cancer.
4 Outside of this context, it wouldn't make sense to
5 sort of try to weigh the factors. I was taking care
6 of their cancer.

7 Q. Okay. When you see new patients or do
8 patient intake, do you screen those patients for any
9 risk factors?

10 A. I don't use screening in that context. I
11 discuss with them what the risk factors might be.
12 They might have modifiable risk factors, like
13 smoking that I want them to stop. But beyond that,
14 yes, I take a thorough history.

15 Q. All right. As part of that history, you
16 ask about smoking history?

17 A. I ask about smoking, I ask about drinking.
18 I ask their diet. I ask a lot of questions.
19 Occupation. I see veterans, so I ask about Agent
20 Orange exposure, other things like that.

21 So yes, I mean, I'm going to ask
22 questions. Now, many of these things may not be
23 relevant for their particular cancer.

24 Q. Why do you ask about Agent Orange exposure?

25 A. Because I see prostate cancer, and they may

1 be service connected.

2 Q. Are there particular occupations that
3 you're looking out for when you ask about
4 occupational history?

5 A. For bladder cancer, painters, hairdressers,
6 things like that, where they might be exposed to
7 different carcinogens from their occupations.

8 Q. What about for kidney cancer?

9 A. Not specifically.

10 Q. And do you screen your kidney cancer
11 patients for Agent Orange exposure?

12 A. No. We have -- we have discussed that.
13 There's no clear association. The VA hasn't deemed
14 it service connected, the best as I know. They may
15 change their mind. They've changed their mind about
16 other things. But as far as I know, it's not.

17 Q. When looking at smoking history, do you
18 consider smoking cessation?

19 A. If they're active smokers, I offer smoking
20 cessation.

21 Q. Okay. I guess what I mean is, in your
22 opinion, smoking cessation diminishes the risk of
23 kidney cancer; is that correct?

24 A. No. The data -- there is data that
25 stopping smoking will eventually diminish lung

1 cancer risk, but I'm not aware of good data for
2 other cancers necessarily. But the association with
3 smoking is actually relatively weak for kidney
4 cancer. So, anyway. . .

5 Q. Okay.

6 A. But I think they should -- if they're
7 smoking, they should stop smoking because of
8 cardiovascular disease as well, you know.

9 Q. So for kidney cancer risk, do you
10 distinguish between distant former smokers and
11 recent former smokers?

12 A. Again, I think the data overall is that
13 smokers have a relatively low increased incidence.
14 Yes, I think in general, the duration and intensity
15 can make a difference, but -- but the literature is
16 certainly not very well established regarding kidney
17 cancer and smoking as compared to, like, lung cancer
18 and smoking.

19 Q. Okay. When you say the literature is not
20 well established, does that also include the
21 literature describing the diminution in risk, if
22 any, related to how long ago someone quit smoking?

23 A. I'm not aware of the literature about --
24 showing when you quit or how long ago you quit, how
25 much it impacts your baseline risk versus the other.

1 It's probably because the baseline risk is
2 relatively low anyway. It would be hard to show a
3 significant decrease if you quit 10 years ago versus
4 20 years ago.

5 Q. Okay. Could a smoking -- okay.
6 Earlier we had discussed age as a risk
7 factor.

8 Do you recall that?

9 A. Yes.

10 Q. All right. What role does age play in
11 cancer etiology?

12 A. As you get older, you -- your risk for many
13 cancers goes up.

14 Q. Okay. Is there a proposed mechanism for
15 why you're increased of cancer goes up with age?

16 A. Presumably, the -- well, cells, as they
17 replicate, might have alterations and you accumulate
18 the alterations over a lifetime. You also have more
19 exposures over a lifetime to potential carcinogens.

20 Q. Okay. And these are -- okay.

21 MR. MANDELL: Five minutes whenever
22 you get a chance.

23 MR. BU: Yeah.

24 MR. MANDELL: Take your time.

25 BY MR. BU:

1 Q. Can you turn to page 24 of your Downs
2 report, Exhibit 2?

3 A. Yes.

4 Q. And do you see that listed bullet point,
5 1.a., in the middle of page 24?

6 A. Yes.

7 Q. And you compare SEER statistics for the
8 incidence of kidney cancer in men between the age
9 group of 65 to 74 and the age group of 75 and older,
10 correct?

11 A. Yes.

12 Q. And in your report, you conclude -- you
13 conclude that, "This difference in incidence of 10
14 men per 100,000 is clinically insignificant."

15 Do you see that?

16 A. Yes.

17 Q. How do you determine whether or what --
18 sorry.

19 How do you determine what difference in
20 incidence is clinically insignificant?

21 A. Just my opinion that -- that
22 1 ten-thousandths of a percent is -- or, you know, 1
23 out of 10,000 men is not significant. It's
24 extremely rare. That's just an opinion.

25 It was also to demonstrate that his

1 baseline risk, just based on 82, is one per
2 thousand. It's not much. So just because somebody
3 is 82 doesn't mean that they're very likely to get
4 kidney cancer.

5 MR. BU: All right. We can stop
6 there.

7 THE VIDEOGRAPHER: All right. We are
8 off the record at 2:08.

9 (Break taken, 2:08 p.m. to 2:12 p.m.)

10 THE VIDEOGRAPHER: We are back on the
11 record at 2:12.

12 BY MR. BU:

13 Q. This may seem a little silly, but for the
14 sake of the record, Dr. Lotan, did you discuss your
15 deposition testimony with anyone during the break?

16 A. No.

17 Q. All right. Is there anything you have
18 testified to today that you would like to clarify or
19 correct?

20 A. No.

21 Q. Okay.

22 MR. BU: Can we pull Tab 7? Actually,
23 hold on. Yes, Tab 7.

24 (Exhibit No. 14 marked.)

25 BY MR. BU:

1 Q. The court reporter has handed you what's
2 been marked Exhibit 14. This is the ATSDR's Public
3 Health Assessment for Camp Lejeune drinking water
4 from 2017.

5 Have you reviewed this document before?

6 A. I have reviewed parts of it. Maybe not
7 every word of it.

8 Q. Do you remember which parts of this report
9 you would have reviewed in preparing your reports in
10 this litigation?

11 A. I mean, there was a bunch of documentation,
12 I think, about the relative risks of cancer. And
13 also the parts I quoted about drinking water
14 exposures at the camp, but -- but not every report
15 on every exposure, it looks like. So probably the
16 summary data.

17 Q. Okay. Are you aware that as part of this
18 report, ATSDR estimated the elevated lifetime cancer
19 risk for exposures to water at Camp Lejeune?

20 A. I have seen tables. Mostly focused -- I
21 mostly focus on the kidney cancer. I didn't
22 necessarily look at the -- the overall risk.

23 Q. Okay. Would it be fair to say that the
24 overall -- I'm sorry, would it be fair to say that
25 the kidney cancer risk would not be greater than the

1 overall risk?

2 MR. MANDELL: Objection.

3 A. Are you going to -- are you asking about a
4 specific table? I'd have to look at that.

5 BY MR. BU:

6 Q. Just conceptually, would the kidney cancer
7 risk exceed the all-cancer risk?

8 MR. MANDELL: Objection.

9 A. I'm not going to answer a conceptual
10 question. We have the actual data. Should we -- we
11 can look at it.

12 BY MR. BU:

13 Q. Yeah, can you turn to page Romanette 12?

14 A. Conclusion 1?

15 Q. Conclusion 1, yes.

16 A. Okay.

17 Q. And for Conclusion 1, ATSDR estimates the
18 excess cases of cancer, correct?

19 A. Do you have a specific line? This is a
20 summary paper -- or page.

21 Q. Sure. So -- well, let's do it this way:
22 There are four bullet points in the middle of page
23 Romanette 12, correct?

24 A. Yeah, "Children living on-base" -- yeah.

25 Q. All right. And ATSDR is discussing

1 different population subgroups at Camp Lejeune,
2 correct?

3 A. It looks at various diseases, yes,
4 including various cancers. Is that what you're
5 asking?

6 Q. No, I'm asking if they're looking at
7 different population subgroups.

8 A. In this specific page?

9 Q. Yeah, those four bullet points are
10 comparing four different subgroups of population --

11 A. Different population subgroups, yes.

12 Q. Yes.

13 And the third subgroup is Marines in
14 training from the early 1970s to the early 1980s,
15 correct?

16 A. Yes.

17 Q. For this population subgroup, ATSDR reports
18 that they had an estimated upper-bound cancer risk
19 of about 4 excess cases of cancer for every 10,000
20 exposed persons, correct?

21 A. That's what it states.

22 Q. All right. And excess cases of cancer
23 would be cases of all cancers, not a specific type
24 of cancer, correct?

25 MR. MANDELL: Objection.

1 A. In general, I think that's what they're
2 referring to. I would have to look at their
3 specific data. This is a conclusion statement.

4 BY MR. BU:

5 Q. Okay. And the number of excess cases of
6 cancer would include cases of kidney cancer,
7 correct?

8 MR. MANDELL: Objection.

9 A. If it's -- if it's an overall case, then it
10 would include kidney cancer.

11 BY MR. BU:

12 Q. All right. And there's no reason to think
13 the number of cases of kidney cancer would be
14 greater than the number of cases of all cancers,
15 correct?

16 MR. MANDELL: Objection.

17 A. I don't think you can make that conclusion
18 based on this statement.

19 BY MR. BU:

20 Q. Okay. Do you have any reason to disagree
21 with the ATSDR's conclusion that for Marines in
22 training from the early 1970s to the early 1980s,
23 there would be an upper-bound cancer risk of about
24 4 cases of cancer for every 10,000 exposed persons?

25 MR. MANDELL: Objection.

1 A. I believe you can read this accurately. I
2 mean, there's got to be a table that goes along with
3 this conclusion. I would have to look at that to
4 say if I completely agree with it.

5 BY MR. BU:

6 Q. Did you look at any of the tables included
7 in the Public Health Assessment in developing your
8 reports in Fancher or in Downs?

9 MR. MANDELL: Objection.

10 A. I think I looked at this among other
11 reports as well.

12 BY MR. BU:

13 Q. When you say "this," what are you referring
14 to?

15 A. I mean this ATSDR. I know there were some
16 tables from this that I looked at.

17 Q. Okay. Can you turn ahead to page 35?

18 A. Okay.

19 Q. Do you see Figure 9, "Hadnot Point:
20 Estimated Lifetime Cancer Risk by Age Group over
21 Time Based on 3-Year Exposure for Residents and
22 Marines-in-Training"?

23 A. Yes.

24 Q. Okay. The graphs on Figure 9 describe the
25 different estimated lifetime cancer risks for

1 different population subgroups at Camp Lejeune,
2 correct?

3 A. Yes.

4 Q. All right. And one of those subgroups is
5 Marines who trained and lived on base.

6 Do you see that?

7 A. Yes.

8 Q. All right. And the highest estimated
9 lifetime cancer risk for that population subgroup is
10 3.5 times 10 to the minus 4th, correct?

11 A. That's what it says.

12 Q. Another way to interpret that would be 3
13 and a half cases for every 10,000 Marines, correct?

14 A. Just numerically, yes. But the caveat
15 here, which I think you should point out, is that
16 most of the Marines had not even reached age 65,
17 which is the average age for many cancers. And so
18 we don't know what -- their actual true lifetime
19 risk. Many more cases could develop in the next --
20 you know, over the next 10, 15, 20 years that would
21 completely shift this number to a different, much
22 higher number.

23 So to ask me if I agree with the number, I
24 would say I can read a piece of paper, but I don't
25 necessarily agree that that's their max cancer risk,

1 the way that they describe it, because it may be
2 completely wrong. It's not completely relevant to a
3 kidney cancer patient as well because it doesn't
4 mean that your risk of every cancer is uniform.

5 Q. Other than factoring in age, why else might
6 you think that the estimated lifetime cancer risks
7 reported on Figure 9 may be incorrect?

8 MR. MANDELL: Objection.

9 A. I think only 12 percent of patients had
10 died at this point. So lifetime risk implies you
11 lived out your whole life, and if most people didn't
12 die, then we don't know what's going to happen to
13 them. I don't think the risk is going to go down
14 over a lifetime. It's going to probably only go up.
15 BY MR. BU:

16 Q. Okay. So you're considering, I guess, the
17 number of deaths that would have been observed in
18 this population at this point in time?

19 MR. MANDELL: Objection.

20 A. You're not showing me any raw data. You're
21 asking about overall cancer based on this graph
22 without any raw data -- raw numbers. And I'm not
23 even sure that I can completely relate this to the
24 kidney cancer risk, which is what -- the main thing
25 that I was looking at.

1 So I don't know that I can comment much
2 further. All I can say is that this is some data on
3 a point -- at one point of time for overall cases,
4 but I can't say that I agree with the conclusion,
5 that this is the max rate, nor can I agree that
6 this -- that this won't change over time.

7 BY MR. BU:

8 Q. The graphs on Figure 9 also show the risks
9 varying depending on when someone was at Camp
10 Lejeune, correct?

11 MR. MANDELL: Objection.

12 A. The -- that's -- that's what the graph
13 suggests.

14 BY MR. BU:

15 Q. Do you have any reason to disagree that the
16 risks for Marines who trained and lived on base
17 would depend on when they were at Camp Lejeune?

18 MR. MANDELL: Objection.

19 A. I can't really agree with that statement.
20 They may have all been at increased risk. Any
21 individual might be at a slightly higher or slightly
22 lower risk about -- based on when they were there,
23 how much water they drank, where exactly they
24 served, where they lived.

25 But I would say that -- that most Marines

1 that were there probably were at higher risk
2 regardless of the time frame. The actual risk may
3 have varied, but -- based on an individual, but --
4 but I don't know that I would think that, oh, there
5 was a safe time to live there based on this -- based
6 on this graph alone.

7 And, again, you know, I think I should --
8 I think, you know, since I haven't really looked --
9 don't see the actual data and didn't look at the
10 overall counts or risks, I really focused on kidney
11 cancer risk, I think my conclusions from this should
12 be viewed with a grain of salt.

13 BY MR. BU:

14 Q. Okay. Would you agree that the actual
15 risks depend, in part, on when someone was at Camp
16 Lejeune?

17 MR. MANDELL: Objection.

18 A. Yeah, again, I -- I think at this point I'm
19 starting to speculate, so I don't -- I don't want to
20 make -- I don't think I can respond to that.

21 BY MR. BU:

22 Q. Okay. Are you familiar with the term
23 "cancer slope factor"?

24 A. No.

25 Q. Okay. Okay. What about the term

1 "inhalation risk unit"?

2 A. No.

3 Q. Okay. You can set the Public Health
4 Assessment to the side. And Zach will remind me
5 that you should bind it so the pages stay in order.

6 Can you go to page 26 of your Downs
7 report?

8 A. Okay.

9 Q. And do you see Section 17, "Mr. Downs'
10 Injuries," which includes four listed bullet points?

11 A. Yes.

12 Q. All right. In Item 4, you write, "The
13 medical billing relating to Mr. Downs' kidney cancer
14 diagnosis and metastasis, the surgery to remove his
15 kidney and the follow-up treatment related to his
16 kidney cancer was reasonable and medically
17 necessary."

18 Did I read that correctly?

19 A. Yes.

20 Q. All right. The metastasis you refer to is
21 the jejunum or small bowel cancer, correct?

22 A. It was the kidney cancer that metastasized
23 to the small bowel. It was not small bowel cancer,
24 it was a metastasis to that spot.

25 Q. And that's the only metastasis you're aware

1 of, correct?

2 A. I haven't reviewed his most recent -- any
3 updated records, but that was what was documented so
4 far. Very unlikely that somebody would just have
5 one metastatic site. Most metastatic sites are
6 systemic, so other sites might show up. But that's
7 what's been documented so far.

8 Q. Okay. Let me ask it this way: When you
9 refer to the metastasis in Item 4, are you referring
10 to anything other than the metastasis to the small
11 bowel?

12 A. No.

13 Q. Okay. And that metastasis was resected,
14 correct?

15 A. Yes.

16 Q. All right. Are you opining to any other
17 specific surgeries or treatment that Mr. Downs will
18 need in the future?

19 A. I think if you look at the natural history
20 of metastatic kidney cancer, it's almost certain
21 that he will recur elsewhere at some point.

22 Q. Are you offering opinions about the type of
23 recurrence Mr. Downs will experience?

24 A. Well, if he recurs, it will be systemic,
25 not -- he obviously had his kidney removed. It

1 can't -- won't be local, or less likely to be local.

2 Q. Are you offering opinions about how that
3 systemic cancer would be treated?

4 A. No, because it will depend on his overall
5 medical condition.

6 Q. Okay. Did you review Mr. Downs' billing
7 records in preparing your report?

8 A. Just what was available. I don't think I
9 saw every medical bill.

10 Q. Are you offering any opinions about the
11 total cost that was billed to Mr. Downs?

12 A. No.

13 Q. Okay. And are you offering any opinions
14 about the present value of those medical bills?

15 A. No.

16 Q. Okay. Can you turn to page 22 of your
17 report in Fancher, Exhibit 1?

18 A. 22?

19 Q. Yes, page 22 of Exhibit 1.

20 A. Okay.

21 Q. Okay. Item 4 for Mr. Fancher's report
22 reads, "The medical billing relating to
23 Mr. Fancher's kidney cancer diagnosis, the surgery
24 to remove his kidney and the follow-up treatment
25 related to his kidney cancer was reasonable and

1 medically necessary."

2 Did I read that correctly?

3 A. Yes.

4 Q. Okay. Other than cancer surveillance, like
5 CT scans, is there any other follow-up treatment
6 that would have been related to Mr. Fancher's kidney
7 cancer?

8 A. Well, a CT is not the only imaging. He
9 probably would be getting imaging of his chest as
10 well. Probably going to have to have lifelong
11 monitoring of his blood work because he has one
12 kidney now.

13 So he's going to have -- people are going
14 to have to monitor his general health. He's at
15 higher risk for future kidney dysfunction, high
16 blood pressure, just based on having one kidney. He
17 also had a flank bulge, so theoretically, if he ever
18 wanted to have that fixed, he would have to have
19 plastic surgery done for that.

20 So one can -- can speculate about what his
21 future risks might be, but he's definitely going to
22 need lifelong monitoring of his overall general
23 health.

24 Q. Would plastic surgery for Mr. Fancher's
25 flank bulge be medically necessary?

1 MR. MANDELL: Objection.

2 You can answer.

3 A. I think depending on how comprehensive you
4 look at somebody's overall health. I mean, if it's
5 -- if it's bothering his quality of life, it's a
6 consequence of his original cancer, one could argue
7 that it may be something that he -- you know, it was
8 something he suffered as a consequence of his kidney
9 cancer.

10 Is it something that he has to do to
11 survive? No. But is it affecting his quality of
12 life? Yes. So there are a lot of things you don't
13 have to do medically, but that would impact your
14 quality of life.

15 BY MR. BU:

16 Q. Regarding high blood pressure, is there
17 any -- are you opining that Mr. Fancher will require
18 anything other than monitoring?

19 A. As long as he doesn't develop high blood
20 pressure. But it's certainly something he's going
21 to have to be more conscious of maybe than the
22 person with just one -- with two kidneys. If you
23 only have one kidney, you have a lower threshold
24 maybe to end up with chronic kidney disease.

25 Q. Similarly, other than monitoring, are you

1 opining that there's any other treatment Mr. Fancher
2 will -- Mr. Fancher requires regarding his chronic
3 kidney disease?

4 A. Right now, no, but if we're looking over a
5 lifetime, then it's possible. He's certainly at
6 higher risk than if he had had two kidneys from
7 suffering consequences that might result from poor
8 kidney function.

9 Q. Did you review Mr. Fancher's medical bills
10 in preparing your report?

11 A. There were some available, but not the
12 comprehensive -- not all of them, no.

13 Q. Are you offering any opinions about the
14 total value of Mr. Fancher's medical expenses?

15 A. No.

16 Q. And are you offering any opinions about the
17 present value of those medical expenses?

18 A. No.

19 Q. Okay. For either Mr. Fancher or Mr. Downs,
20 is there any methodology you used to determine
21 whether the amounts being billed were reasonable?

22 MR. MANDELL: Objection.

23 I'm sorry, go for it.

24 A. Yeah, I did not see the -- every bill, so
25 it's hard -- I can't make any general conclusion. I

1 think they got appropriate medical care, but the
2 billing I can't comment on.

3 BY MR. BU:

4 Q. Okay. When did you first become aware of
5 the Camp Lejeune Water Litigation?

6 A. I think it was a couple years ago. I
7 wouldn't know exactly when.

8 Q. Were you aware of the Camp Lejeune Water
9 Litigation before your involvement as an expert
10 witness?

11 A. I think just vaguely, just. . .

12 Q. Do you know how you found out about the
13 Camp Lejeune Water Litigation before you were
14 retained as an expert witness?

15 A. I think just from the news. Not any
16 specific. . .

17 Q. Do you recall when you were first contacted
18 about working on the Camp Lejeune Water Litigation?

19 A. No. I imagine that it was within the
20 last --

21 MR. MANDELL: He's not asking about
22 any particular communications, but he's asking you
23 about the date or time frame.

24 A. Sometime in 2023.

25 BY MR. BU:

1 Q. Do you recall when in 2023?

2 A. No. It's probably maybe April, May. I
3 could be mistaken, though.

4 Q. Without telling me what was discussed, do
5 you remember who contacted you?

6 A. I would have to look back. May have been
7 Patrick Telan's office, but I could be mistaken.

8 Q. Okay. Do you remember how Patrick Telan or
9 his office contacted you?

10 MR. MANDELL: Objection.

11 A. It probably would have been by e-mail.

12 BY MR. BU:

13 Q. Okay. And thinking only about that initial
14 contact, do you recall how, if at all, the Camp
15 Lejeune Water Litigation was described to you?

16 MR. MANDELL: I'm going to object and
17 say don't answer that question. It sounds to me
18 like it's calling for communication between a lawyer
19 and Dr. Lotan. I'm not sure I can interpret that
20 any other way. And I'm not trying to speak for the
21 witness, but if you want to try to rephrase it.

22 But I'm going to say, I guess, don't
23 answer that particular question.

24 BY MR. BU:

25 Q. So I am going to ask about your

1 communications with lawyers, but only before you
2 were retained as an expert witness.

3 MR. MANDELL: I'm going to object and
4 say I -- well, ask your question, I guess. We'll
5 take it step by step.

6 BY MR. BU:

7 Q. When Patrick Telan or his office first
8 e-mailed you, had you been retained to work on the
9 Camp Lejeune Water Litigation for any plaintiffs'
10 firm?

11 A. Before, no.

12 Q. Okay.

13 A. And I would have to double-check. So, you
14 know, I think that's the office that contacted me
15 first.

16 Q. Okay. And at some point after that --
17 receiving that e-mail or initial contact, you agreed
18 to work as an expert witness for a plaintiffs' firm,
19 correct?

20 MR. MANDELL: I'm going to object to
21 the form of the question.

22 But you can answer the question.

23 A. Yeah, after the communication, at some
24 point I agreed to serve as an expert witness.

25 BY MR. BU:

1 Q. Okay.

2 A. That's the chronologic order at least.

3 Q. So between that initial contact and you
4 agreeing to work as an expert witness, do you recall
5 any communications with plaintiffs' attorneys?

6 A. There were not --

7 MR. MANDELL: Objection.

8 A. I don't think I can -- I mean, I think the
9 initial contact was, can you send us a CV and, you
10 know, what -- what constraints you might have as an
11 employee of UT Southwestern, costs, et cetera. I
12 think after I sent that -- when they said they want
13 to retain me, I think after that, we had
14 communication, but they didn't send me documents or
15 anything to review prior to that.

16 BY MR. BU:

17 Q. Okay. When they sent an e-mail saying they
18 wanted to retain you, did you immediately agree to
19 be retained, or were there additional
20 communications?

21 MR. MANDELL: I'm going to object. I
22 guess I can handle this one of two ways. I could
23 just have him leave the room so I can put something
24 on the record, or I can just put it on the record.
25 I don't think it's, like, super-substantive that

1 way, but I'm happy to do it either way. I just
2 don't -- I want to make a record, but I just --

3 MR. BU: About a privilege issue?

4 MR. MANDELL: Yeah.

5 MR. BU: Okay. Sure. Why don't we
6 have the -- excuse the witness and you can make your
7 objection for the record?

8 MR. MANDELL: It will be 15 seconds.

9 THE WITNESS: Okay. No worries.

10 (Dr. Lotan exits proceedings.)

11 MR. MANDELL: Thanks. I just want to
12 make a record. I believe that any communication
13 between the lawyer and the expert is privileged, I
14 mean, this -- these questions about, well, when were
15 you formally -- was there a formal retainer letter,
16 that type of thing.

17 So I think he's answered the questions
18 anyways, but I just wanted to make that record. So
19 I'll grab him and --

20 MR. BU: Okay. So that I understand
21 your position, the privilege extends to
22 communications before he was retained as long as
23 they're coming from the plaintiffs' attorney for
24 purposes of the same litigation?

25 MR. MANDELL: I think it would -- for

1 purposes of what we're talking about right now, I
2 think what he just said was basically he hasn't had
3 any communications of any substantive nature prior
4 to that.

5 But -- so I'm not trying to say some
6 blanket rule about every single situation, but --
7 but I would say that I think that the nature of the
8 way that -- as I'm -- you know, the nature of the
9 way that this generally works, my position would be,
10 yeah, any communication between the lawyer and the
11 expert is privileged. I think that's consistent
12 with the CMOs. I think that's consistent with the
13 law. And so I just wanted to make that on the
14 record.

15 MR. BU: Okay.

16 (Dr. Lotan reenters proceedings.)

17 BY MR. BU:

18 Q. Have you executed any retainer agreement or
19 contract with the plaintiffs' law firm regarding
20 this litigation?

21 A. I don't know that there's a specific
22 agreement. I know I received -- I mean, I would
23 have to look back at my e-mails to see what -- I
24 think we received -- there is a letter that we
25 received saying, yes, that we're -- that they're

1 going to use me as an expert witness. I don't
2 remember signing anything.

3 Q. When you say there was a letter that we
4 received, who is "we"?

5 A. Well, that I received.

6 Q. Okay.

7 A. I mean, in general, when I say "we," you
8 know, I'm not allowed to do any outside employment
9 without the department. So I would have forwarded
10 it to the department. All the payments go to the
11 department or the University. So it's not done --
12 it's not done in isolation.

13 Q. Is there anyone at the -- let me take a
14 step back, actually.

15 When you say "the University," you're
16 referring to University of Texas Southwestern?

17 A. Yes.

18 Q. Is there anyone at University of Texas
19 Southwestern who assisted you in drafting your
20 reports?

21 A. No.

22 Q. Is there anyone at University of Texas
23 Southwestern who helped you assemble materials to
24 review in formulating your opinions?

25 A. No.

1 Q. Okay. Does University of Texas
2 Southwestern receive part of your compensation?

3 A. The Department of Urology does.

4 Q. Are your services being billed at \$800 an
5 hour?

6 A. Yes.

7 Q. Okay.

8 MR. BU: And actually, could we pull
9 Tab 33? I'm sorry, 32 -- no, 31.

10 (Exhibit No. 15 marked.)

11 BY MR. BU:

12 Q. All right. I have handed you what's been
13 marked Exhibit 15. These are some of your invoices
14 from University of Texas Southwestern?

15 A. Yes.

16 Q. All right. And you submit your invoices
17 yourself, correct?

18 A. Yeah, I cc the department administrators
19 because the payments don't go to me.

20 Q. Okay. And I apologize that these are a
21 little bit out of order.

22 A. Yes.

23 Q. But can you turn to what's marked at the
24 bottom as page 12? This is the second-to-last page.
25 It's your fee schedule.

1 A. Yes.

2 Q. All right. And these are fees revised as
3 of April 2018, correct?

4 A. Yes.

5 Q. Are these the -- are these the current fees
6 that you're charging in this litigation?

7 A. Yes.

8 Q. All right. Do you know what portion of
9 those fees are provided to the Department of
10 Urology?

11 A. 50 percent, except I think a hundred
12 percent of the retainer, but 50 percent and -- of
13 everything else.

14 Q. Does the other 50 percent go to you?

15 A. Yes.

16 Q. All right. Can you flip one page back to
17 what's marked as page 10?

18 A. Yes.

19 Q. All right. And this is a May 2023 invoice,
20 correct?

21 A. Yeah, probably the first one.

22 Q. Yeah. So this is the first one.

23 Do you know how much earlier before
24 May 4th, 2023, you would have been working before
25 you sent your first invoice?

1 A. Probably not very long.

2 Q. Okay. When you say "not very long," like,
3 a matter of weeks? A matter of months?

4 A. Yeah, probably one to two months at most.

5 Q. Can you flip to what's marked as page 2?
6 This is a January 4th, 2024, invoice?

7 A. Wait, page -- which page are you looking
8 at? I'm not seeing that.

9 Q. I'm sorry. It's marked 002 in the bottom
10 right-hand corner.

11 MR. MANDELL: We don't have that,
12 Nathan.

13 MS. JOHNSON: It's the very last page.

14 MR. BU: The very last page.

15 MR. MANDELL: Oh, it's clipped -- it's
16 clipped at the end.

17 THE WITNESS: The January 4th, 2024?

18 MR. MANDELL: It's actually going to
19 be the last page of ours. For some reason it's out
20 of order.

21 MR. BU: Yeah, I think they're all out
22 of order, unfortunately.

23 MR. MANDELL: That's it, yeah.

24 A. I see it.

25 MR. MANDELL: We're there.

1 BY MR. BU:

2 Q. All right. If there are no invoices dated
3 between May 2023 and January 2024, would you have
4 performed any work other than these two hours
5 between that time period?

6 A. No.

7 Q. And do you recall doing work in this
8 litigation between May 2023 and January 2024 other
9 than possibly two hours?

10 A. Trust me, I would have invoiced.

11 Q. You would have been what?

12 A. I would have invoiced.

13 Q. Okay. All right. Okay. And did you do
14 any work in this litigation other than for the Downs
15 and the Fancher case?

16 MR. MANDELL: I'm going to object and
17 instruct you not to answer that. Well, you can
18 answer yes or no.

19 BY MR. BU:

20 Q. Just yes or no.

21 A. No.

22 Q. Okay. Your most recent invoice is dated
23 for March of this year. Have you done work in this
24 litigation since March 2025?

25 A. Yes.

1 Q. And about how much time have you spent
2 working on this litigation since March 2025?

3 A. There's an invoice for May 2025 if you look
4 at page 1. But it's the second-to-last page. It's
5 the one right behind the legal fees.

6 Q. Have you done any work since May 2025 in
7 this litigation?

8 A. Yes.

9 Q. All right. And about how much work have
10 you done since May 2025?

11 A. Mostly reviewing things this past weekend
12 and week. I don't know, maybe another 10 to
13 12 hours.

14 Q. Have you submitted any invoices since
15 May 2025?

16 A. I can't remember if I submitted something
17 in June. I may have been holding off knowing that
18 this was happening today, so -- so probably not.

19 Q. Okay. Would those 10 to 12 hours since
20 May 2025 have been for anything other than preparing
21 for your deposition?

22 A. No.

23 Q. And your payment does not depend on the
24 outcome of this case, correct?

25 A. No.

1 Q. Is the fee schedule that you or the
2 University uses in this case the same as the fee
3 schedule used in other cases?

4 A. Yeah, I don't have -- it's -- I do what the
5 University says to do.

6 Q. Okay. Did you speak with any other
7 plaintiffs' experts in the course of preparing your
8 reports in this case without telling me anything
9 that may have been discussed?

10 A. No.

11 Q. Did you speak with any plaintiffs in the
12 course of preparing your reports in this case?

13 A. No.

14 Q. Did you speak with any of the plaintiffs'
15 treating physicians in the course of preparing your
16 reports in this case?

17 A. No.

18 Q. Without telling me anything you may have
19 discussed with attorneys, what, if anything, did you
20 do to prepare for your deposition today?

21 A. I reviewed my reports. I reviewed some of
22 the experts reports. I reviewed the literature
23 again.

24 Q. Without telling me what was discussed, did
25 you have any meetings with attorneys to prepare for

1 your deposition?

2 A. Yes.

3 Q. How many meetings?

4 A. I think two.

5 Q. When was the first meeting?

6 A. Oh, I mean, where -- I mean, I've been
7 meeting with the lawyers periodically throughout
8 this process, so I can't say that -- I mean, if you
9 meant -- well, let me change that number, then.

10 Are we talking about from May of 2023
11 until now? I wouldn't know how many times we spoke.

12 Q. Okay. Let's do it this way: When was the
13 most recent time you had a meeting with a
14 plaintiffs' attorney?

15 A. Yesterday.

16 Q. All right. And who did you meet with?

17 A. With Zach.

18 Q. How long was that meeting?

19 MR. MANDELL: I can't answer for you.

20 A. Oh. I think it was about an hour and a
21 half.

22 BY MR. BU:

23 Q. Okay. Before yesterday, when was the last
24 time you had a meeting with a plaintiffs' attorney?

25 A. Within a couple of weeks.

1 Q. Okay. And who did you meet with?

2 A. Also Zach.

3 Q. How long was that meeting a few weeks ago?

4 A. I think it was probably a similar time
5 frame.

6 Q. About one and a half hours?

7 A. Something like that, yeah. It may have
8 been shorter. Maybe an hour.

9 Q. Did anyone other than Zach attend the
10 meeting yesterday?

11 A. No.

12 Q. Did anyone other than Zach attend the
13 meeting a few weeks ago?

14 A. No.

15 Q. Have you ever met with anyone other than a
16 plaintiffs' attorney or their staff to prepare for
17 your deposition?

18 A. No.

19 Q. Had you worked with Zach before this
20 litigation?

21 A. No.

22 Q. Had you worked with his law firm before
23 this litigation?

24 A. No.

25 Q. Had you worked with Pat Telan before this

1 litigation?

2 A. No.

3 Q. To the best of your knowledge, have you
4 previously worked with any of the plaintiffs' firms
5 involved in this litigation?

6 A. No.

7 Q. Have you ever been a witness in a case
8 against the United States?

9 A. No.

10 Q. Over the past four years, what percentage
11 of your annual income would you estimate has been
12 earned serving as an expert witness?

13 A. How many years?

14 Q. Past four years.

15 A. I don't know, less than 10 percent.

16 Q. Was it significantly --

17 A. Actually, no, less than 5 percent.

18 Q. Okay. Was it significantly more than
19 5 percent at any period of time?

20 A. No.

21 Q. Have you ever been retained as an expert
22 witness in another case involving toxic exposures?

23 A. No.

24 Q. And so is it fair to say you've never been
25 retained as an expert witness in another case

1 involving TCE, PCE, vinyl chloride, or benzene?

2 A. That's correct, I have not.

3 Q. Have you ever been involved in litigation
4 as a party or as a witness -- sorry, as a fact
5 witness?

6 A. I was involved defending a urologist who --
7 well, where a patient had a complication. I guess
8 I was a fact witness in that regard -- or as an
9 expert witness in that regard. Is that what you
10 mean?

11 Q. Yes.

12 A. Yes.

13 Q. Okay. Have you ever been a defendant in a
14 medical malpractice case?

15 A. I have been -- I had a TMB complaint that
16 was dismissed and I had a lawsuit that was
17 dismissed. Is that what you mean?

18 Q. What is a TMB complaint?

19 A. Texas Medical Board.

20 Q. What was the nature of the complaint?

21 A. I think a patient thought that I was being
22 rude.

23 Q. Do you recall the name of the patient?

24 A. I could find out. It was more than a
25 decade ago.

1 Q. Okay. And that complaint was dismissed?

2 A. Yes, without cause or whatever the thing
3 is.

4 Q. Can you go back to your CV in either
5 Fancher or Downs? It doesn't matter. At the top of
6 your CV, there's a signature and a date,
7 September 23, 2024.

8 Do you see that?

9 A. Yes.

10 Q. Do you have a more recent version of your
11 CV?

12 A. I think I do. There -- published more
13 papers since then.

14 Q. Okay. Would any of your positions or
15 appointments have changed since September 2024?

16 A. No.

17 Q. Okay. Would you have published any
18 articles relating to TCE since September 2024?

19 A. No.

20 Q. Would you have published any articles
21 relating to PCE, vinyl chloride, or benzene since
22 September 2024?

23 A. No.

24 Q. All right. Other than new publications,
25 are -- actually, take a step back.

1 Do you see under "Education," a list of
2 board recertifications on your CV?

3 A. Yes.

4 Q. All right. And the most recent board
5 recertification on this CV expires February 28th,
6 2025.

7 Do you see that?

8 A. Yeah, the -- there's a -- they have changed
9 the whole process. There's a continuing -- the
10 American Board of Urology changed it to sort of a
11 continuing education. So I'm up to speed on that,
12 but it's not -- they don't use this particular
13 process. My board certification is still intact.

14 Q. Okay. And does it expire at a certain
15 time?

16 A. No, as long as -- well, this is -- they
17 sort of started piloting it a couple of years ago.
18 But as long as you meet all the criteria, they
19 don't -- you don't -- you don't sit for an exam
20 anymore. It's just -- you have certain requirements
21 you have to do every year in terms of CME and
22 things like that and then you maintain your
23 accreditation.

24 Q. Okay. Do you know who Theresa Koppie is?

25 A. I know Dr. Koppie, yeah.

1 Q. Okay. And how do you know Dr. Koppie?

2 A. Just from going to meetings and reading
3 some of her papers.

4 Q. Okay.

5 A. Wouldn't be able to tell you any specific
6 paper, but I know who she is.

7 Q. All right. Have you coauthored
8 publications with Dr. Koppie?

9 A. I would have to PubMed us to see if we were
10 on any multicenter studies together. I couldn't
11 say, but I have a lot of papers.

12 Q. Okay. Do you recall if you've ever
13 presented at an AUA conference with Dr. Koppie?

14 A. When you say presented with somebody -- I
15 go to the AUA almost every year and I occasionally
16 present. When you say present with her, I don't
17 know what that would mean.

18 Q. Okay.

19 A. Have we sat on the same panel together or
20 are we -- I don't know. That doesn't usually
21 correlate.

22 Q. All right. Let me ask this way, then: How
23 would you describe your relationship with
24 Dr. Koppie?

25 A. Collegial.

1 Q. Have you ever discussed this litigation
2 with Dr. Koppie?

3 A. No.

4 Q. All right. Do you hold yourself out as an
5 epidemiologist?

6 A. No. I'm a urologic oncologist and I
7 publish outcomes research. That's the extent of
8 my -- what I hold myself out to be.

9 Q. How would you define "outcomes research"?

10 A. I mean, it's a very broad spectrum.
11 Looking at cancer outcomes that could be related to
12 clinical factors, pathologic factors, molecular
13 markers. But I'm not an epidemiologist when it
14 becomes -- when the math gets complicated, I involve
15 a statistician.

16 Q. Do you consider yourself an expert in
17 statistics?

18 A. No.

19 Q. Do you consider yourself an expert in
20 genetics?

21 A. No.

22 Q. Do you consider yourself an expert in
23 toxicology?

24 A. No.

25 Q. Do you consider yourself an expert in

1 environmental health?

2 A. No.

3 Q. Do you consider yourself an expert in
4 occupational medicine?

5 A. No.

6 MR. BU: Can we go off the record?

7 THE VIDEOGRAPHER: We're off the
8 record at 3:00.

9 (Break taken, 3:00 p.m. to 3:07 p.m.)

10 THE VIDEOGRAPHER: We are back on the
11 record at 3:07.

12 BY MR. BU:

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

15 A. No.

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

18 A. No.

19 Q. Do you feel that your testimony that you've
20 given has been complete and accurate to the best of
21 your ability?

22 A. Yes.

23 MR. BU: No further questions.

24 MR. MANDELL: Dr. Lotan, I just have a
25 couple of really quick questions.

1 A. Yes.

2 Q. With -- and would it be fair to say that
3 that was with regard to, as you state in your
4 report, the levels of the different chemicals that
5 are associated with kidney cancer and the
6 association of those cancers -- chemicals to kidney
7 cancer?

8 A. Yes, I agree with that.

9 Q. And then there was just some back-and-forth
10 in the deposition on this issue, and we can turn to
11 the specific parts of your report for this, but is
12 it fair to say that for both Mr. Fancher and
13 Mr. Downs, ultimately your conclusion in terms of
14 the causal relationship of both of them to the water
15 at Camp Lejeune was more likely than not?

16 A. Yes, that's correct.

17 Q. Okay. And that, would you agree,
18 necessarily exceeds the as likely as not -- "at
19 least as likely as not" standard?

20 A. Yes.

21 Q. Okay.

22 A. For both patients, yeah.

23 MR. MANDELL: That's all I have.
24 That's it.

25 FURTHER EXAMINATION

1 BY MR. BU:

2 Q. Looking at page 10 that Mr. Mandell had
3 referred you to, can you recall what other levels
4 you compared -- what other levels you opined that
5 Mr. Fancher would have met?

6 A. I would have to look at the specific
7 reports to comment on that -- well, to answer your
8 question directly.

9 Q. Okay. Are there certain levels that you
10 gave more weight than others?

11 A. No. Again, I would have to look at the
12 report to see which one was the most relevant to
13 each individual case.

14 Q. Okay. Is it fair to say you gave more
15 weight to the ATSDR studies than the other levels
16 that you do not describe in your report?

17 A. I can't say that I can be specific -- that
18 specific to say which one weighed because this is
19 a -- you know, at the end of the day, a general
20 conclusion rather than saying this one report versus
21 this other report.

22 MR. BU: Can we go off record?

23 THE VIDEOGRAPHER: Off record, 3:11.

24 (Break taken, 3:11 p.m. to 3:12 p.m.)

25 THE VIDEOGRAPHER: All right. We are

1 back on the record at 3:12.

2 MR. BU: Thank you.

3 I have no further questions.

4 MR. MANDELL: I have no further
5 questions.

6 THE VIDEOGRAPHER: We're off the
7 record at 3:13.

8 (Deposition concluded at 3:13 p.m.)

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SIGNATURE

I, YAIR LOTAN, 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.

YAIR LOTAN, M.D.

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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 YAIR LOTAN, M.D.
JULY 14, 2025

I, CHRISTY R. SIEVERT, CSR, RPR, in
and for the State of Texas, hereby certify to the
following:

That the witness, YAIR LOTAN, 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;

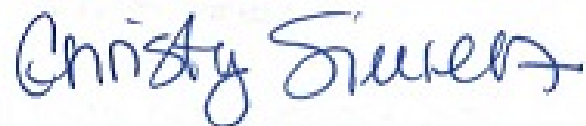
I further certify that I am neither
counsel for, related to, nor employed by any of the
parties or attorneys in the action in which this
proceeding was taken, and further that I am not

1 financially or otherwise interested in the outcome
2 of the action.

3 Subscribed and sworn to on this the 21st
4 day of July, 2025.

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CHRISTY R. SIEVERT, CSR, RPR

Texas CSR 8172

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Expiration Date: 4-30-2027

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