

Exhibit 581

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

Case No. 7:23-cv-00897

IN RE:
CAMP LEJEUNE WATER LITIGATION
This Document Relates to:
ALL CASES

DEPOSITION OF: STEVEN BIRD, M.D.

The video deposition of Steven Bird, M.D. was taken before Janine N. Leroux, Stenographic Court Reporter and Notary Public, commencing on July 18th, 2025, at the Law Office of Mandell, Boisclair & Mandell, Ltd., One Park Row, Providence, Rhode Island at the approximate hour of 9:12 a.m. Said deposition was taken pursuant to notice Rule 30 of the Federal Rules of Civil Procedure.

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1 THE VIDEOGRAPHER: We are now on the
2 record. My name is David Woodford a
3 videographer from Golkow.

4 Today's date is July 18th, 2025 and the
5 time is 9:12 a.m.

6 This is the video deposition being held
7 at the office of Mandell, Boisclair &
8 Mandell, at One Park Row, Providence, Rhode
9 Island.

10 It's being heard in the matter of
11 In Re: Camp Lejeune Water Litigation, being
12 heard before the United States District Court
13 for the Eastern District of North Carolina,
14 Civil Action No. is 7:23-cv-00897.

15 The deponent is Steven Bird, M.D.

16 Will counsel present please introduce
17 yourselves and your affiliations.

18 MR. RUZICKA: Ted Ruzicka with the PLG.

19 MR. ANWAR: Haroon Anwar and Jennifer
20 Adams for the Department of Justice.

21 THE VIDEOGRAPHER: The court reporter
22 is Janine Leroux and she will now swear the
23 witness.

24 THE COURT REPORTER: Raise your right
25 hand, please, Dr. Bird. Do you swear or

1 affirm to tell the truth, the whole truth,
2 nothing but the truth?

3 THE WITNESS: Yes, I do.

4 THE COURT REPORTER: Thank you.

5 THEREUPON:

6 STEVEN BIRD, M.D.,
7 the witness, after being first duly sworn, was
8 examined and testified as follows:

9 DIRECT EXAMINATION

10 BY MR. ANWAR:

11 Q. Good morning, Dr. Bird.

12 A. Good morning.

13 Q. My name is Haroon Anwar. I'm a -- I'm
14 here with my colleague, Jennifer Adams. We met at
15 your deposition in May. Do you recall that?

16 A. I thought it was in June, but I do
17 recall it.

18 Q. Oh, in June. Okay, yeah. You do
19 recall that?

20 A. Yes.

21 Q. Okay. It's nice to see you again.

22 Could I start by having you state your
23 -- your full name and your address on the record?

24 A. Sure. It's Steven, with a V, Bird,
25 B-I-R-D. My home address is Six Laurel Ridge Lane

1 in Shrewsbury, Mass.

2 Q. Great. You probably remember sort of
3 the rules from the last deposition. You may have
4 discussed them with -- with Ted, but I'm just
5 going to go over them quickly again today just so
6 we have a smooth deposition, as smooth a
7 deposition as possible.

8 So first and most important rule is you
9 are under oath as if you were sitting in an actual
10 court of law. Do you understand that?

11 A. Yes.

12 Q. Okay. And is there any reason today
13 that you would be unable to testify truthfully?

14 A. No.

15 Q. From time to time today I may ask a bad
16 question, I may ask an unclear question. If you
17 don't understand my question, could you please let
18 me know?

19 A. Of course.

20 Q. Otherwise I'll assume you understood my
21 question, is that fair?

22 A. That's fair.

23 Q. Okay. We'll try to take breaks every
24 hour or so, but if you need to take a break for
25 any other reason, just let me know. I'm happy to

1 accommodate you. And it's not intended to be
2 punishment at this deposition. The only
3 stipulation I'd put on that is if there's a
4 pending question, if you could answer that
5 question and then we can go on break, that would
6 be great. Can we agree to that?

7 A. Sure.

8 Q. Okay. As you know, and I'm sure you
9 recall from the last time around, we have a court
10 reporter here virtually this time typing
11 everything down. In order for her to be able to
12 type everything and get everything on the record,
13 and have the best record possible, it's important
14 for us not to speak over each other.

15 So can we try our best -- I know it's
16 human sometimes not to speak in this manner, but
17 we can try our best to -- to -- can you try your
18 best to let me finish your question, pause for a
19 second so your counsel can object if he wants and
20 then to answer my question?

21 A. I'll try.

22 Q. Okay. Thank you. Did you bring
23 anything with you to today's deposition?

24 A. I did not.

25 (Exhibit 1 was marked.)

1 BY MR. ANWAR:

2 Q. I'm going to hand you what I'm marking
3 as Exhibit 1. I'll represent to you this is the
4 initial subpoena that we issued and initial
5 deposition notice. The date of your deposition
6 got changed, so the date on this -- this copy is
7 not accurate. But I wanted to direct your
8 attention to Attachment A in the back. Have you
9 seen this document before?

10 A. I believe so.

11 Q. And did you search your records and
12 produce any documents you had that were responsive
13 to the requests in these subpoenas or in the -- to
14 the -- to the document request attached to the
15 subpoena?

16 A. Yeah. I don't think there's anything
17 responsive to this.

18 Q. Okay. We did receive invoices produced
19 from you. Do you recall providing those to your
20 lawyers?

21 A. Maybe.

22 (Exhibit 2 was marked.)

23 BY MR. ANWAR:

24 Q. Okay. And I'll hand you Exhibit 2 just
25 so you have it. These are the responses, like the

1 formal written responses we received from the
2 lawyers. Have you seen these before?

3 A. I recall reading something. I don't
4 know that it was this long.

5 Q. Okay. Fair enough. We will talk about
6 your invoices. I just wanted to ask you a few
7 questions about the initial requests.

8 Request No. 1 in the subpoena, which is
9 also reflected in the responses -- you can look at
10 either -- either one, Exhibit 1. Why don't you
11 look at the subpoena. It might be easier for you
12 in Exhibit 1.

13 It asks for communications with a
14 number of people about Camp Lejeune, including the
15 plaintiffs, the five bladder cancer plaintiffs
16 in -- in this case, in the Track 1 case that
17 you're offering opinions about.

18 Do you have any communications with any
19 of these people?

20 A. No.

21 Q. Okay. Have you communicated with any
22 of the plaintiffs in the litigation?

23 A. I don't believe so.

24 Q. And so it would then stand to reason
25 you've not communicated with any of the five

1 bladder cancer plaintiffs that you've offered
2 opinions about, correct?

3 A. That's right.

4 Q. Have you communicated with any of
5 the -- any plaintiff treating physicians in the
6 case?

7 A. Not knowingly.

8 Q. If you did you communicate with them,
9 it wasn't about the litigation, correct?

10 A. Yes, that's right.

11 Q. And it wasn't about any care or
12 treatment that the plaintiffs received related to
13 their injuries at issue in the litigation,
14 correct?

15 A. That's right.

16 Q. Okay. Have you communicated with any
17 other experts in the litigation?

18 A. No.

19 Q. Requests 2 and 3 are also primarily
20 about communications. Request 4 is about notes
21 and memos and calculations and charts related to
22 the -- the report that you pro -- you've provided.
23 And when I say "the report," we'll talk about
24 them. But specifically now focusing on your
25 Phase III reports about the individual plaintiffs,

1 I understand that you -- you submitted a general
2 causation report as well, correct?

3 A. I did but don't know what Phase III
4 means.

5 Q. Okay. We're talking -- so you -- do
6 you recall submitting a report that was focused --
7 like a more general report focused on general
8 causation?

9 A. Yes.

10 Q. Okay. And then do you recall
11 submitting five reports that relate to individual
12 plaintiffs?

13 A. And bladder cancer, yes.

14 Q. Okay. Yeah. So we're not talking
15 about the general report now. But as it relates
16 to the five bladder cancer plaintiffs, do you have
17 any materials, aside from drafts of your report,
18 notes, memos, calculations, tables that are sort
19 of other information that relate to your opinions
20 that -- that is not reflected in the reports that
21 you provided?

22 A. I don't have anything.

23 Q. Okay. Have you -- have you published
24 or lectured at all related to Camp Lejeune water?

25 A. I don't believe so.

1 Q. Okay. You can set that aside for a
2 moment. Thank you.

3 (Exhibit 3 was marked.)

4 BY MR. ANWAR:

5 Q. I'm going to hand you now what I'm
6 marking as Exhibit 3. These are invoices that we
7 received in response to the document subpoena that
8 we served. Do you recall these?

9 A. Yes.

10 Q. Okay. Are these the invoices
11 reflecting the work you've done in the Camp
12 Lejeune litigation?

13 A. Yes.

14 Q. And it looks like to me there are
15 really two separate invoices. There's one dated
16 January 1, 2024 and it reflects work that you did
17 during the period of August 2024 to December 2024
18 for a total amount billed of 177,900, is that
19 right?

20 A. That's right.

21 Q. And does this -- does this invoice
22 relate to your general causation report?

23 A. Yes.

24 Q. And then there's a second invoice.
25 It's dated February 29 it says 2024, but I believe

1 that should be 2025, is that correct?

2 A. Oh, yeah, that's right.

3 Q. And then it reflects a number of
4 charges or entries for work that you performed
5 between January 2025 to February 7, 2025, is that
6 right?

7 A. Yes.

8 Q. And it reflects a total amount of
9 37,658, is that right?

10 A. That's right.

11 Q. Okay. Do you have any -- have you
12 performed any additional work since then or do you
13 have any other invoices that -- or charges that
14 aren't reflected on these invoices?

15 A. I don't have another invoice, but I did
16 spend time preparing for today's deposition.

17 Q. Understood. Do you intend to, at some
18 point, issue an invoice for the time spent
19 preparing for the deposition?

20 A. Yes.

21 Q. And when you invoice -- when you issue
22 that invoice, do you have any -- would you --
23 would you be able to provide that to your counsel
24 to provide to us?

25 A. Of course.

1 Q. Okay. Thank you. You'll obviously
2 provide it to your counsel today.

3 And so just adding these two invoices
4 up, it looks like today, not including the time
5 spent preparing for your deposition, you've been
6 paid about \$215,558, that's what I've calculated.
7 Does that, give or take, seem about right to you?

8 A. I think so.

9 Q. What percentage of your income comes
10 from expert witness work?

11 A. It varies over time.

12 Q. Could you provide a ballpark, anything
13 like a range over time as a high and low?

14 A. Five to 25 percent perhaps.

15 Q. Okay.

16 (Exhibits 4-8 were marked.)

17 BY MR. ANWAR

18 Q. I'm going to hand you five documents.
19 Mark Exhibit 4 is your report for Criswell,
20 Exhibit 5 is your report for Edward Raymond,
21 Exhibit 6 is your report for -- related to Mark
22 Cagiano, Exhibit 7 is your report related to Jimmy
23 Laramore, and then Exhibit 8 is your report
24 related to Terry Dyer.

25 Do you recognize these documents to be

1 the five reports you issued related to the five
2 bladder cancer patients that we discussed?

3 A. Yes.

4 Q. And you prepared and signed all five of
5 these reports, correct?

6 A. That's right.

7 Q. All of them are dated February 7, 2025,
8 correct?

9 A. That's right.

10 Q. And then you submitted -- I believe
11 these are -- are corrected versions of these
12 reports on June 11, 2025, correct?

13 A. That's right.

14 Q. Do you -- do you recall what
15 corrections were made or why?

16 A. I actually can't remember now if a
17 correction was in each one. But, for instance,
18 with Edward Raymond, he was not -- he was not at
19 Camp Lejeune in the time period of 1972 to '85, so
20 some of the calculations I thought would be
21 different.

22 I also recall that either part of my
23 general causation report -- I think that's what it
24 was. Part of my general causation report and
25 exposure kind of assessment got copied into -- or

1 inadvertently copied or pasted into my specific
2 causation reports, and I felt to be correct that
3 that should be corrected.

4 Q. Understood. And you just referred to
5 your five bladder cancer plaintiff reports as your
6 specific causation reports. If I refer to them as
7 your specific causation reports, will you -- will
8 you understand what I mean?

9 A. Yes, these five.

10 Q. Okay.

11 (Exhibit 9 was marked.)

12 BY MR. ANWAR:

13 Q. I'm going to hand you what I'm marking
14 as Exhibit 9. Do you recall this document?

15 A. Yes. This looks to be the corrected
16 Appendix 3 from the report of Dr. Reynolds.

17 Q. And this is for Terry Dyer, your
18 report -- your specific causation report for Terry
19 Dyer, correct?

20 A. That's right.

21 Q. Do you recall why you made this
22 correction?

23 MR. RUZICKA: Objection, form.

24 A. Well, I think Dr. Reynolds made the
25 correction.

1 Q. Okay.

2 A. And I can't remember now. I think it
3 had to do with the summed variable totals which is
4 on the penultimate page, or maybe it's the last
5 page, of this corrected version. I think there
6 were some -- I don't remember the details now.

7 Q. Okay. So -- so Dr. Reynolds made the
8 corrections. And because your report relies on
9 Dr. Reynolds' calculations, you -- you updated
10 the -- the appendix that you had attached to
11 Ms. Dyer's report, is that right?

12 A. Yes. Although my recollection is that
13 I actually had the same tables from Dr. Reynolds'
14 report in my original report. I don't think my
15 table changed.

16 Q. Okay.

17 A. I believe that's correct.

18 Q. Okay.

19 (Exhibit 10 was marked.)

20 BY MR. ANWAR:

21 Q. I'm going to hand you what I'm marking
22 as Exhibit 10. I'll just represent to you
23 Exhibit 10 is a letter that we received from the
24 lawyers in -- in the case summarizing the
25 correct -- the June 11, 2025 corrections that were

1 made to your specific causation reports. Do you
2 -- have you ever seen this letter?

3 A. I don't believe so.

4 Q. Okay. Does this letter, to the best of
5 your knowledge and recollection, accurately
6 reflect the corrections that were made between
7 your original specific causation reports that were
8 provided on February 7th and the corrected
9 versions that were provided on June 11th?

10 A. Yes.

11 Q. Okay. Did anyone help you prepare your
12 specific causation reports?

13 A. What do you mean?

14 Q. Did you have any assistants help you
15 prepare your specific causation reports?

16 A. The words are all mine. There was
17 certainly discussions with counsel.

18 Q. But the words are all yours and you
19 stand by the opinions in the report?

20 A. Yes.

21 Q. Does each of your specific causation
22 reports contain a complete statement of your
23 opinions in the case about the -- the five bladder
24 cancer patients or plaintiffs?

25 A. I believe that's correct.

1 Q. And each of the five specific causation
2 reports contains the bases and the reasons for
3 your opinions in the five bladder cancer cases?

4 A. Well, there was also -- there's more
5 information in my general causation report, so I
6 think given those two things, that's the basis for
7 my opinions.

8 Q. Okay. Would it -- would it be fair to
9 say you have no opinions in this litigation other
10 than those that were disclosed in your general
11 causation report and your specific causation
12 reports?

13 A. I think that's fair. If there were new
14 scientific evidence that would come out, I would
15 perhaps amend or add to my opinions. But as of
16 now, that's it.

17 Q. Understood.

18 A. I just realized Exhibit 8 is not
19 marked. Can we -- do you mind just scribbling an
20 8 on there?

21 Q. Sure. I think I gave you the wrong
22 one. I took the marked one out. 8 is Dyer,
23 right?

24 A. Yes.

25 Q. Okay. And at the beginning of our

1 conversation today, I think you -- you mentioned
2 your recollection being that you were deposed
3 about your general causation report in June. My
4 records indicate it was May 14, 2025. Does that
5 -- do you have any reason to dispute that?

6 A. No, none.

7 Q. Okay.

8 (Exhibit 11 was marked.)

9 BY MR. ANWAR:

10 Q. I'm handing you what -- and sorry for
11 the badges -- what is being marked as 11,
12 Exhibit 11. Do you recognize this document to be
13 your materials considered list for your five
14 specific causation reports for the bladder cancer
15 plaintiffs?

16 A. Yes.

17 Q. Okay. Had you seen this document
18 before, prior to today?

19 A. Not in this form at least.

20 Q. But as you sit here today, to the --
21 having had an opportunity to review this document,
22 does this reflect all of the materials you
23 considered in forming your opinions for the five
24 specific causation reports?

25 A. I believe so.

1 Q. I notice some of the plaintiff-specific
2 records include military records, housing records,
3 NARA records, those sort of things. Do you have
4 any particular training or experience in reviewing
5 military records?

6 A. Sure. I was in active duty military
7 for four years.

8 Q. Okay. And did that -- did that
9 experience sort of inform how you reviewed those
10 records?

11 A. I don't know.

12 Q. Did you review all the records, the
13 materials considered on your Materials Considered
14 List personally?

15 A. Yes.

16 (Exhibit 12 was marked.)

17 BY MR. ANWAR:

18 Q. And I'm going to hand you what is being
19 marked as Exhibit 12, and I'll represent to you
20 that I think this week were we provided with this
21 Supplemental Materials Considered -- Considered.
22 Do you recognize this document?

23 A. Yes. It's also attached at the end of
24 Exhibit 11.

25 Q. Oh, is it? Okay. No, maybe it got

1 stapled. It should be separate, but it's fine.

2 And this -- this document reflects the
3 rough deposition transcript of Benjamin Hatten,
4 correct?

5 A. That's right.

6 Q. Okay.

7 MR. RUZICKA: Do we want to remove that
8 last page?

9 MR. ANWAR: Yeah, we can do that.

10 A. It's actually there I think four
11 copies.

12 Q. Yeah. You can just rip that it off.
13 Thank you. I can take those.

14 Between your -- between Exhibit is it
15 10 and 11 and your materials considered list and
16 your supplemental materials considered list, do
17 those two documents contain all of the materials,
18 data, facts that you considered in forming your
19 opinions in the five -- for the bladder cancer
20 plaintiffs?

21 A. I believe so, yes.

22 Q. Okay. Thank you. On page I believe
23 it's 5 of your Materials Considered List -- wait,
24 it may be Page 4 -- it looks like you reviewed the
25 expert reports of Kyle Longley, Morris Maslia, and

1 I know in your report you reviewed I think the
2 expert report of Dr. Kelly Reynolds, is that
3 right?

4 A. That's right.

5 Q. Did you find any errors or anything you
6 disagree with in their reports?

7 A. Nothing that stood out.

8 Q. Did you review any reports authored by
9 other plaintiffs' experts?

10 A. I don't believe so.

11 Q. If during the course of our
12 conversation something pops up and, you know, you
13 remember reviewing something else, can you let me
14 know?

15 A. Absolutely.

16 Q. Now, in your Supplemental Materials
17 Considered List, it identifies the rough
18 deposition transcript of Benjamin Hatten, correct?

19 A. That's right.

20 Q. Aside from Dr. Hatten's transcript,
21 deposition transcript, have you reviewed
22 deposition transcripts of any other plaintiffs'
23 experts in the case?

24 A. Did you say "plaintiffs' experts"?

25 Q. Correct.

1 A. I also reviewed the deposition of
2 Dr. Bove and Dr. Maslia, but I don't know if those
3 are fact witnesses or what they would be called.

4 Q. Understood. Aside from their -- their
5 depositions, have you reviewed any other
6 deposition transcripts of any -- any experts in
7 the case?

8 A. I read the deposition transcript of
9 Dr. Goodman, and I think that's it.

10 Q. Understood. And if I remember
11 correctly from your -- your last deposition, did
12 you also review the expert report of Dr. Goodman?

13 A. Reports plural.

14 Q. Correct. The -- the five reports I
15 believe she issued?

16 A. However many it was, yes.

17 Q. Okay. Did you review the reports of
18 Dr. John Lipscomb?

19 A. The name sounds familiar, but I don't
20 recall reading a report.

21 Q. Okay. What about Dr. Michael McCabe?

22 A. Again, the name sounds familiar, but I
23 don't recall a report.

24 Q. Do you recall reviewing the report of
25 Dr. Peter Shields?

1 A. Oh, yes. Yes, I do recall that.

2 Q. How about the reports of Dr. Judy
3 LaKind and Dr. Lisa Bailey?

4 A. I don't recall.

5 Q. Did you review any of the reports from
6 the United States bladder cancer expert Dr. Max
7 Kates?

8 A. No.

9 Q. Did you review any of the reports from
10 the United States Phase I -- and when I say
11 Phase I, I guess, water modeling experts?

12 A. I did not.

13 Q. Sitting here as we're talking now, are
14 there any other expert reports that you recall
15 reviewing in the case?

16 A. No.

17 Q. Now, to your -- attached to your
18 general causation report, there was a copy of your
19 curriculum vitae and your prior testimony. Do you
20 recall that?

21 A. Yes.

22 Q. And that CV was dated November 2024.
23 Do you recall that?

24 A. I think so.

25 Q. Okay. Is that CV still a complete

1 representation of your educational and employment
2 background?

3 A. Yes.

4 Q. Is there anything to add since November
5 of 2024?

6 A. There's been I think one publication,
7 maybe two. I think we talked about one of them in
8 my -- my general causation deposition.

9 Q. Okay. Can -- can you remind me what
10 the one or two publications are or were?

11 A. Yes. One was looking at -- at the use
12 of antipsychotics and the increase in prolactin
13 and increased risk of breast cancer.

14 Q. Okay.

15 A. I think that may be the only one that
16 was published since then.

17 Q. Okay. And aside from that one
18 publication, your CV is complete and up-to-date?

19 A. More or less.

20 Q. When you say more or less, what do you
21 mean?

22 A. Well, I -- I've been a full professor
23 now for nine years, so I don't add lectures or
24 when I'm asked to give a presentation somewhere, I
25 largely don't include those anymore.

1 Q. Understood. With the exception of your
2 general causation deposition, the one in this case
3 back in May, have you testified at trial or in a
4 deposition since then?

5 A. Yes.

6 Q. Can you tell me about that?

7 A. Not in trial but a deposition in a med
8 mal case.

9 Q. Okay. Well, can you -- what were the
10 circumstances of the med mal case?

11 A. It had to do with failure to tell a
12 patient that there was a mass in her lung.

13 Q. Is that -- is that case ongoing?

14 A. I have no idea.

15 Q. Did you testify or did you offer
16 opinions about the standard of care in that?

17 A. Yes.

18 Q. Were you retained by the plaintiff or
19 the defendant?

20 A. The plaintiff. And I have testified,
21 sorry, in a Zantac trial since May 14th.

22 Q. When did -- to the best of your
23 knowledge, I'm not holding you precisely to the
24 date, when did that trial take place?

25 A. Two or three weeks ago.

1 Q. Where did it take place?

2 A. Chicago.

3 Q. And were you offering opinions on
4 general causation in that case?

5 A. I'm not sure.

6 Q. Okay. What types of opinions were you
7 offering in that case?

8 A. Well, it was specifically -- it was
9 a -- a plaintiff with cancer.

10 Q. Were you testifying on behalf of the
11 plaintiff or the defendant?

12 A. Plaintiff.

13 Q. And high level, what was the thrust of
14 your opinion in that case?

15 A. That the amount of NDMA in Zantac was a
16 substantial causative factor for the person's
17 cancer.

18 Q. Do you have any knowledge about what
19 the result of that trial was?

20 A. Yes. It was a defense verdict.

21 Q. Did that trial take place, do you know,
22 in Federal or State Court in Chicago?

23 A. I believe it's State.

24 Q. So like Cook County Court?

25 A. Yes.

1 Q. Do you have a copy of your trial
2 transcript from that case?

3 A. No.

4 Q. So there was the med mal deposition and
5 the Zantac trial testimony. Aside from those two
6 instances, have you testified at all between
7 your -- your prior deposition in this case and
8 today?

9 A. No.

10 Q. Do you -- do you recall the name of the
11 plaintiff in the Zantac trial?

12 A. It was Caston.

13 Q. Can you spell that?

14 A. C-A-S-T-O-N.

15 Q. Thank you. I've had an opportunity to
16 review your -- your CV and obviously was here for
17 your -- your deposition last time. As I
18 understand it, you're not an attorney, correct?

19 A. I am not an attorney.

20 Q. Okay. And you don't have any sort of
21 Juris Doctor degree, correct?

22 A. That's right.

23 Q. I saw some case law listed in your
24 materials considered. Do you recall that? Do you
25 know what I'm talking about?

1 A. Yes.

2 Q. Okay. Why did you review case law in
3 forming your opinions?

4 A. Well, it's been a while since I
5 reviewed that. My recollection is it was in an
6 effort to understand the -- some of the standards
7 that have been applied in other cases.

8 Q. Do you remember -- do you have any
9 recollection about any of the specific cases that
10 you reviewed?

11 A. I remember the word Atorvastatin in one
12 and either Dix or Nix, N-I-X or D-I-X. Maybe
13 there was DuPont. That's about all I remember.

14 Q. And I think you said you reviewed those
15 to sort of inform your opinions about -- or inform
16 yourself about the standards in -- in the case.
17 How did those cases inform you about the standards
18 in the case, or how did they inform your opinions?

19 A. I'm not sure that they did.

20 Q. Now, you're not an epidemiologist,
21 correct?

22 A. I use epidemiology all the time, but
23 I'm not a certified epidemiologist.

24 Q. Okay. And you don't have a
25 certification in epidemiology, right?

1 A. That's correct.

2 Q. You've never been a Principal
3 Investigator for an epidemiological study,
4 correct?

5 A. I agree with that.

6 Q. You've never published peer-reviewed
7 literature on epidemiology, right?

8 A. I believe that's correct.

9 Q. You've never taught any courses on
10 epidemiology, correct?

11 A. Not full courses, no.

12 Q. Have you taught partial courses on
13 epidemiology?

14 A. I don't know about -- well, I have
15 participated in one at the Harvard School of
16 Public Health, but I also as part of my job as a
17 residency director and the division chief of
18 toxicology, discuss epidemiologic principles as
19 part of the curriculum for those trainings.

20 Q. Understood. What -- what was the
21 course at Harvard?

22 A. I can't remember the name of the
23 course, but it's MP -- it's a course -- it's part
24 of MPH at the school of public health.

25 Q. What was your role with that course?

1 A. Discussing various exposures with the
2 MPH students.

3 Q. Were you brought in as a guest or were
4 you a lecturer in that course?

5 A. I guess I was a guest lecturer.

6 Q. Okay. Were you a guest lecturer for
7 one class or for multiple classes?

8 A. For one class several times.

9 Q. I see. So it was the same lecture
10 several times?

11 A. I'm not sure it was the same. It might
12 have been similar.

13 Q. Okay. Do you recall what the lectures
14 were about?

15 A. It had to do with exposures, and I
16 don't even recall now.

17 Q. When you say "exposures," do you mean
18 environmental exposures?

19 A. Yes.

20 Q. Do you recall anything about the type
21 of environmental exposures you were discussing in
22 that class?

23 A. I don't.

24 Q. I assume it had nothing to do with Camp
25 Lejeune water?

1 A. I assume that's correct.

2 Q. Do you recall approximately when you --
3 you were a guest lecturer for that Harvard course?

4 A. The last time would have been before
5 COVID.

6 Q. Now, as I understand it, you're a board
7 certified -- you're board certified as a medical
8 toxicologist, correct?

9 A. In emergency medicine.

10 Q. Okay. In emergency medicine, correct.
11 And so -- just so the record is clear,
12 you're board certified as a medical toxicologist
13 and as an emergency physician, correct?

14 A. That's right.

15 Q. And medical toxicology is a
16 subspecialty of emergency medicine, correct?

17 A. That's right.

18 Q. Medical toxicology and sort of more
19 broadly, toxicology are distinct fields, correct?

20 A. I'm sorry, I don't understand.

21 Q. Yeah. Are -- what's the difference
22 between the field of medical toxicology and the
23 field of toxicology?

24 A. Well, the biggest difference is medical
25 toxicology are physicians. Toxicologists usually

1 are not or usually Ph.D.s, and they both
2 involve -- well, physicians involve
3 patient-related care but also assessments and data
4 interpretation. Often toxicologists may run a
5 lab, have expertise in determining concentrations
6 of substances, et cetera, but there's certainly
7 overlap.

8 Q. According to the American Board of
9 Emergency Medicine, and I'm quoting now, they say
10 that medical -- quote, medical toxicologists are
11 physicians who specialize in the prevention,
12 evaluation, treatment and monitoring of injury and
13 illness from exposures to drugs and chemicals as
14 well as biological and radiological agents.

15 Would you agree with that?

16 A. Largely. I don't know that we do a lot
17 in prevention necessarily.

18 Q. And then they go on to say, and I'll
19 quote, this is the American Board of Emergency
20 Medicine, quote, medical toxicologists care for
21 people in clinical, academic, governmental and
22 public health settings and provide poison control,
23 center leadership. And important areas of medical
24 toxicology include acute drug poisoning, adverse
25 drug events, drug abuse, addiction and withdrawal,

1 chemicals and hazardous materials, terrorism
2 preparedness, venomous bites and stings and
3 environmental and workplace exposures.

4 Would -- would you agree with that?

5 A. Generally

6 Q. Okay. Would you agree that medical
7 toxicology is a clinical focus field?

8 A. Part of it is. Part of it may not be.
9 It depends on personal circumstances.

10 Q. To the extent it's not a
11 clinically-focused field, what would it be
12 focused on?

13 A. Well, medical toxicologists who run
14 labs and principally do research, clinical or
15 basic research, and may not do a lot of
16 patient-focused work.

17 Q. Would you agree that more broadly
18 speaking toxicology as a field is a -- is a
19 research focus field?

20 A. It may. There may be people who are
21 research focus and there are others who have --
22 medical toxicologists who have no research focus,
23 and it's all clinically related.

24 Q. Are you aware of any sort of -- I think
25 earlier the distinction you made was medical

1 toxicologists typically are medical doctors and
2 toxicologists are typically like masters or
3 Ph.D.s, is that right?

4 A. I agree with that.

5 Q. Are you aware of any Ph.D.
6 toxicologists that have a clinical aspect to
7 their -- their focus?

8 A. There certainly are some with their
9 practice being at a poison center.

10 Q. What is your focus in medical
11 toxicology either on the clinical side or the
12 research side?

13 A. Well, I'm our division chief of medical
14 toxicology, so I am the chief of the largest or
15 second largest group in the country of
16 toxicologists. We have 10 toxicologists, four
17 fellows.

18 So I oversee kind of all the enterprise
19 within that including our consultation service,
20 our medical toxicology clinic, our research
21 enterprise, our on-call service, pretty much all
22 of it.

23 Q. Do you have a particular focus -- focus
24 -- let me start on the research side. To the
25 extent that you do research within your -- the

1 scope of your profession as a medical
2 toxicologist, do you have a focus in terms of your
3 research?

4 A. No.

5 Q. And then on the -- on the clinical
6 side, do you have a focus in terms of sort of the
7 types of patients you treat or the types of
8 clinical care you're involved with?

9 A. No.

10 Q. Do you have a certification in
11 toxicology?

12 A. I don't even know what that is.

13 Q. I think I saw you're obviously board
14 certified in medical toxicology, correct?

15 A. Right.

16 Q. Okay. Have you ever been a Principal
17 Investigator for a toxicological study?

18 A. Sure.

19 Q. Can you tell me about that?

20 A. Well, with my former lab as the PI for
21 a lab, I've been involved in a number of
22 publications with toxicology. I helped set up the
23 toxic database, which is a nationwide database.
24 So I think in those, that's my experience.

25 Q. Well, for the lab where you were the

1 PI, what was the focus of that lab? Like what was
2 the research interest?

3 A. Organophosphorus pesticides.

4 Q. And what was your -- your interest in
5 those types of pesticides?

6 A. They're intellectually very
7 interesting. They are also very similar to the
8 military nerve agents, so that was also of
9 interest.

10 Q. Were you comparing them to other
11 pesticides or chemicals, or were you looking at
12 how those pesticides interact with humans?

13 A. Mostly looking at the effects and
14 looking for countermeasures against exposures or
15 poisonings.

16 Q. Effects in humans?

17 A. Yes.

18 Q. Have you published any peer-reviewed
19 literature on toxicology?

20 A. Sure.

21 Q. All right. And that would be -- would
22 those -- would that be reflected in your CV?

23 A. Yes.

24 Q. Have you taught any courses on
25 toxicology?

1 A. Well, I mean, I'm the division chief of
2 toxicology, and we have four fellows. It's a
3 24-month training program. I don't know if
4 program is the right word, but it's a 20-month --
5 24 month training. And so every week we have at
6 least two hours of direct face-to-face teaching
7 for the curriculum of the medical toxicology.

8 Q. Okay. And I was going to say is
9 that -- is that the medical toxicology program at
10 UMass?

11 A. Yes.

12 Q. Are you based out of Boston?

13 A. No.

14 Q. Are you based out of Providence?

15 A. No.

16 Q. Where are you headquartered or based
17 out of?

18 A. Worcester, Mass.

19 Q. I got you. Okay.

20 Your CV says, the version of your CV
21 that we have, that you're currently Chief of
22 Medical Toxicology at UMass Memorial Health, is
23 that right?

24 A. Yes.

25 Q. Okay. On the website it says -- on the

1 UMass website it says you're Chief Experience
2 Officer in the Division of Medical Toxicology at
3 UMass. What's a chief experience officer?

4 A. Well, what you read there doesn't make
5 any sense. I was formerly the clinician
6 experience officer, the CXO, but I don't know what
7 site you're getting that from, but what you read
8 doesn't make any sense.

9 Q. Okay. So you're not familiar with that
10 term chief -- chief experience officer?

11 A. No. Particularly when you -- it said
12 Chief Experience Officer of Division of Medical
13 Toxicology?

14 Q. Yeah.

15 A. Yeah, that doesn't make any sense.

16 Q. Okay. So you're not familiar with
17 that.

18 A. That doesn't exist.

19 Q. Okay. I will just represent to you,
20 and we can look at it at a break, there's a UMass
21 website that has -- has that out there, like a
22 picture of you with that title, but you're not --
23 it sounds like you're not familiar with that at
24 all.

25 A. That title doesn't exist.

1 Q. Okay. In looking at your CV, is it
2 correct to say that you don't have any degrees in
3 environmental health?

4 A. I agree with that.

5 Q. And you don't have any degrees in
6 occupational medicine?

7 A. Correct.

8 Q. You don't have any degrees in
9 industrial hygiene?

10 A. Correct.

11 Q. And I think we may have asked you these
12 at your last deposition, but I just want to be
13 sure. You've never published peer-review
14 literature regarding whether TCE causes bladder
15 cancer, correct?

16 A. That's right.

17 Q. And you've never published
18 peer-reviewed literature regarding whether PCE
19 causes bladder cancer, right?

20 A. That's right.

21 Q. You've never published peer-review
22 literature regarding whether vinyl chloride causes
23 bladder cancer, right?

24 A. That's right.

25 Q. And then you've never published

1 peer-reviewed literature regarding whether benzene
2 causes bladder cancer, correct?

3 A. That's right.

4 Q. Okay. We -- we've touched on this a
5 little bit already. As a -- as an emergency
6 physician, an emergency room physician, what
7 percentage of your work is spent treating patients
8 versus research?

9 A. Well, all my time is clinical now other
10 than as the administrator, as the Division Chief
11 of Medical Toxicology.

12 Q. And when you say "clinical," does that
13 consist entirely of treating patients or are you
14 including within that definition the training you
15 do of other physicians?

16 A. Yeah. So those are separate. So I
17 guess a quarter of my time is devoted to
18 administration of medical toxicology, which is
19 seeing patients, teaching residents and fellows,
20 and then the rest of my time is clinical seeing
21 patients.

22 Q. And are you seeing patients in -- and
23 this is -- forgive me because I know it might be
24 my own ignorance about sort of emergency room
25 physicians. Are you exclusively working out of

1 the emergency room then?

2 A. As an emergency physician, yes. In
3 medical toxicology, no.

4 Q. Can you break down your time between
5 serving as an emergency room physician versus a
6 medical toxicologist?

7 A. I can't.

8 Q. You can't. Do you think it's 50/50?

9 A. I -- I don't want to say it's
10 impossible, but I can't imagine a way to be able
11 to divide it up.

12 Q. Is that because the medical toxicology
13 aspect comes into play as you're treating patients
14 in the emergency room?

15 A. It does. In addition when we're
16 on-call for toxicology, we're on for 24 hours at a
17 time whether I'm working in the ER or not that
18 day. And so how -- it's kind of hard to -- I
19 don't know how it's possible to divide it up.

20 Q. Are you seeing anyone that's coming
21 into the ER essentially?

22 A. As an emergency physician, yes.

23 Q. Can you -- just so I have an
24 understanding of the flavor of issues you
25 encounter in your day-to-day, what are sort of the

1 ranges of issues you see as an emergency room
2 physician?

3 A. Everything, name it.

4 Q. You tell me.

5 A. Everything.

6 Q. Okay. Have you treated a patient with
7 bladder cancer?

8 A. Yes. I told someone last month that
9 she had bladder cancer.

10 Q. Were you the diagnosing physician?

11 A. Yes.

12 Q. And then did you refer that patient to
13 a urologist?

14 A. Yes.

15 Q. As the diagnosing physician, were you
16 the physician -- how did you diagnose the bladder
17 cancer in that patient?

18 A. Actually to be absolutely accurate, I
19 didn't tell the patient. I told her daughter
20 because the patient said if you tell me I have
21 cancer, I will kill myself.

22 Q. Oh, no.

23 A. So I told the daughter that she had
24 bladder cancer. The patient had gross hematuria.
25 It didn't clear with continuous bladder

1 irrigation. Ultrasound looked like there was a
2 mass, CT scan demonstrated a mass.

3 Q. Do you have any ballpark on how many
4 patients you have diagnosed with bladder cancer?

5 A. In 30 years, I have no idea.

6 Q. Of the patients you see on a day-to-day
7 basis, let's just say -- even say for, you know,
8 the past month, do you have any idea of sort of
9 the percentage of the patients that you've -- your
10 patients that consist of patients that were
11 diagnosed with bladder cancer?

12 A. In the last month, I only diagnosed one
13 patient with bladder cancer. I don't know if
14 there were others who had it who had been treated
15 or who were undergoing treatment, I just don't
16 recall.

17 Q. The -- the patient that you saw last
18 month where you diagnosed her with bladder cancer,
19 were you able to determine a cause of her bladder
20 cancer?

21 A. No.

22 Q. Did you perform a differential
23 diagnosis or etiology on that patient?

24 A. No.

25 Q. When you're treating patients that come

1 into the emergency room, do you typically perform
2 a differential diagnosis or etiology?

3 A. Yeah. So -- well, we virtually always
4 do a differential diagnosis so -- as opposed -- in
5 that patient I did do a differential diagnosis.
6 That is what's the differential diagnosis of gross
7 hematuria? We sometimes do a differential
8 etiology -- we -- we do that more in toxicology I
9 suspect than emergency medicine. So sometimes we
10 do, sometimes we don't.

11 Q. Out of all the patients that you've
12 treated -- well, strike that. Let me ask it this
13 way.

14 During the course of your career, have
15 you diagnosed more than one patient with bladder
16 cancer?

17 A. Sure.

18 Q. And out of all of the patients that
19 you've diagnosed with bladder cancer throughout
20 the course of your career, how many of them were
21 you able to identify a cause?

22 A. I don't know that I did a differential
23 etiology for any of them.

24 Q. How come?

25 A. Because I've got the patient right

1 there in front of me with bloody urine and a
2 tumor.

3 Q. Do you -- do you typically take a
4 physical and history of the patient?

5 A. Sure.

6 Q. And can you walk me through the types
7 of questions you ask when taking a history, a
8 patient's history?

9 A. Well, it certainly depends on what the
10 patient is there for and how sick they are. And
11 if -- so oftentimes all of the questions that --
12 or the detailed questions I may ask for a
13 toxicology patient wouldn't be relevant for a
14 patient with a broken toe for instance.

15 Q. What types of questions would you ask
16 for a toxicology patient?

17 A. So medical history, medications, past
18 surgical history, allergies, social history,
19 family history, occupational history and then
20 questions specifically related to why they are
21 there, the reason I'm seeing them.

22 (Interruption by one of the Zoom
23 participants.)

24 MR. RUZICKA: Janine, are you okay?
25 Can you hear us?

1 THE COURT REPORTER: I'm fine. People
2 just keep coming in and out of the room.

3 MR. RUZICKA: Okay.

4 THE COURT REPORTER: Like a lot. So
5 that's what's happening.

6 MR. RUZICKA: Okay. Everyone please
7 mute if you're on Zoom.

8 THE COURT REPORTER: All right. We're
9 good.

10 BY MR. ANWAR:

11 Q. Okay. You mentioned social history.
12 Does that include -- is that like drinking and
13 smoking?

14 A. Drinking, smoking and other drug use,
15 yes.

16 Q. And did you also say occupational
17 history?

18 A. Yes.

19 Q. What types of questions do you ask
20 about occupational history?

21 A. Are you working? If no, did you
22 formerly work? What did you do? That kind of
23 stuff.

24 Q. Are there any particular types of
25 questions you ask patients that come in with

1 symptoms like hematuria or that you may suspect of
2 having bladder cancer or urologic issues?

3 A. Not usually because I'm there to figure
4 out what's wrong with them, so more of a
5 differential diagnosis than the etiology.

6 Q. Understood. For that -- that bladder
7 cancer patient last month, did you do any other --
8 did you do any other testing like a cystoscopy or
9 cytology or anything like that?

10 A. No. I referred her or actually
11 transferred her to -- to be admitted for it
12 because her urine wouldn't clear with continuous
13 bladder irrigation.

14 Q. Okay. To the best of your knowledge,
15 have you ever treated any patient that -- that
16 spent time at Camp Lejeune?

17 A. I know one for sure, and I'm sure there
18 have been others in my 30 years.

19 Q. Who is the one that you know for sure?
20 Not the name but what did the patient -- the one
21 that you know for sure, what did that patient come
22 in for?

23 A. A transient ischemic attack.

24 Q. And what is a transient ischemic
25 attack?

1 A. TIA, some people refer to them as
2 ministrokes.

3 Q. How did you -- if you recall, how did
4 you learn that that patient had -- had spent time
5 at Camp Lejeune?

6 A. Because he told me.

7 Q. Did you identify a cause of his
8 transient ischemic attack?

9 A. I don't -- I did not. And I note he
10 was admitted to observation for a number of tests,
11 and I don't know that a cause was identified.

12 Q. I understand. Aside from that specific
13 patient, do you recall any other specific patients
14 that have told you they served at Camp Lejeune or
15 they spent time at Camp Lejeune?

16 A. No.

17 Q. Has any patient ever asked you if their
18 bladder cancer was caused exposure to water at
19 Camp Lejeune?

20 A. No.

21 Q. And earlier I think you said you've --
22 in the patients that you've seen that were
23 diagnosed with bladder cancer, that you diagnosed
24 with bladder cancer, you did not determine a
25 cause, correct?

1 A. I didn't endeavor to determine a cause.

2 Q. So would it be fair to say in those
3 cases there was -- the discussion or topics of
4 exposure to -- to chemicals like TCE, PCE, vinyl
5 chloride, benzene didn't come up?

6 A. That's correct.

7 Q. Is it fair to say your practice doesn't
8 require you to be familiar with TCE, PCE, vinyl
9 chloride, benzene?

10 MR. RUZICKA: Objection, form.

11 A. I don't understand the question.

12 Q. Have you ever had a conversation with a
13 patient that you're treating about exposure to
14 TCE, PCE, vinyl chloride or benzene?

15 A. I'm not sure. I don't recall.

16 Q. And I'm sorry if I already asked you
17 this question, but aside from your work in this
18 litigation, have you ever given a presentation or
19 spoken publicly about Camp Lejeune?

20 A. I don't think so. I am trying to
21 remember if I've talked at all about the chemicals
22 of interest in Camp Lejeune as part of our
23 toxicology teaching. I'm not sure.

24 Q. Nothing that you can recall as you sit
25 here today?

1 A. Correct.

2 Q. Do you consider yourself an expert in
3 risk assessment?

4 A. I may. It depends on the -- the topic
5 of interest.

6 Q. What -- what topics would you consider
7 yourself an expert on in risk assessment?

8 A. Well, it depends on, I mean, lots of
9 things some of which I see, you know, every day or
10 every week as a toxicologist, so some exposures,
11 typically drug exposures.

12 In this case, I've read a lot of
13 literature and a lot of government reports and
14 other things regarding TCE, PCE, benzene, vinyl
15 chloride and the water concentrations at Camp
16 Lejeune, so I consider myself an expert.

17 Q. Okay. Prior to your involvement in
18 this litigation, would you have considered
19 yourself an expert on risk assessment regarding
20 the chemicals at issue in the case, TCE, PCE,
21 benzene, vinyl chloride?

22 A. Probably not.

23 Q. Have you taken any college or
24 graduate-level courses related to risk
25 assessment?

1 A. No.

2 Q. Have you taken the Mid-America
3 Toxicology Course?

4 A. Mid-America Toxicology, never heard of
5 it.

6 Q. Have you taken any courses in
7 environmental risk assessment?

8 A. Nothing outside of my toxicology
9 training at UMass.

10 Q. In your toxicology training at UMass,
11 was there a component focused on environmental
12 risk assessment.

13 A. I suspect. It's been 20 some years, so
14 I don't recall what the curriculum exactly was 20
15 years ago.

16 Q. Okay. Understood. Have you taught any
17 courses on risk assessment?

18 A. No.

19 Q. Have you conducted any human health
20 environmental risk assessments?

21 A. I don't believe so.

22 Q. Have you read EPA's Risk Assessment
23 Guidance for Superfund?

24 A. I likely read at least part of it.

25 Q. Do you recall which part?

1 A. I don't recall.

2 Q. Do you recall when you likely would
3 have read it?

4 A. I don't know specifically, but likely
5 around the time that I had to take my board exam
6 in medical toxicology and recertify.

7 Q. When would -- when would that have
8 been?

9 A. 2014 and then I recertified again in
10 December of '24. So I do remember looking at some
11 CERCLA, C-E-R-C-L-A, information.

12 Q. Have you read EPA's guidelines for
13 carcinogen risk assessment?

14 A. I've read a lot of things. I don't
15 recall.

16 Q. Have you ever read EPA's exposure
17 Factors Handbook?

18 A. I don't recall a handbook. I seem to
19 recall something. I don't remember the details.

20 Q. Have you read any textbooks related to
21 risk assessment?

22 A. Not that I recall.

23 Q. Have you ever run ATSDR's PFAS model?
24 Are you familiar with that?

25 A. I'm not.

1 Q. Are you familiar with ATSDR?

2 A. Yes.

3 Q. Okay. And when I say ATSDR, you
4 understand it as the Agency for Toxic Substance
5 Disease Registry, correct?

6 A. Yes.

7 Q. Have you ever run ATSDR's shower model?

8 A. No.

9 Q. Have you ever run a Monte Carlo
10 simulation as part of a risk assessment?

11 A. I'm certainly familiar with Monte Carlo
12 simulations, but I don't think with regards to
13 risk assessment I have.

14 Q. How -- in what -- how are you familiar
15 with Monte Carlo simulations?

16 A. I've known about them for a long time.
17 I -- I don't know if I can be any more specific
18 than that.

19 Q. Okay. I was going to say what is your
20 understanding of what a Monte Carlo simulation is?

21 A. I think they're mostly used in
22 financial planning now. So looking -- a way to
23 look at lots of different assumptions within
24 simulations to derive an answer to something.

25 Q. Have you ever run any other risk

1 assessment models?

2 A. Not that I can think of.

3 Q. Are you a member of any professional
4 societies that include a focus on risk assessment?

5 A. No.

6 Q. Have you ever published any papers on
7 risk assessment in peer-reviewed literature?

8 A. I don't believe so.

9 Q. Have you served on any editorial boards
10 of journals that focus on risk assessment?

11 A. No.

12 Q. Have you ever been asked by a journal
13 to peer review manuscripts on risk assessment?

14 A. I don't know.

15 Q. Have you ever been invited to talk on
16 risk assessment?

17 A. I don't think so but I don't -- I'm not
18 fully sure.

19 Q. Okay. Have you ever been asked by EPA
20 or any other agency to peer review their risk
21 assessment guidance documents?

22 A. No.

23 MR. ANWAR: So I'm at a good spot to
24 take a break if you want or we can keep
25 going, but we can take a five-minute break if

1 you'd like. We've been going about an hour.

2 THE WITNESS: Yeah, let's take five
3 minutes.

4 MR. ANWAR: Sure.

5 THE VIDEOGRAPHER: This is the end of
6 Media 1. Off the record, 10:22 a.m.

7 (Thereupon, a break was taken.)

8 THE VIDEOGRAPHER: This is the
9 beginning of Media 2. On the record,
10 10:33 a.m.

11 BY MR. ANWAR:

12 Q. We are back on the record from a short
13 break. Dr. Bird, are you okay to continue?

14 A. I am.

15 Q. Okay. Did you speak with anyone about
16 the substance of your testimony?

17 A. No.

18 Q. Okay. Do you consider yourself an
19 expert in modeling environmental exposures?

20 A. I typically don't do modeling. I use
21 modeling that had been done by others to -- to
22 reach conclusions and times.

23 Q. Okay. So you're not the expert in
24 modeling environmental exposures, correct?

25 A. I would largely agree with that.

1 Q. You've never published in a
2 peer-reviewed journal on modeling exposures,
3 correct?

4 A. That's true.

5 Q. Have you ever taught any courses on
6 modeling exposures, environmental exposures?

7 A. No.

8 Q. Have you -- do you train any of your
9 physician -- emergency room physicians, fellows
10 and residents on modeling environmental exposures?

11 A. Well, it depends on the degree to which
12 you mean modeling. So considering risks,
13 considering exposures, that kind of thing, sure.
14 But creating a water model, for instance, no.

15 Q. Understood. Are you a member of any
16 professional organizations focused on
17 environmental exposure modeling?

18 A. No.

19 Q. I want to shift gears a little bit and
20 focus on your specific causation reports, Exhibits
21 4 through 8, and I wanted to start by asking you
22 what your -- what your assignment for these
23 reports was or what your understanding of your
24 role --

25 MR. RUZICKA: I'm going to --

1 Q. -- was.

2 MR. RUZICKA: I'm going to object just
3 to the extent that it calls for any
4 communications that we've had with you,
5 Dr. Bird. And to the extent you're able to
6 answer, you can.

7 A. To the extent I can without discussing
8 conversations with counsel would be to examine the
9 exposures of the plaintiffs, considering their
10 time on base, and to give an opinion about the --
11 the risk of bladder cancer with their exposures.

12 Q. Understood. Earlier we talked a little
13 bit about differential etiology versus
14 differential diagnosis. Can you explain for me
15 your understanding of the difference between the
16 two?

17 A. Yes. For me differential diagnosis is
18 a medical concept whereby you have a symptom, for
19 instance, or a disease process, and you're trying
20 to figure out -- you're trying to figure out what
21 the specific disease process is.

22 Differential etiology is -- my
23 understanding is more of a legal term
24 whereas finding out what is the cause of someone's
25 symptoms rather than what the diagnosis is.

1 Q. Do you understand differential etiology
2 to be a legal term?

3 A. That's my understanding.

4 Q. Have you ever used the term
5 differential etiology in your practice emergency
6 room physician?

7 A. No, not that term.

8 Q. Okay. And you've never used the phrase
9 or the term differential etiology in your practice
10 as a medical toxicologist?

11 A. I don't think so.

12 Q. And you've never encountered it outside
13 of the legal or litigation context?

14 A. I would agree with that. Now, we may
15 do a differential etiology, but I don't know of
16 any physician who calls it that.

17 Q. Okay. For your specific causation
18 reports, Exhibits 4 through I believe 8, you --
19 you don't perform a differential etiology or
20 diagnosis, correct?

21 A. That's correct.

22 Q. And you did not review the five Track 1
23 bladder cancer plaintiffs' medical records,
24 correct?

25 A. Just so we're clear, what's a Track 1?

1 Q. We -- we -- that's a terminology --
2 that's a terminology in this case. I can reask
3 the question without using that.

4 Why don't we say this. When I refer to
5 bladder cancer plaintiffs, is it your
6 understanding that I'm referring to Mr. Cagiano,
7 Mr. Raymond, Mr. Laramore, Ms. Dyer and
8 Mr. Criswell?

9 A. Yes.

10 Q. Okay. And those are the five bladder
11 cancer plaintiffs in this case that you're
12 offering specific causation opinions, correct?

13 A. That's right.

14 Q. Okay. And for those five plaintiffs,
15 you did not review their medical records in
16 forming your opinions in your specific causation
17 report, correct?

18 A. That's right.

19 Q. Okay. And you do not opine in any of
20 your specific causation reports for those five
21 plaintiffs that their alleged exposures to water
22 at Camp Lejeune, in fact, did cause their bladder
23 cancer, correct?

24 A. Oh, you lost me there. Can you repeat
25 it?

1 Q. Sure. You're not offering the opinion
2 for any of these five plaintiffs in your specific
3 causation reports that exposure to Camp Lejeune
4 water caused their bladder cancer.

5 A. I just want to see exactly how I
6 phrased it in my report. Correct, I did not use
7 the word "caused."

8 For instance, in Mr. Criswell's report,
9 Paragraph 57, I say: My opinion is that
10 Mr. Criswell was exposed to levels of carcinogens
11 that are known to be hazardous to human health,
12 including bladder cancer, and as a result,
13 developed an increased risk of developing bladder
14 cancer.

15 Q. Okay. So you're not offering the
16 opinion for any of these five plaintiffs that Camp
17 Lejeune water caused their bladder cancer,
18 correct?

19 A. I have not expressed that opinion.

20 Q. Okay. And when we're talking about
21 Camp Lejeune water, would you agree that the
22 chemicals that were -- or can we agree when we're
23 talking about Camp Lejeune water, the -- the
24 chemicals at issue in the water are the TCE, PCE,
25 vinyl chloride and benzene?

1 A. Yes.

2 Q. Okay. I want to talk a little bit
3 about your methodology on those -- your -- your
4 five specific causation reports. As I understand
5 it, you -- from your reports, you reviewed the
6 expert report of Dr. Kyle Longley, correct?

7 A. I did.

8 Q. Who is Dr. Longley?

9 A. Is he a historian? I actually don't
10 know what his educational background is.

11 Q. Well, why did you review Dr. Longley's
12 report?

13 A. Well, to have a sense of what kind of
14 life was like generally on Camp Lejeune, and --
15 and his report kind of comported with my own ideas
16 or ideas about what it was like.

17 Q. And you haven't done any -- you're not
18 a historian, correct?

19 A. I'm not a professional historian.

20 Q. And you haven't performed any sort of
21 expert historian work related to Camp Lejeune,
22 correct?

23 A. That's correct.

24 Q. And you're relying on Dr. Longley's
25 opinions in forming your own opinions in the

1 specific causation reports, correct?

2 MR. RUZICKA: Objection, form.

3 A. Well, as I just said, his report
4 comported with my understanding of what life is
5 like on a military base.

6 Q. What was your understanding of what
7 life is like on a military base or at Camp Lejeune
8 specifically?

9 A. Well, I've lived on a military base, so
10 people shower and eat and PCE on base. Sometimes
11 people live off base and they come on base for
12 their work.

13 What I reviewed in Dr. Longley's report
14 comported with my remembrance and understanding of
15 life on base.

16 Q. If you don't mind me asking, what
17 military base did you live on?

18 A. Camp Lester.

19 Q. What branch of the military did you
20 serve in?

21 A. I served in the Navy and wore a Marine
22 Corps uniform.

23 Q. Okay. And did you say earlier that you
24 served for four years, is that right?

25 A. Active duty for four years and reserves

1 for five.

2 Q. Okay. Thank you for your service.

3 Can you -- just because I don't know
4 where it's located, just for the record, where is
5 Camp Lester located?

6 A. Well, it was located in Okinawa. I
7 don't know that it exists any longer.

8 Q. Okay. Aside from informing sort of
9 some of your ideas about what life on a military
10 base is like, has your -- has your experience
11 serving in the military informed your opinions in
12 any other way?

13 A. No.

14 Q. Did you ever meet with Dr. Longley?

15 A. No.

16 Q. Would you agree that if Dr. Longley's
17 opinions are incorrect or inaccurate that -- that
18 that would impact your opinions, too?

19 A. I don't think so because his report
20 comported with my recollection of what life is
21 like on a military base.

22 Q. Okay. Did you live on base while you
23 served?

24 A. So I've -- at times, yes. I've been on
25 a number of bases over -- during my four years of

1 active duty.

2 Q. What -- what's the longest period of
3 time that you can remember living on a military
4 base?

5 A. I don't recall.

6 Q. Do you think it was more than a week,
7 more than a month?

8 A. Oh, certainly more than a week and more
9 than a month.

10 Q. Okay. Do you recall where you lived on
11 base?

12 A. At Naval Air Station Pensacola and Camp
13 Lester.

14 Q. Do you recall whether you lived in
15 officer housing, barracks, what type of housing
16 you lived in?

17 A. So I lived in officer's quarters in
18 Camp Lester, and I don't know what I was living in
19 in Pensacola.

20 Q. And as I understand your testimony, the
21 opinions that Dr. Longley has offered in; the case
22 are consistent with your recollection of what it's
23 like to serve in the military or what your
24 experience was in the military?

25 A. Well, to be clear, I'm not sure what

1 Dr. Longley's opinions all were, so I don't know
2 that I can answer that.

3 Q. Oh, the ones that you've cited in
4 your -- strike that.

5 You have cited some of his opinions in
6 your specific causation reports, correct?

7 A. I don't know that I actually cited an
8 opinion of his.

9 Q. Okay. Well, we'll take a look at it
10 when we get there.

11 Now, you also reviewed and are relying
12 on the expert report of Dr. Kelly Reynolds for the
13 five plaintiffs, right?

14 A. That's right.

15 Q. And what is your understanding of
16 Dr. Reynolds' role in the case?

17 A. Acknowledging I may not know all of
18 her -- her entire role in the case was to
19 calculate the exposure of the five plaintiffs to
20 each of the chemicals of question.

21 Q. Okay. Do you -- do you know how she --
22 generally speaking, do you know how she did that?

23 A. I think so.

24 Q. Can you tell me about it?

25 A. My understanding or recollection is

1 that she used the monthly averages of the
2 chemicals from water sources, relevant to a
3 particular person, so Hadnot Point versus Tarawa
4 Terrace, for instance, and calculated and used
5 their time on base to then derive a cumulative
6 exposure.

7 Q. Do you have any understanding of where
8 she obtained the -- the monthly contaminant
9 concentrations?

10 A. My recollection is it was from the -- I
11 don't know if it was a report or a publication of
12 Dr. Maslia. I guess, is that technically ATSDR?
13 I'll say Dr. Maslia.

14 Q. Okay. Did you ever meet with
15 Dr. Reynolds?

16 A. No.

17 Q. Now, I think a moment ago you stated
18 that, and I'm probably going to state it
19 differently -- well, strike that.

20 So would you agree Dr. Reynolds
21 calculated exposure doses, cumulative exposure
22 doses of TCE, PCE, vinyl chloride and benzene for
23 each of -- based on -- for each of the five
24 bladder cancer plaintiffs that you're offering
25 opinions on?

1 MR. RUZICKA: Objection, form.

2 A. I believe that's what she did.

3 Q. Okay. Related to Camp Lejeune water,
4 correct?

5 A. Correct.

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

9 A. No.

10 Q. Okay. What is -- what is incorrect
11 about the statement?

12 A. She used microgram per liter months.

13 Q. Okay.

14 A. And then I actually can't remember what
15 the rest of your question was because I was
16 focused on that error.

17 Q. Okay. She -- she used micrograms per
18 liter months -- per liter months?

19 A. Correct.

20 Q. And she used a total mass in total
21 micrograms, correct?

22 A. Correct.

23 Q. Okay. What is an exposure dose?

24 A. Could you be more specific?

25 Q. How does an exposure dose -- well,

1 strike that.

2 What is your understanding of an
3 exposure dose in the context of Camp Lejeune and
4 what Dr. Reynolds did?

5 A. It would be what is the amount of the
6 chemical that the person was exposed to.

7 Q. Would you agree that an exposure dose
8 is different from an absorbed dose?

9 A. It may at times.

10 Q. How -- how would it be different?

11 A. Well, it depends on the specific
12 substance that we're talking about. I think in
13 general for these chemicals, the exposure and
14 absorbed amounts are likely the same or very, very
15 close to each other.

16 Q. Why do you say that?

17 A. Because we know that these chemicals
18 are absorbed from the GI tract. We also know that
19 they are absorbed with inhalation, and they are
20 also absorbed from dermal exposure.

21 Q. Do you -- can you direct me to any sort
22 of literature or peer-reviewed studies that would
23 support that?

24 A. They are cited in my general causation
25 report.

1 Q. Do you recall offhand, sitting here,
2 which ones?

3 A. So with regards to inhaled absorption,
4 there's McKone, Weisel and Jo, and Andeman (sic)
5 or Ald -- Andeman I think is the other author.
6 Those are three manuscripts describing inhaled
7 absorption of the chemicals.

8 Q. What about ingested absorption?

9 A. Oh, I can't -- there's a whole section
10 in my report about that.

11 Q. Okay. How -- how would you define
12 absorbed dose?

13 A. The percentage, if you will, of an
14 exposed dose that is -- enters the body, enters
15 circulation, something like that.

16 Q. In your practice as an ER physician and
17 a medical toxicologist, do you focus more on
18 exposure dose or absorbed dose in trying to
19 understand the possible health effects of an agent
20 on one of your patients?

21 A. It depends on the agent, but probably
22 focus more on the exposure dose.

23 Q. How come?

24 A. Because that's the information
25 generally we have.

1 Q. Is absorbed dose unavailable? Is it --

2 A. It may be unavailable. It may be
3 irrelevant because we have an exposure and we have
4 an outcome. Yeah, I think that's my answer.

5 Q. Is it your understanding that
6 Dr. Reynolds estimated doses accounted for all
7 routes of exposure?

8 A. My understanding is she did only
9 ingestion or oral exposure.

10 Q. And earlier you discussed -- you
11 mentioned Mr. Maslia, but Dr. Reynolds relied on
12 ATSDRs and Mr. Maslia's water modeling for Hadnot
13 Point, Holcomb Boulevard and Tarawa Terrace,
14 correct?

15 A. That's my understanding.

16 Q. Okay. And you understand that Hadnot
17 Point, Holcomb Boulevard and Tarawa Terrace are
18 three locations within Camp Lejeune, correct,
19 three water distribution systems within Camp
20 Lejeune?

21 A. Yes.

22 Q. And you understand that there were more
23 than three water distribution systems at Camp
24 Lejeune, correct?

25 A. That's my understanding.

1 Q. Okay. And you understand that there
2 are no other water distribution systems at Camp
3 Lejeune that are at issue in the litigation,
4 correct?

5 A. That's right.

6 Q. So if a plaintiff -- if any of the five
7 bladder cancer plaintiffs spent time at a part of
8 base that wasn't Hadnot Point, Holcomb Boulevard,
9 or Tarawa Terrace, for instance Camp Geiger or
10 Camp Johnson, you did not include the time -- that
11 time in your exposure calculations, correct?

12 MR. RUZICKA: Objection, form.

13 A. I believe Dr. Reynolds accounted for
14 that largely.

15 Q. Okay. Are you aware there's no
16 contaminant sampling data available for Hadnot
17 Point, Tarawa Terrace, Holcomb Boulevard prior to
18 the early 1980s?

19 A. Yes, that's my understanding.

20 Q. Okay. And that's -- it's your
21 understanding that's why ATSDR and Mr. Maslia
22 conducted the water modeling, correct?

23 A. In large part.

24 Q. We discussed that ATSDR modeled mean
25 monthly concentrations of the contaminants at

1 issue for -- for Hadnot Point and Tarawa Terrace,
2 correct?

3 A. Yes.

4 Q. And those were measured by ATSDR in
5 units of micrograms per liter, correct?

6 A. That's right.

7 Q. Would you agree in water one microgram
8 per liter equals one parts per -- one part per
9 billion?

10 A. Yes.

11 Q. And those are both units describing a
12 concentration, correct?

13 A. That's right.

14 Q. Would you agree that if ATSDR's water
15 models are inaccurate, that Dr. Reynolds' exposure
16 dose calculations would also be inaccurate?

17 MR. RUZICKA: Objection, form,
18 foundation.

19 A. Sure. To the degree that it's off from
20 the actual, her calculations will also be off from
21 the actual by that same amount.

22 Q. Okay. And if Dr. Reynolds'
23 calculations are inaccurate, the exposure dose
24 numbers in your specific causation reports would
25 also be inaccurate, correct?

1 MR. RUZICKA: Objection, form,
2 foundation.

3 A. They would be off by the same amount.

4 Q. In other words, your -- the numbers in
5 your report -- in your opinions, in your specific
6 causation reports ultimately depend on the
7 accuracy of ATSDR's water models and Dr. Reynolds'
8 opinions, correct?

9 MR. RUZICKA: Objection, form.

10 A. Sure. I also did some of my own
11 calculations that comported with Dr. Reynolds, but
12 I also was relying upon the data from Dr. Maslia
13 or ATSDR.

14 Q. What -- what calculations did you do?

15 A. I don't remember specifically. There's
16 lots of calculations here. But I wanted to
17 understand exactly how they were done to see if I
18 got the same numbers.

19 Q. Okay. Are your calculations at all
20 reflected in your specific causation reports?

21 A. Well, insofar as they were the same as
22 Dr. Reynolds, yes.

23 Q. And so it sounds like you attempted to
24 check her calculations, is that right?

25 A. I just wanted to make sure I understood

1 exactly how they were done instead of just solely
2 relying on her, so I did some of my own and
3 they -- they were the same.

4 Q. Can you describe for me like the
5 specific calculations you performed?

6 A. So using the chemical concentrations
7 per month and adding those up depending on how
8 many days there were, et cetera, in a month for
9 how long someone was there exposed, seeing if
10 those final numbers matched.

11 Q. Did you do any other calculations?

12 A. Nothing meaningful.

13 Q. When you -- when you say "nothing
14 meaningful," was there something that you did that
15 was not meaningful or insignificant?

16 A. Sure.

17 Q. Can you tell me about that?

18 A. Converting micrograms to milligrams.

19 Q. And to convert a milligram to a
20 microgram, you multiply by 1,000, right?

21 A. Yes.

22 Q. And then to convert a microgram to a
23 milligram, you divide by 1,000, correct?

24 A. You got it.

25 Q. Okay. Any other calculations that you

1 recall?

2 A. I don't think so.

3 Q. Did you do those calculations on paper
4 somewhere?

5 A. Just with my phone calculator.

6 Q. Do you have any notes or written
7 records of the calculations you performed?

8 A. No.

9 Q. Have you ever relied on an
10 environmental contaminant model in your practice
11 as a medical toxicologist and emergency physician?

12 A. Sure.

13 Q. Can you tell me about that?

14 A. Well, for instance, arsenic exposure in
15 drinking water comes up on occasion in some of the
16 litigation work relying on exposure modeling of
17 diesel exhaust, for instance.

18 Q. Any other examples you can think of?

19 A. That's what I'm thinking. Nothing that
20 comes to mind.

21 Q. What -- what type of model or models
22 have you -- have you relied on as it relates to
23 arsenic in drinking water?

24 A. Well, not much different than here.
25 What's the concentration? What was the

1 concentration over time? How much did someone
2 ingest? How much water did they ingest? And then
3 what was their total exposure to arsenic? What
4 was their urine and/or blood arsenic
5 concentrations?

6 Q. Who -- who developed that model?

7 A. I'm not sure.

8 Q. Did you rely on that model in the
9 context of litigation?

10 A. I --

11 Q. And this is focusing on arsenic.

12 A. No.

13 Q. In what context did you encounter the
14 model related to arsenic in drinking water?

15 A. Well, arsenic in drinking water is a
16 concern for some people, generally those who have
17 private wells, and so it's a question of is the
18 arsenic in the water at a level which would be
19 hazardous to human health.

20 Q. You -- you didn't perform that model
21 related to arsenic in drinking water, correct?

22 A. Correct.

23 Q. Where did that model come from?

24 A. Oh, I don't recall.

25 Q. Was it -- where did you get the results

1 from that model? Was it in a -- like a
2 peer-reviewed article or was it in a report of
3 some kind?

4 A. I don't -- maybe both. I don't recall.

5 Q. Do you recall what -- what timeframe
6 this would have been when you considered the model
7 related on arsenic in drinking water?

8 A. Oh, I mean, it's going back as far as
9 probably 15 years.

10 Q. Do you recall anything about the
11 modeling software that was used or how the arsenic
12 in the drinking water was modeled?

13 A. I don't.

14 Q. Do you recall whether that model was
15 attempting to predict model arsenic concentrations
16 into the future or into the past?

17 A. I can't remember.

18 Q. What did you use the -- that particular
19 model for, the model on arsenic in drinking water?

20 A. I don't remember all the details when
21 I've done this. I don't want to misstate. My --
22 my recollection is to look to estimate a person's
23 total cumulative exposure to arsenic.

24 Q. Was that in the context of your
25 practice as a physician?

1 A. Medical toxicology.

2 Q. And did you use the results of that
3 model to publish literature or to treat a patient?

4 A. We didn't publish anything, but it
5 would be as a means to reassure someone about
6 their exposure or to provide them data about how
7 to remediate the arsenic in their water.

8 Q. Do you recall whether it was to provide
9 them information about their exposure versus to
10 remediating their water?

11 A. Well, I think those are very similar
12 things.

13 Q. Well, I guess, why do you think they're
14 similar?

15 A. Well, if -- if someone's exposure is
16 negligible, then there's no need to remediate a
17 reverse osmosis system then, for instance. But if
18 the exposure is significant, then that may be a
19 reason for a person to put in a remediation
20 system.

21 Q. Would you agree that it's possible
22 someone's, I guess, water supply could be
23 contaminated but their exposure limited because
24 they weren't exposed to the contaminated water?

25 A. Sure. Or the contaminant level was so

1 low as to -- to not pose a health risk.

2 Q. Okay. And then you mentioned a model
3 relating to diesel exhaust, correct?

4 A. Yes.

5 Q. Can you tell me about that model?

6 A. Well, it just relied on modeling of
7 others or results of others to determine diesel
8 exhaust exposure.

9 Q. Do you know who performed the -- the
10 diesel exhaust model?

11 A. No.

12 Q. Do you recall what timeframe this would
13 have been that you -- you considered the diesel
14 exhaust model?

15 A. Oh, in the last -- since COVID.

16 Q. So in the last five years probably?

17 A. Yes.

18 Q. What were you using the diesel exhaust
19 model for?

20 A. To determine the exposure of a person
21 to diesel exhaust.

22 Q. Was it in the -- was this in the
23 context of your practice as a physician and
24 medical toxicologist, or was it in the context of
25 litigation?

1 A. In litigation.

2 Q. And so were you -- you considering the
3 diesel exhaust model or were you relying on that
4 to -- to offer opinions in litigation?

5 A. Yes.

6 Q. Do you remember the name of the
7 litigation?

8 A. Well, it's been a few -- I think we
9 talked about it last time. I think it was
10 Hartmann, H-A-R-T-M-A-N-N, maybe.

11 Q. Do you know who developed the diesel
12 exhaust model?

13 A. No.

14 Q. Was it -- do you know if it was a
15 government agency or another expert in a
16 litigation?

17 A. No idea.

18 Q. Okay. Do you recall the outcome of
19 that litigation?

20 A. I think it settled.

21 Q. Okay. Do you recall whether that model
22 was trying to predict, I guess, diesel exhaust
23 levels into the future or into the past?

24 A. I don't know. Well, I could guess. I
25 shouldn't guess. I don't know.

1 Q. You used it to -- to evaluate an
2 individual's exposure, is that right?

3 A. That's right.

4 Q. And was it your opinion that individual
5 was exposed to diesel exhaust?

6 A. Yes.

7 Q. Have you reviewed any of the ATSDR's
8 water modeling reports?

9 A. For Camp Lejeune?

10 Q. Correct.

11 A. I have seen them and reviewed them to
12 some degree.

13 Q. And it looks like as part of the
14 opinions you're offering in your specific
15 causation reports, you compared Dr. Reynolds'
16 exposure dose calculations for each of the five
17 plaintiffs to some epidemiological studies to see
18 if plaintiffs were exposed to sufficient levels of
19 TCE, PCE, benzene, vinyl chloride to increase
20 their risk of bladder cancer, is that right?

21 A. That's right.

22 Q. Okay. So have -- based on your
23 reports, my understanding is the studies that you
24 reviewed included Aschengrau 1993. Does that
25 sound right?

1 A. Yes.

2 Q. ATSDR 2018 the Morbidity Study?

3 A. Yes.

4 Q. And then ATSDR Bove 2024 the Cancer
5 Incidence Study, correct?

6 A. Yes. I think that -- I just want to be
7 clear. It sounded like your question like those
8 are the only things I've reviewed or relied upon.
9 I've reviewed and relied on a lot, but
10 specifically for the calculations or determination
11 in these specific causation reports, it's those
12 three.

13 Q. Okay.

14 A. Does that make sense?

15 Q. Yes. Those were the three that I saw
16 cited in your reports when you were comparing
17 Dr. Reynolds' calculations of exposure for an
18 individual plaintiff to exposure levels in the
19 epidemiology, is that right?

20 A. Correct.

21 Q. Okay. And for that purpose you did not
22 cite any other studies in your specific causation
23 reports, correct?

24 A. Correct.

25 Q. How did you land on these specific

1 three studies to use in your specific causation
2 reports?

3 A. Well, they have epidemiologic data
4 about outcomes. That's largely the reason why.
5 There are also some outcomes in one of the Bove
6 2014 studies, but I use the ATSDR 2018 because
7 their concentrations showing increased risk of
8 bladder cancer was a little bit lower.

9 Q. You didn't use the -- the 2024, the
10 Bove ATSDR Mortality Study, correct?

11 A. Correct.

12 Q. Have you reviewed that study?

13 A. Surely.

14 Q. Do you recall that study, the Mortality
15 Study in 2024 showing a decreasing exposure
16 response relationship using duration on base for
17 civilian employees as a metric for exposure?

18 A. I don't recall.

19 Q. Do you recall the 2024 Mortality Study
20 showing that when adjusted for sex, race and age,
21 there was -- there were 3% fewer deaths from
22 bladder cancer in Camp Lejeune, the Camp Lejeune
23 cohort, than the general population?

24 A. I recall something like that.

25 Q. And the 2024 Mortality Study does not

1 reflect an association between exposure to
2 contaminants in Camp Lejeune and death from
3 bladder cancer in comparison to the general
4 population, right?

5 A. Oh, I don't recall the details.

6 Q. Do you know why you didn't rely on the
7 2024 Mortality Study?

8 A. Well, we have other data. And
9 mortality study in order to be counted, you have
10 to die of something.

11 And so here when the Camp Lejeune
12 military cohort is young, that I felt that
13 generally morbidity studies would be better than
14 mortality studies.

15 Q. Is there any reason you chose not to
16 use occupational studies to identify levels of
17 exposure with possible toxicological significance?

18 A. Well, I've considered those but,
19 importantly, the plaintiffs were a part of those
20 studies that were done, the Bove ATSDR studies.
21 It's the -- the group we're talking about are the
22 exact same ones that were in the publications, so
23 that's the most meaningful.

24 Q. Okay. Is it -- would you agree that,
25 generally speaking, occupational studies -- the

1 doses in occupational studies are much higher than
2 the doses we're talking about in the water at Camp
3 Lejeune?

4 MR. RUZICKA: Objection, form,
5 foundation.

6 A. They may be. Or I should say they may
7 be higher. I don't know about qualifying it as
8 much higher.

9 Q. A moment ago you made a -- I think in
10 explaining why you didn't use the mortality study,
11 you described the -- the Camp Lejeune population
12 as young, is that right?

13 A. Yes. They were certainly younger than
14 the civilian population at the time that they were
15 at Camp Lejeune.

16 Q. So you're saying the civilian
17 population in that study was older than the
18 population that was being studied at Camp
19 Lejeune --

20 MR. RUZICKA: Objection.

21 Q. -- in that study?

22 MR. RUZICKA: Objection, form.

23 A. My recollection is the civilians, the
24 average age of the civilians, was older than the
25 average age of the Navy and Marine Corps

1 personnel.

2 Q. Okay. So based on your -- your
3 evaluation of sort of reliance on Dr. Reynolds'
4 calculations in comparison to the three studies
5 that we mentioned for each of these five bladder
6 cancer patients or plaintiffs, you opine about
7 whether each plaintiff was exposed to levels,
8 quote, recognized to be hazardous to humans,
9 correct?

10 A. Yes.

11 Q. Where did the language -- where did you
12 get the language "recognized to be hazardous to
13 humans"?

14 A. No idea.

15 Q. What does that language, I guess, mean
16 to you?

17 A. That there is evidence, scientific
18 evidence that those concentrations have adverse
19 effects.

20 Q. And then for each of these
21 five plaintiffs, based on your reliance on
22 Dr. Reynolds' calculations and your comparison to
23 the three studies that we -- we discussed, you
24 offer opinions about each of these plaintiffs that
25 their exposure was, quote, substantial and, quote,

1 de minimis, correct?

2 A. Yes.

3 Q. What is a substantial exposure?

4 A. So in this context, one, I would say
5 it's more qualitative, but it involves
6 around-the-clock exposure for these people.

7 Q. When you say it's more qualitative,
8 what -- what do you mean by that? What goes into
9 your qualitative evaluation?

10 A. The concentration of the substance, how
11 often they were exposed and for how long they were
12 exposed.

13 And here, because we know that these
14 chemicals remain in the body for more than 24
15 hours, these people living on base and exposed
16 were effectively exposed around-the-clock to these
17 chemicals.

18 Q. That's assuming Dr. Reynolds' numbers
19 are correct, right?

20 MR. RUZICKA: Objection, form.

21 A. Well, the concentration is part of
22 that.

23 Q. But if her numbers are incorrect, the
24 exposures may be substantial or may not be
25 substantial, correct?

1 MR. RUZICKA: Objection, form,
2 foundation.

3 A. Well, these exposures were large. They
4 were substantial. Even if her calculations were
5 off by a bit, I -- I can't imagine, I don't know
6 if that's the right word, that they would be
7 de minimis even if her calculations were off a
8 bit.

9 Q. You're not -- as far as I could tell in
10 the reports, your five specific causation reports,
11 you're not offering an opinion about the
12 quantitative threshold for a substantial exposure,
13 is that right?

14 MR. RUZICKA: Objection, form.

15 A. That's correct.

16 Q. Do you have an opinion about,
17 quantitatively, what the threshold is to have a --
18 to have a substantial exposure?

19 A. I don't.

20 Q. Is that something you considered?

21 A. Well, using the scientific data that we
22 have, I don't think that exists.

23 Q. How would you define a de minimis
24 exposure?

25 A. Well, I think it comes from the Latin

1 for the law does not consider itself with trifles.
2 So a trifle exposure, clinically insignificant.

3 Q. And I -- as far as I could tell in your
4 report, you did not offer any opinion on the sort
5 of a quantitative threshold or number where a
6 exposure is considered de minimis, is that right?

7 A. Correct.

8 Q. Why not?

9 A. Well, we don't have that data about
10 what a safe exposure concentration is.

11 Q. Hypothetically, if you had a plaintiff
12 or a patient who was exposed below an MCL level
13 for 10 years, would you consider that substantial
14 or de minimis?

15 MR. RUZICKA: Objection, form,
16 foundation.

17 A. Yeah. I would -- I would have to
18 consider all of the details about a case in order
19 for me to answer that.

20 Q. What about hypothetically if it was an
21 exposure to contaminants in the water that were
22 just above the MCL, but let's say it took place,
23 you know, over the course of six months.

24 MR. RUZICKA: Objection, form,
25 foundation.

1 A. Yeah. Without -- you'd have to
2 consider all the details about an exposure,
3 et cetera, for me to give an opinion.

4 Q. Did this language -- do you recall, did
5 this language substantial exposure and recognized
6 to be hazardous to humans, did that come from any
7 of the case law that you reviewed?

8 A. I don't recall.

9 Q. Did -- did anyone provide you with that
10 language substantial exposure and hazardous to
11 human health?

12 MR. RUZICKA: Objection, to the extent
13 that that would require you to disclose any
14 conversations that you had with your
15 attorneys, please don't respond. But if
16 you're able to with that caveat, go ahead and
17 answer.

18 A. I don't recall where the language came
19 from.

20 Q. Now, in offering your opinions in your
21 five specific causation reports for the five
22 bladder cancer plaintiffs, would it be fair to say
23 that you assumed that Dr. Longley's history report
24 was correct and accurate?

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

1 what I read of his report comports with my
2 understanding of life on base. So unless -- I
3 would have to be wrong, too, about my own
4 impressions about life on base for that to be
5 true.

6 Q. So rather than assuming, you believe
7 based on your life impressions, you were able to
8 confirm that his -- his report is accurate, is
9 that what you're saying?

10 A. Well, I don't -- his description
11 comported with my recollection of my time on
12 active duty.

13 Q. Would you agree that you -- you had to
14 assume that ATSDR's water modeling for Hadnot
15 Point and Tarawa Terrace were reasonable estimates
16 of mean monthly concentrations for the chemicals
17 at issue?

18 MR. RUZICKA: Objection, form.

19 A. Yeah, insofar as it's part of the
20 calculations, I agree with that.

21 Q. Would you agree that you lack expertise
22 to evaluate ATSDR's water models?

23 A. I think I would agree with that.

24 Q. Because you're not an engineer,
25 correct?

1 A. I am not.

2 Q. And you're not a groundwater or
3 hydrologist, correct?

4 A. I am not.

5 Q. I think we discussed you're not an
6 environmental modeling expert, correct?

7 A. Correct.

8 Q. You -- earlier I think you confirmed
9 you did review Morris Maslia's expert report,
10 correct?

11 A. Yes.

12 Q. What do you -- what do you recall about
13 his report?

14 A. I don't recall a single thing.

15 Q. Okay. Is there anything in particular
16 about Mr. Maslia's report that gave you confidence
17 in relying on ATSDR's water models?

18 A. I don't recall anything from his
19 report.

20 Q. Did you review the expert report of the
21 United States historian expert?

22 A. What was the name?

23 Q. That's a good question. Do you recall?
24 MS. ADAMS: Dr. Brigham.

25 Q. Dr. Brigham?

1 A. No.

2 Q. Do you recall reviewing the expert
3 report of the United States water modeling
4 experts?

5 A. No.

6 Q. Is there any reason you didn't review
7 those reports?

8 A. I -- I didn't ask for them. I didn't
9 feel like I needed to review them.

10 Q. Wouldn't you want like sort of complete
11 information in forming your opinions?

12 MR. RUZICKA: Objection, form.

13 A. Well, I think we have complete
14 information. We have a peer-reviewed study that
15 was paid for by the Government and performed by
16 ATSDR. I think that's the answer.

17 Q. Do you have any understanding of what
18 ATSDR's models were developed for, what purpose?

19 A. Well, my understanding is it was to
20 determine, at least in part, the historical
21 chemical concentrations at Camp Lejeune.

22 Q. Do you know how ATSDR used those
23 historical chemical concentrations?

24 A. No.

25 Q. Do you have any understanding of the

1 precision or accuracy required by ATSDR in its use
2 of the water models?

3 A. No.

4 Q. Did you -- when you said you didn't
5 think it was necessary or -- and I'm -- I'm
6 paraphrasing, so if I -- if I misquote you, feel
7 free to correct me.

8 But as I understood your testimony, I
9 think you testified something along the lines of
10 you didn't think it was necessary to review the
11 United States expert reports because you -- you
12 had complete information. Were you -- were you
13 not curious about the -- the defense perspective
14 in the case?

15 MR. RUZICKA: Objection, form.

16 A. Oh, maybe I have a bit of -- did you
17 say curious?

18 Q. Yeah.

19 A. Curiosity about it. But we had
20 peer-reviewed, published water models and data
21 about the chemical concentrations paid for by the
22 Government, published by the Government, so I
23 didn't feel like I needed to see another water
24 model.

25 Q. Do you understand, Dr. Bird, what it

1 means for a chemical to volatilize?

2 A. Yes.

3 Q. What does that mean?

4 A. So that's another term for evaporate,
5 to go from the liquid phase to the gas phase.

6 Q. As a medical toxicologist, would you
7 agree that TCE, PCE, benzene and vinyl chloride
8 readily volatile -- volatilize?

9 A. Yeah. They're characterized as
10 volatile organic compounds or VOCs.

11 Q. Are you aware that ATSDR's water models
12 did not take account of volatilization of the
13 contaminants?

14 A. That's my recollection.

15 Q. Where did that recollection come from?

16 A. I have no idea.

17 Q. And what is your understanding about
18 the impact of -- on the results of ATSDR's water
19 models in not taking account volatilization?

20 MR. RUZICKA: Objection, form.

21 A. Well, it could be that it actually
22 decreases the amount of exposure that people had.
23 Yeah, I don't know if I can say much. I'd just be
24 speculating.

25 Q. And when you say it would decrease, it

1 could be that it decreases the amount of exposure,
2 it's because it -- by taking into account
3 volatilization, the -- the estimated contaminant
4 concentrations necessarily would -- would have to
5 go down, right?

6 A. Oh, no, I said increase.

7 Q. You said increase. Why would it -- why
8 would volatilization increase exposures of
9 individuals?

10 A. Well, because the -- Dr. Reynolds only
11 included oral ingestion, but with volatilization,
12 there would be increased inhalation. And we
13 already discussed three studies, McKone, Andelman
14 and I think Weisel and Jo, where inhalation could
15 be as much or up to six times greater than the
16 oral ingestion amount.

17 So with volatilization, I can see how
18 there would actually be increase in exposure.

19 Q. Well, I guess the question I'm asking
20 you is a little different. I'm not disputing that
21 volatilization in the real world actually took
22 place in the -- did occur on the base. I'm just
23 suggesting that ATSDR's water models did not
24 account for volatilization in estimating monthly
25 contaminant concentrations.

1 And so wouldn't you agree that
2 accounting for volatilization, the models that
3 the -- the -- the estimated contaminant
4 concentrations that those models produced
5 necessarily would have to go down?

6 MR. RUZICKA: Objection, form,
7 foundation.

8 A. I don't know that it would necessarily
9 have to. Maybe it's -- maybe -- yeah, I don't
10 know that it's necessarily would have to.

11 Q. You agree they could go down, right?

12 MR. RUZICKA: Objection, form,
13 foundation.

14 A. I don't know that I have an opinion on
15 that.

16 Q. Would you agree that you assumed that
17 the deposition testimony of plaintiffs that you
18 reviewed and available records accurately reflect
19 the times and locations on base for each
20 Plaintiff?

21 A. I agree with that.

22 Q. Would you agree that a -- a plaintiff's
23 time and location on base are important factors or
24 variables in considering the degree of a
25 plaintiff's exposure?

1 A. It may. It may have no bearing.

2 Q. Why would it have no bearing?

3 A. Well, they may have had the same
4 exposure, whether they were placed at Point A or
5 Point B, depending on circumstances.

6 Q. Would you agree that the -- the levels
7 of contaminants at Camp Lejeune varied over time?

8 A. To some degree, yes.

9 Q. And then I think -- would you -- we've
10 talked about this a little bit, but would you
11 agree that you assumed Dr. Reynolds' exposure dose
12 calculations were sufficiently reliable for
13 purposes of your analysis for the five bladder
14 cancer plaintiffs?

15 A. Well, I did insofar as I relied on
16 them. But as I said before, I did some of the
17 calculations myself and they were the same.

18 Q. Did you do anything else to -- to
19 verify either her methodology or the actual
20 performance of the calculations?

21 A. I don't think so.

22 Q. Aside from the calculations to make
23 sure the -- the numbers add up correctly, did you
24 do anything else to verify or investigate the
25 accuracy of her methodology?

1 A. I don't think so.

2 Q. Did you review the deposition
3 transcript of Dr. Reynolds?

4 A. I -- I don't recall. If it's not in my
5 materials considered, then I haven't.

6 Q. I can't remember. I apologize if I
7 already asked you this, but did you review the
8 reports of the United States expert, Drs. Judy
9 LaKind and Dr. Lisa Bailey?

10 A. No.

11 Q. Now, in relying on Dr. Reynolds'
12 calculations for each plaintiff's cumulative
13 exposure, would you agree there were four
14 categories of her calculations?

15 MR. RUZICKA: Objection, form.

16 A. Sorry, I don't understand.

17 Q. Sure. Let me -- so as -- as -- and
18 we'll get into this as we look at each of the
19 reports.

20 My understanding is one category of her
21 calculations, I guess, consisted of cumulative
22 micrograms per liter a month. Does that sound
23 right?

24 A. Yes.

25 Q. Okay. And then another category

1 consisted of cumulative consumption and total
2 micrograms. Does that sound right?

3 A. Let me just look at the report from --

4 Q. Sure.

5 A. -- Jefferson or Mike Criswell.

6 Q. Sure.

7 A. I'm sorry, I don't remember that last
8 question.

9 Q. No problem. Let me see if I can get on
10 the same page.

11 Okay. So another category you
12 considered -- so like why don't we just -- why
13 don't we just go through and talk through this
14 chart on Page 9 and 10 of the Exhibit 4 which is
15 the Criswell report.

16 Oh, I might be -- let me -- I'm sorry.
17 On the Criswell report let's talk through -- it's
18 Page 15 and 16, I'm sorry, Exhibit 4.

19 A. Okay.

20 Q. So there -- there's a chart there at
21 the bottom and there are four categories of
22 calculations identified, correct?

23 A. Yes.

24 Q. Okay. And one is cumulative micrograms
25 per liter per month, right? A month.

1 A. No.

2 Q. Okay. Correct me.

3 A. Cumulative micrograms per liter month.

4 Q. Per liter month, okay.

5 So the first category is cumulative
6 micrograms per liter month, correct?

7 A. Yes.

8 Q. Okay. The second category is
9 cumulative consumption in total micrograms,
10 correct?

11 A. That's right.

12 Q. And the third category is the same but
13 based on ATSDR's exposure assumptions, correct?

14 A. That's right.

15 Q. Do you know what's being referred to
16 there when it says ATSDR exposure assumptions?

17 A. Yeah. Let me go back because Column 2,
18 that cumulative consumption, assumes I believe
19 it's one liter per day. So then for the third
20 category, they used the water consumption data
21 that is in some ATSDR documents. I can't remember
22 which ones.

23 Q. Okay. And then that -- for that fourth
24 category, that's cumulative consumption in total
25 micrograms but based on, quote, deposition/FM

1 exposure assumptions, is that right?

2 A. That's right.

3 Q. What is your understanding of what that
4 means?

5 A. Looking at what they stated in the
6 deposition in context of the field manual.

7 Q. Would you agree that the first category
8 there, cumulative micrograms per liter month, that
9 is a unit describing concentration?

10 A. Yes.

11 Q. And these other three, second, third
12 and fourth categories, are describing total mass,
13 correct?

14 A. That's right.

15 Q. When -- earlier when you said you did
16 calculations to confirm Dr. Reynolds' numbers, was
17 that just for cumulative micrograms per liter a
18 month?

19 A. Yes.

20 Q. And what did that consist of, adding up
21 the totals here and making sure the totals were
22 correct?

23 A. Yes, largely.

24 Q. Okay.

25 A. Well, when you said -- you said adding

1 up the totals here.

2 Q. Sure.

3 A. What I'm talking about are the totals
4 listed, for instance, on Page 11, 12, 13, and 14,
5 the monthly concentrations.

6 Q. And you did it for the micrograms per
7 liter month category, correct?

8 A. That's right.

9 Q. Did you add up the totals for the
10 second, third and -- these other categories?

11 A. I did.

12 Q. Well, actually, these are all
13 micrograms per liter month, so I apologize, yeah.

14 So you -- you added up these totals
15 on -- in the charts on Page 12 and 13 and going on
16 to 14, correct?

17 A. Yes.

18 Q. Do you know where the numbers came from
19 in the chart starting on Page 12?

20 A. Well, the numbers are concentrations
21 multiplied by days on base.

22 Q. And you -- you got these numbers
23 directly from Dr. Reynolds' reports, correct?

24 A. Yes.

25 Q. Do you know how she -- aside from

1 the -- the performing of the calculation itself,
2 do you know where she obtained the concentration
3 levels for TCE, PCE, vinyl chloride and benzene?

4 A. She got -- my understanding is she got
5 those numbers from ATSDR.

6 Q. Okay. Is it your opinion that relying
7 on total mass exposure dose is a reliable way to
8 represent an individual's exposure to a chemical?

9 A. Sure. It can be.

10 Q. What, I guess, scientific literature
11 support do you rely on to support that opinion?

12 A. Well, that's exactly what we have in
13 Aschengrau, for instance. But we -- often that's
14 the number that we have in medicine. When we're
15 considering exposures, we know -- or we have an
16 estimate of what someone was exposed to, so
17 that's -- that would -- in this instance, that --
18 that would be equivalent to the -- the mass in
19 micrograms.

20 Q. So the methodology that's being used in
21 Dr. Reynolds' report and the methodology that you
22 use here to offer your opinions about the degree
23 of the five bladder cancer plaintiffs' exposures,
24 have you ever used that methodology in your
25 clinical practice as a medical toxicologist and ER

1 physician?

2 A. Sure. Evaluating a patient's exposure,
3 whether it's in -- well, it would typically be in
4 micrograms or milligrams or grams, so a mass, and
5 then giving an opinion about their -- the effect
6 from that exposure, sure.

7 Q. For a patient that comes in and sees
8 you in the emergency room, where do you get the --
9 the quantitative exposure amount for that patient?

10 A. You may get it from the patient. You
11 may get it from a family member. There may be a
12 pill bottle, for instance. There may be other
13 collateral information to get that information.

14 Q. And so you mentioned a pill bottle. So
15 one example would be a patient involving use of
16 a -- like a prescription drug, correct?

17 A. Sure.

18 Q. What about patients that come in with
19 environmental or occupational exposures?

20 A. So we may have information, for
21 instance, of carbon monoxide concentration or
22 hydrogen sulfide concentration. So in that case
23 we would have -- technically there it's a
24 concentration and not a mass.

25 Other times if someone has had

1 hydrofluoric acid exposure, for instance, in a
2 semiconductor industry, we may have a total mass
3 or we may have a concentration and a volume.

4 Q. In your practice as a -- an ER doc and
5 a medical toxicologist, how -- how does the
6 analysis change when you have a concentration
7 versus a total mass for an environmental exposure
8 or occupational exposure?

9 A. I don't know that answer -- I don't
10 know that that question is answerable. I --
11 largely, I think there may not be a difference.
12 You have an exposure, you have a patient, and so I
13 don't know that there's much difference.

14 Q. In your practice as a -- a medical
15 toxicologist and ER physician, have you ever
16 evaluated a patient in terms of, quote,
17 substantial or, quote, de minimis exposure?

18 A. I'm sorry, I don't understand.

19 Q. You're using the terms substantial
20 exposure and de minimis exposure in your specific
21 causation reports, correct?

22 A. That's right.

23 Q. Have you ever used those terms in your
24 practice as an ER physician or a medical
25 toxicologist?

1 A. I absolutely use the word substantial.
2 I don't know if I've used de minimis. I've
3 probably used minimal or, I don't know, maybe
4 trivial.

5 Q. Sure. And this is in the context of
6 treating patients?

7 A. Absolutely.

8 Q. Do you have any estimate of how often
9 you calculate someone's cumulative exposure to
10 chemicals in your clinical practice?

11 A. It would depend on the exposure.

12 Q. Would you agree that in the real world
13 most of the time that that data is not available?

14 MR. RUZICKA: Objection, form.

15 A. It depends on the circumstance.

16 Q. I guess let's -- let's hone in on
17 environmental or occupational exposures. Would
18 you agree that in the real world someone's
19 cumulative exposure is typically not available?

20 MR. RUZICKA: Objection, form.

21 A. I don't know that that's true.

22 Q. How often do you calculate someone's
23 cumulative exposure to chemicals in an
24 environmental or occupational exposure context?

25 A. Yeah, it's not common probably, but

1 it's -- it's part of the equation. It's part of
2 the information that we try to elicit or
3 determine.

4 Q. Would you agree Dr. Reynolds used
5 ATSDR's water models to calculate daily exposures
6 for plaintiffs?

7 A. I don't know that she calculated daily
8 exposures.

9 Q. Well, I guess like looking at the
10 example on the Criswell report on Page 12,
11 Exhibit 4, there at the top of Page 12, it says,
12 total days -- like the first entry for July 29,
13 1975 to July 31, 1975, doesn't it identify three
14 days there?

15 A. Well, it does but she didn't calculate
16 the exposure per day.

17 Q. How did she -- how did she -- well, let
18 me say -- wouldn't you -- would you agree that
19 Dr. Reynolds used ATSDR's water models to estimate
20 daily exposures for plaintiffs?

21 A. No. That's not my interpretation of
22 what she did at all.

23 Q. Why not?

24 A. Because that's what the data looked
25 like. It doesn't look like there's any daily

1 exposure estimate.

2 Q. I guess how -- what is your
3 understanding of her exposure estimate?

4 A. They're largely by month.

5 Q. How are -- how do you estimate a month
6 when you have three days of an exposure?

7 A. Well, you take a proportionate.

8 Q. And isn't that essentially attempting
9 to extrapolate daily estimates from a monthly
10 metric?

11 A. I don't think so.

12 Q. Are you aware that ATSDR stated that
13 its water modeling isn't specific enough to
14 accurately estimate daily levels of the VOCs?

15 A. Right. Yeah, they gave it by month and
16 that's what Dr. Reynolds did in my opinion.

17 Q. Are you aware ATSDR's water models
18 weren't intended for use in litigation or -- or to
19 determine exposure levels for individuals?

20 MR. RUZICKA: Objection, form.

21 A. I seem to recall reading that or
22 hearing that some -- reading that somewhere.

23 Q. Well, where -- where do you recall
24 reading that from?

25 A. I think a deposition transcript.

1 Q. Do you remember whose deposition
2 transcript?

3 A. No.

4 Q. Was it Mr. Maslia?

5 A. I don't recall.

6 Q. Are you aware that the purpose of
7 ATSDR's water models was to provide relative
8 levels of exposure for epi studies?

9 A. I don't recall.

10 Q. Are you aware that ATSDR stated that it
11 shows conservative health protective assumptions
12 and data interpretation methods?

13 A. That sounds vaguely familiar.

14 Q. Where would you have obtained that
15 understanding from?

16 A. Well, I don't recall specifically.
17 Reading it somewhere, I suspect.

18 Q. In your practice as a -- as a medical
19 toxicologist and ER physician, do you typically
20 express dose as the weight of a chemical per unit
21 of body weight?

22 MR. RUZICKA: Objection, form.

23 A. Usually not.

24 Q. How come?

25 A. Because it's often not -- it's just not

1 what we know or what we use. We usually use -- in
2 my experience, with the exception of things like
3 acetaminophen or aspirin exposures, we typically
4 use mass instead of mass per kilogram of body
5 weight.

6 Q. And again, the literature that you
7 believe supports using total mass in evaluating
8 exposure, that -- that's cited in your general
9 causation report?

10 A. Well, I don't think I said that.

11 Q. Okay. I may have misunderstood you, so
12 if I -- if I did, I apologize.

13 Is there any literature that you're
14 aware of that supports using total mass when
15 evaluating an environmental or occupational
16 exposure?

17 A. There may be. I don't know.

18 Q. Are you aware of any textbooks or other
19 authorities that support using total mass when
20 evaluating an environmental or occupational
21 exposure?

22 A. Not that I'm aware of. I suspect there
23 are, but none that I can name off the top of my
24 head.

25 Q. Would you agree that use of total mass

1 does not account for a person's body weight?

2 A. Sure.

3 Q. And as a medical toxicologist and ER
4 physician, would you agree that a person's body
5 weight is important to accurately determine that
6 person's exposure dose to a chemical?

7 A. No, I don't think so.

8 Q. I guess in a -- like a simple example,
9 would you expect a single beer to have a different
10 effect on a person who weighs 100 pounds versus a
11 person who weighs 200 pounds?

12 A. Well, it depends on the individuals,
13 particularly their tolerance, and maybe other --
14 other factors as well.

15 Q. All other factors being equal,
16 wouldn't you agree that you would -- you would
17 expect a -- a different or a more intense effect
18 of one beer on a person that weighs 100 pounds
19 versus a person that weighs 200 pounds?

20 MR. RUZICKA: Objection, form.

21 A. You would expect different blood -- or
22 serum concentrations of the alcohol. The clinical
23 effects would be determined primarily by
24 tolerance, so a 100 pound person -- I think you
25 said pound or kilos. But a 100 pound person may

1 have no effect if they're a chronic user, and a
2 200 pound person who is naive to alcohol may have
3 significant effects.

4 Q. What if their tolerances were the same?

5 A. Just to be clear, there is no objective
6 measure of tolerance. So I don't know if I can
7 answer that. But all things being equal, there
8 will be different blood or serum concentrations,
9 but the clinical effects can vary or not vary.

10 Q. Has that been your experience as an ER
11 physician?

12 A. It all depends on the substance and the
13 person.

14 Q. Like Dr. Reynolds, the numbers that you
15 rely on from her do not account for the body
16 weight of any of these five plaintiffs, correct?

17 A. Correct.

18 Q. In your -- in your clinical practice,
19 do you ever prescribe dose medications without
20 taking into account things like body weight?

21 A. Sure. Particularly with adults, all
22 the time.

23 Q. Would you agree that determining the
24 duration of an exposure to a given concentration
25 is relevant to whether that exposure can cause

1 health effects, including cancer?

2 A. I would agree with that.

3 MR. ANWAR: Okay. Let's -- well, we --
4 we have two options. We can either take a
5 lunch break now if you'd like, or we can keep
6 going for a bit and then take a break a
7 little later. I'm at a good spot and --

8 MR. RUZICKA: Let's take a break now
9 and we'll come back. We can go off the
10 record.

11 THE VIDEOGRAPHER: This is the end of
12 Media 2. Off the record, 11:56 a.m.

13 (Thereupon, a break was taken.)

14 THE VIDEOGRAPHER: This is the
15 beginning of Media 3. On the record, 12:50
16 p.m.

17 BY MR. ANWAR:

18 Q. We are back on the record from lunch a
19 break. Dr. Bird, are you okay to continue?

20 A. I am.

21 Q. Did you speak with anyone about the
22 substance of your testimony during the break?

23 A. No.

24 Q. Okay. I think the last question I
25 asked you before the break, you agreed that

1 exposure to a given concentration is relevant to
2 whether that exposure can cause health effects.
3 Do you recall that?

4 A. I don't.

5 Q. Okay. Would you agree that determining
6 the duration of an exposure to a given
7 concentration is relevant to whether that exposure
8 can cause health effects including cancer?

9 A. That's part of the equation, sure.

10 Q. Okay. And the follow-up question I
11 wanted to ask you is, why is it relevant?

12 A. Well, that gets you to the total
13 exposed dose, a time and a concentration. That
14 gets you to the mass exposure like we have here
15 with Aschengrau.

16 Q. Okay. Let's talk about Exhibit 4 a
17 little bit more. That is your specific causation
18 report for Mr. Criswell, right?

19 A. Yes.

20 Q. Okay. So feel free to reference, you
21 know, anywhere in the report you need to as I'm
22 asking you questions, and I'll -- I'll try to
23 direct you from time to time as well.

24 Mr. Criswell was at Camp Lejeune
25 between January 1975 and March 1975 -- or 1977,

1 correct?

2 A. Yes.

3 Q. Are you aware --

4 A. Did you say January '75?

5 Q. I said January '75 to it looks like
6 here you have April '77, is that right?

7 A. Yes.

8 Q. Okay. Are you aware that he would have
9 had some departures for leave or deployments?

10 A. That's my understanding.

11 Q. Okay. Are you aware that Mr. Criswell
12 lived at Camp Geiger until July 1975?

13 A. I remember seeing Camp Geiger in
14 relation to Mr. Criswell at some point, but I
15 don't remember the details.

16 Q. Did you assume that he lived at Hadnot
17 Point from January 1975 onwards for purposes of
18 the exposure numbers that you used?

19 A. Well, there's -- I used the exposure
20 assessment from Dr. Reynolds. There's -- there's
21 exposure at your place of living. There's also
22 then exposure to the chemicals in the water as
23 part of Marine life, so it's not just where
24 someone lived.

25 Q. Okay. And he lived at Tarawa Terrace

1 but worked at Hadnot Point, right?

2 A. That is my recollection, right, he
3 lived at Tarawa Terrace after July '75.

4 Q. Okay. Now, earlier in the deposition,
5 you -- I think you agreed that you were aware that
6 there is no contaminant sampling data prior to the
7 19 -- early 1980s. Do you recall that?

8 A. Yes.

9 Q. Okay. And so you'd agree there's no
10 contaminant sampling data for Tarawa Terrace or
11 Hadnot Point for the time period that Mr. Criswell
12 was at Camp Lejeune, correct?

13 A. That's right.

14 Q. Which is why Dr. Reynolds is providing
15 her exposure numbers based on ATSDR's models,
16 correct?

17 A. That's right.

18 Q. And which is why you're relying on
19 Dr. Reynolds' exposure numbers, correct?

20 A. Correct.

21 Q. If you turn -- so Page 10 there of the
22 report and Page 11, it looks like you have pulled
23 appendices from ATSDR's water modeling report,
24 correct?

25 A. That's right.

1 Q. And these are for the time periods that
2 you understand Mr. Criswell to have been at Camp
3 Lejeune, correct?

4 A. That's right.

5 Q. Okay. On Page 12 there -- I believe on
6 Page 12 is a chart that you pulled or you took
7 from Dr. Reynolds' expert report, correct?

8 A. That's right.

9 Q. And this chart contains micrograms per
10 liter a month for each of the contaminants, TCE,
11 PCE, vinyl chloride, benzene from Dr. Reynolds'
12 report, correct?

13 A. That's right.

14 Q. And so on 12 the chart starts for
15 Tarawa Terrace, and if you go to 13 in the middle
16 it starts at Hadnot Point and it ends Tarawa
17 Terrace.

18 I was just wondering at the bottom
19 there for both the Hadnot Point chart on 13 and 14
20 and the Tarawa Terrace chart on 12 and 13, if
21 these are micrograms per liter month, which is a
22 concentration as opposed to a total mass number,
23 why were they -- why were they added up as opposed
24 to averaged?

25 MR. RUZICKA: Objection, form.

1 A. Because that's how you would do it.

2 Q. You would add up the concentration
3 level for a month to get a total -- a total -- a
4 total mass concentrate -- total mass there?

5 A. Well, it's microgram per liter month so
6 it's got concentration and time in it.

7 Q. But doesn't each one of these -- and I
8 just want to make sure I understand this
9 correctly. Doesn't each of these represent the
10 concentration per month or is it -- or do you
11 understand it to be the mass per month, mass for
12 each of the time steps?

13 A. It is a concentration by month, so that
14 should represent the average concentration during
15 that month.

16 Q. For each time step, correct?

17 A. Correct.

18 Q. And if it represents the average
19 concentration per month or time step, it's your
20 testimony that it's appropriate to -- to add all
21 of these up to get total mass?

22 A. Well, this isn't the total mass. This
23 is the mass per liter month.

24 Q. That I understand. I guess I --
25 it's -- it's not clear to me if you were trying to

1 get sort of the mass per liter month during this
2 timeframe, you wouldn't average those figures as
3 opposed to adding them all up.

4 A. Well, I mean you could divide them by
5 the months, or you can present it this way, which
6 is consistent with how ATSDR reported their -- the
7 chemical exposures.

8 Q. The ATSDR reports don't tabulate the
9 total micrograms per liter month though, do they?

10 A. No, not in those figures, for instance,
11 on Page 10 and 11. But that's how it was reported
12 in, for instance, ATSDR April 2018 and the Bove
13 studies.

14 Q. Is that they -- they totaled the -- the
15 monthly microgram per liter month concentrations?

16 A. No, they didn't total them up, but
17 that's how they reported the risks.

18 Q. Okay. Okay. So according to -- on
19 Page 14 there, according to your report which is
20 relying on Dr. Reynolds' report, it looks like
21 Mr. Criswell was at Camp Lejeune for 804 days, is
22 that right?

23 A. Correct.

24 Q. And that's at least what Dr. Reynolds
25 tabulated and that's where you're pulling this

1 information from, correct?

2 A. That's right. I remember seeing his
3 service records that had time for leave, maybe
4 there was some deployment or something like that,
5 and it looks like she considered that in her days
6 on base as well.

7 Q. Okay. And you should feel free to do
8 the math. I tried to do the math, and I
9 calculated 804 days, excuse me, to be about 26
10 months. Does that sound right to you, a little
11 over two years?

12 A. I'll use my calculator.

13 Q. Sure.

14 A. Yeah, 26 and a half or so months.

15 Q. And then based on the information from
16 Dr. Reynolds' report in Paragraph 29 there, you
17 state -- you state: Using this exposure
18 assessment, Mr. Criswell met or exceeded the
19 levels that I discussed in my prior report on
20 general causation as being hazardous to human
21 health and generally capable of causing cancer,
22 including bladder cancer, in exposed individuals.
23 See in this regard, my prior expert reports and
24 its citations to publications including but not
25 limited to ATSDR 2018, which is a morbidity study,

1 and Bove 2024b, which I think you're citing the
2 Cancer Incidence Study there, correct?

3 A. That's right.

4 Q. Okay. Can we grab the studies? Thank
5 you.

6 (Exhibit 13 was marked.)

7 BY MR. ANWAR:

8 Q. Okay. I'm going to hand you a few
9 exhibits. Exhibit 13 is the 2024 Dr. Bove Cancer
10 Incidence Study, correct?

11 A. Yes.

12 (Conferring regarding exhibits.)

13 (Exhibit 14 was marked.)

14 BY MR. ANWAR:

15 Q. Then I'm going to hand you Exhibit 14,
16 which is the 2018 ATSDR Morbidity Study, correct?

17 A. Yes.

18 MR. ANWAR: Okay. Do you have a copy
19 of the morbidity?

20 MR. RUZICKA: Not on me.

21 (Counsel conferring about exhibits.)

22 (Exhibit 15 was marked.)

23 BY MR. ANWAR:

24 Q. And then I'm handing you Exhibit 15,
25 which is a copy of the 1993 Aschengrau Study,

1 correct?

2 A. Yes.

3 Q. Okay. So these are -- in that
4 paragraph, in Paragraph 29, these three studies
5 include two of the studies that you cited in
6 Paragraph 29, correct?

7 A. That's right.

8 Q. Okay. And so then in Paragraph 30, you
9 go on to state: Subject to the qualifications
10 included in my general causation report for
11 bladder cancer, the lower amounts of the Camp
12 Lejeune water contaminants that have been shown to
13 cause bladder cancer, it is my opinion to a
14 reasonable degree of medical and scientific and
15 toxicological certainty, that any individual with
16 exposure to any one of these chemicals at the
17 level or higher than the levels identified below,
18 as likely as not, was at an increased risk of
19 bladder cancer. The exposure quantities, to
20 reiterate, should not be interpreted as floors
21 below, which cancer does not occur.

22 And then you cite to the three articles
23 I just gave you, and you identify cumulative
24 exposure levels, is that right?

25 A. Yes.

1 Q. Okay. I wanted to walk through the
2 cumulative exposure levels that you identify
3 there. So for the Aschengrau Study, I -- I know
4 where that is located in the study, but I was
5 having a little trouble finding, like, B, C, these
6 cumulative exposure amounts in the Morbidity
7 Study, the 2018 ATSDR Study and the Cancer
8 Incidence Study, the 2024, and I was hoping maybe
9 you could help clarify that for me.

10 So if we start with -- we could maybe
11 just go down the list and work through with B. It
12 says: Cumulative exposure to less than 110 parts
13 per billion months of TCE. And you identify that
14 as a level at which -- which is hazardous to human
15 health for the purposes of increased risk of
16 bladder cancer, correct?

17 A. Correct.

18 Q. Okay. I was just wondering if you
19 could point me to where in the -- the report you
20 got the 110 parts per billion months.

21 A. That comes from, I think it's an
22 appendix, or maybe it's just Table 2 --

23 Q. Okay.

24 A. -- page 66 in the ATSDR 2018 article
25 you gave me.

1 Q. Let's take a look. And so your -- if
2 I'm understanding this table correctly, there's
3 a -- there's a section of the table that is
4 focused on just Camp Lejeune Marines, and it says
5 internal analyses, and it looks like medium
6 exposure is defined as greater than 110 parts per
7 billion, is that right?

8 A. For that. They also said that the low
9 exposure is less than 110 parts per billion
10 months.

11 Q. Okay. And so is it your testimony that
12 less than 110 parts per billion months presents a
13 risk of -- increased risk of bladder cancer?

14 A. Yes.

15 Q. Okay. So these numbers (sic), B, C, D,
16 E --

17 A. And F

18 Q. -- F, G come from the table on Page 66,
19 is that right?

20 A. Yes.

21 Q. Okay. That's helpful. And then H, I,
22 J and K cite to the 2024 Cancer Incidence Study,
23 correct?

24 A. As does L.

25 Q. As does L. Excuse me, yeah.

1 Can you direct me to where you were
2 looking at in the cancer incidence studies for
3 that information?

4 A. For -- beginning with H, and working
5 way down, it's on Page 1 of the Cancer Incidence
6 Study from 2024.

7 Q. Okay.

8 A. Right-hand column, last partial
9 paragraph, they gave, four lines up from the
10 bottom, median levels of 366, 15 and 22 micrograms
11 per liter, respectively, so that's for TCE, PCE
12 and vinyl chloride. That's per month.

13 And so to make a quarter, one quarter
14 of a calendar year, I multiplied these averages,
15 monthly averages, by three to get the average in a
16 quarter. So 366 times 3 equals H, 1,098 parts per
17 billion months.

18 Q. Why -- and I'm sorry, these might be
19 very obvious questions, but why did you -- why
20 were you looking to get the -- the value for a
21 quarter?

22 A. Because that was the duration of
23 exposure, one to six quarters on base for the
24 Marines.

25 Q. Okay. One quarter being three months,

1 correct?

2 A. Correct.

3 Q. Okay. Okay. And so that is helpful.

4 H, I, J, K and L come from this first
5 page, bottom right-hand side of the Cancer
6 Incidence Study, is that right?

7 A. Yes, except for J, benzene. They
8 actually didn't mention the median benzene
9 concentration in this paragraph, and so the median
10 concentration for benzene came from another Bove
11 Study. I -- I don't -- maybe it's somewhere
12 buried in here, but it's not in that paragraph.

13 Q. Okay. If it was another Bove Study, do
14 you -- do you recall which one?

15 A. I don't. I think it may be elsewhere
16 in here. They just didn't put it with the other
17 three chemicals. So I think it's in this one, but
18 I may have taken it from another Bove Study.

19 Q. Okay. And then on Page 16 of your
20 Criswell Report, Exhibit 4, you go on to say in
21 Paragraph 32: Mr. Criswell was exposed to an
22 amount of VOC exposure that is considered
23 substantial since it is known to be hazardous to
24 human health. Moreover, this only addresses
25 chemicals in isolation and does not consider the

1 additive and perhaps synergistic effect of
2 combining ingestion of TCE, PCE, vinyl chloride
3 and benzene.

4 And then as I stated in my general
5 causation report, while it is frequently assumed
6 that the toxic effects of solvents are additive,
7 the chemicals may also interact synergistically
8 or -- and antagonistically.

9 And then you cite Bruckner from --
10 which looks like it's a textbook. Did I read that
11 correctly?

12 A. Yes.

13 Q. Okay. So the source you cited there
14 indicated that the chemicals could interact
15 antagonistically as well. What -- what does that
16 mean?

17 A. So antagonistically, an example would
18 be that, for example, 2 plus 2 equals 3 rather
19 than 4.

20 Q. Is it your testimony that when
21 chemicals, I guess, interact antagonistically,
22 they interact in a way that increases their
23 intensity, is that what you're saying or their
24 intensity of exposure?

25 A. Well, it could be decreased intensity

1 of exposure antagonistically.

2 Q. Okay. As -- as I was -- as I read that
3 sentence, I interpreted antagonistically, so I
4 interpreted additive or synergistically as
5 potentially increasing exposure or intensifying
6 exposure and antagonistically as decreasing
7 exposure, is that correct? Is that your
8 understanding as well?

9 A. At a basic level, yes.

10 Q. Okay. And then in Paragraph 33, you go
11 on, on Page 16: Regarding Mr. Criswell's
12 cumulative ingestion exposure to PCE, his range of
13 exposure of 119,008 -- or is at 119.809 to 183.584
14 milligrams is in excess of the 90th percentile
15 exposure group in the Aschengrau Study, correct?

16 A. That's right.

17 Q. Okay. I wanted to ask you, where did
18 the 119.809 to 183.584 milligram number come from?

19 A. From up above in the table that's
20 labeled PCE TechFlowMP model.

21 Q. Okay.

22 A. If you look in the third column, that's
23 the 119.809, and the fourth column is the 183.584.

24 Q. Okay. I see where you're looking at.
25 So you are -- you're taking Categories

1 3 and 4 from Dr. Reynolds' chart, which is --
2 Category 3 is cumulative consumption total per
3 ATSDR with the ATSDR exposure assumptions, and
4 then Category 4 is cumulative assumption with the
5 deposition and field manual exposure assumptions
6 that we discussed earlier, correct?

7 A. That's right.

8 Q. Why did you choose to use Categories 3
9 and 4 there as opposed to Categories 1 or 2?

10 A. Well, because it takes into
11 consideration their total consumption. Clearly,
12 he did not consume one liter -- one liter of water
13 a day. And using the ATSDR exposure assumptions
14 as well as the field manual, I felt that those
15 were more representative to use for what an
16 active-duty Marine is ingesting.

17 Q. And then you took those numbers from
18 the table on Page 16, and they're presented there
19 as micrograms, and you converted them into
20 milligrams, is that right?

21 A. That's right.

22 Q. And you did that because the Aschengrau
23 Study presents its results in milligrams?

24 A. Exactly.

25 Q. Okay. Let's -- let's take a look at

1 that Cancer Incidence Study again, which is Bove
2 13 -- or which is Exhibit 13.

3 I think you agreed earlier that the --
4 the low to no exposure category in this study was
5 one to seven -- or one to seven quarters, is that
6 right?

7 A. One to six quarters.

8 Q. One to six quarters.

9 And so the low to no exposure category
10 is approximately 3 to 18 months, correct?

11 A. Correct.

12 Q. Okay. And then the medium duration
13 exposure category in this study is seven to ten
14 quarters, correct?

15 A. Right.

16 Q. And so that's approximately 21 to 30
17 months, correct?

18 A. That's right.

19 Q. And so based on this study, I think
20 earlier you agreed that Mr. Criswell was at Camp
21 Lejeune about 26 months, correct?

22 A. A little over 26 months, right.

23 Q. Okay. So based on this study, he would
24 fall into the medium duration group, correct?

25 A. That's right.

1 Q. So if we turn to Table 5 on Page 10.

2 A. Yes.

3 Q. So this is a table showing cancer
4 outcomes duration stationed at Camp Lejeune
5 compared with Camp Pendleton between '75 and '85,
6 correct?

7 A. That's right.

8 Q. And if you go down to urinary bladder,
9 it's in the middle of the page. Do you see it?

10 A. Yes.

11 Q. Under the median exposure group, the
12 hazard ratio for urinary bladder is 1.18 with a
13 confidence interval of 0.95 on the lower end and
14 1.46 on the -- the upper end. Did I read that
15 correctly?

16 A. Yes.

17 Q. The 1.18 hazard ratio is a
18 statistically insignificant finding, correct?

19 MR. RUZICKA: Objection, form.

20 A. The point estimate demonstrates an 18%
21 increased risk. Under classic confidence interval
22 interpretation, it would not be statistically
23 significant.

24 Q. And then if we turn to -- if we turn a
25 couple pages over to Table 6.

1 A. Yes.

2 Q. So this -- this Table 6 is cancer
3 outcomes by duration employed at Camp Lejeune
4 compared with Camp Pendleton October 1972 to
5 December 1975 among civilian workers, correct?

6 A. That's right.

7 Q. And here low and medium duration are
8 combined in terms of category and then there's a
9 high duration column, correct?

10 A. Yes.

11 Q. And if you go down to urinary bladder,
12 there under low or medium duration, the adjusted
13 hazard ratio is 1.18 and the confidence interval
14 on the low end is 0.80 and the upper end is 1.75.
15 Did I read that correctly?

16 A. Yes.

17 Q. And similar to the other table, that's
18 a statistically insignificant finding, correct?

19 MR. RUZICKA: Objection, form.

20 A. Well, I don't think anyone uses the
21 term "statistically insignificant." The point
22 estimate is 18% increase in bladder cancer, but
23 with historical or classical statistical
24 significance, it would not be considered
25 statistically significant.

1 Q. Okay. Understood.

2 Would you agree that civilian personnel
3 may have had less intense exposures to chemicals
4 at Camp Lejeune than Marine or Navy personnel?

5 A. Some may, some may not.

6 Q. Now, in your report you didn't cite
7 these hazard ratios and confidence intervals,
8 correct?

9 A. Correct. I believe they're in my
10 general causation report.

11 Q. Okay. Would you agree that the Cancer
12 Incidence Study used duration stationed or
13 employed for -- I guess, Marines and civilians
14 stationed or employed at Camp Lejeune as a proxy
15 for cumulative exposure based on the assumption
16 that monthly contamination levels did not
17 fluctuate?

18 A. Well, they certainly used duration. I
19 don't know about not fluctuating concentrations.

20 Q. Okay.

21 A. That doesn't -- that doesn't make sense
22 to me.

23 Q. It looks like on the first page, they
24 used the concentrations, monthly concentrations
25 from ATSDR's water model for the period between

1 '75 and '85, correct?

2 A. That's right.

3 Q. Okay. Do you agree that 1.18 is not a
4 strong positive association?

5 MR. RUZICKA: Objection, form.

6 A. I would say it represents an 18%
7 increased risk. I don't know that I'd put an
8 adjective to it.

9 Q. Okay. Let's take a look at Exhibit 14,
10 which is the Morbidity Study that you cited from
11 ATSDR. And I think a moment ago we agreed that at
12 least based on the Cancer Incidence Study,
13 Mr. Criswell fell into the medium exposure group,
14 is that right?

15 A. Yes.

16 Q. And so if you turn to -- well, let me
17 back up. Into the median -- medium exposure group
18 based on time on base from Bove 2024b.

19 A. Understood. And that -- that was the
20 Bove Cancer Incidence Study, correct?

21 Q. That's right.

22 A. Okay.

23 Q. If you turn to Page 76 of the 2018
24 Morbidity Study, on Page 76 is a table, Table 7,
25 titled: Odds Ratio for Cumulative TCE Exposure in

1 Marines at Camp Lejeune Compared With Those at
2 Camp Pendleton, correct?

3 A. Yes.

4 Q. And then if we -- we go down to urinary
5 system bladder, do you see that?

6 A. Yes.

7 Q. There are -- there are numbers there
8 for three exposure groups, low, medium and high,
9 correct?

10 A. That's right.

11 Q. And under the -- the low exposure
12 group, the odds ratio is 1.28 with a lower
13 confidence interval of .76 and a upper confidence
14 interval of 2.15, did I -- is that correct?

15 A. Just to make the record clear, the
16 lower limit was .76.

17 Q. I'm sorry, if I said 76, yeah. We -- I
18 can ask that again.

19 So on Table 7 under urinary bladder for
20 low exposure, the odds ratio is 1.28 with a lower
21 confidence interval of .76 and an upper confidence
22 interval of 2.15, correct?

23 A. That's right.

24 Q. And you would agree that is -- that
25 represents a not statistical significant finding,

1 correct?

2 MR. RUZICKA: Objection, form.

3 A. The point estimate of 1.28 represents a
4 28% increased odds of bladder cancer. That's how
5 I would answer it.

6 Q. But you would agree that it is not
7 statistically significant.

8 A. And under historical or classical
9 interpretations, it would not be statistically
10 significant.

11 Q. Okay. And then the medium exposure
12 group there has an odds ratio of 1.68 with a lower
13 confidence interval of 1.0 and an upper confidence
14 interval limit of 2.82. Did I read that
15 correctly?

16 A. Yes.

17 Q. And same question, that represents a
18 finding that is not statistically significant,
19 correct?

20 A. Well, that point estimate represents a
21 68% increased odds of bladder cancer, and I think
22 there is debate -- because the lower bound of the
23 confidence interval does not go below 1.00, I
24 think there is debate whether that is under
25 historical or classical considerations

1 statistically significant or not.

2 Q. Okay. And then if you go to the high
3 exposure group there, the odds ratio is .93 and
4 the lower confidence interval limit is .43 with
5 the upper confidence interval limit at 2.01, is
6 that right?

7 A. That's correct.

8 Q. And so under the high exposure group
9 there for TCE exposure, in your words, under
10 traditional statistical methods, that is not a
11 statistically significant finding, correct?

12 A. I agree with that.

13 Q. Okay. So the high -- the high exposure
14 group is a -- I'm trying to think of the best way
15 to characterize this -- is a decreased risk than
16 the medium exposure, is that right?

17 A. I don't think anyone would interpret it
18 that way. There's no evidence that exposure
19 decreases a risk. It has to do with the -- just
20 the way the statistics fell out on this case.

21 Q. So for TCE exposure here in bladder
22 cancer, for low exposure and high exposure, you
23 would agree under traditional statistical methods
24 neither of the findings are statistically
25 significant, correct?

1 MR. RUZICKA: Objection, form.

2 A. Yeah. As I've already said, what the
3 point estimates, which is the important metric,
4 show the increased risk. But under kind of
5 historical methodology, it wouldn't be considered
6 clinically significant -- statistically
7 significant.

8 Q. And based on this study, would it be
9 fair to characterize Mr. Criswell and the medium
10 exposure group consistent with the -- the Bove
11 Study?

12 A. I believe that's correct.

13 Q. Okay. And so if you turn to -- a
14 page over to Page 78, Table -- there's a table on
15 Page 78, Table A, titled Odds Ratios for
16 Cumulative PCE Exposure in Marines at Camp Lejeune
17 Compared With Those at Camp Pendleton, correct?

18 A. Yes.

19 Q. And then just like the table we just
20 looked at, further down in the middle of the
21 table, there is a -- there are rows for urinary
22 system bladder, correct?

23 A. That's right.

24 Q. And for medium exposure, which I
25 believe you agreed Mr. Criswell falls into...

1 A. Well, standby.

2 Q. Sure.

3 A. I don't think that's right. That's not
4 right. For PCE, Mr. Criswell is in the high
5 exposure group.

6 Q. And why do you say that?

7 A. Because if we go to Table 2, you'll
8 notice that we talked about before on Page 66, the
9 high exposure is greater than 711 parts per
10 billion months for PCE. Oh, I misspoke.

11 Q. That's okay.

12 A. Yes, he's in the medium exposure for
13 PCE as well.

14 Q. No worries. It's a lot of paper to
15 flip back and forth on.

16 So for PCE there, the hazard ratio --
17 the odds ratio, excuse me, for urinary system
18 bladder on Table 8 is 1.30 with lower confidence
19 intervals of 0.76 and upper confidence intervals
20 of 2.23, correct?

21 A. That's right.

22 Q. Okay. And as I asked you before, under
23 traditional statistical methods, that is not a
24 statistically significant finding, correct?

25 A. I agree with that.

1 Q. Okay. Would you agree that the --
2 would you agree that the 2018 Morbidity Study from
3 ATSDR had major significant limitations?

4 MR. RUZICKA: Objection, form.

5 A. You know, before I answer that, I -- I
6 need to back up and answer the way I did
7 initially, that Mr. Criswell was in the high
8 exposure group for PCE based upon my chart on
9 Page 15 and 16 of my Criswell report, that his
10 total PCE exposure was 1,852 microgram per liter
11 months, which put him in the high exposure for
12 PCE.

13 Q. Can you show me or remind me where
14 you're looking at on your Criswell report?

15 A. Sure. So Page 15 and 16, if you look
16 in the first column, which is cumulative
17 micrograms per liter months, which is the same as
18 parts per billion months --

19 Q. Sure.

20 A. -- the total, which is on Page 16,
21 left-hand column, it says totals for HP and TT for
22 PCE, I said with the TechFlow model he was at
23 1,405. I think I read the other one just a minute
24 ago. So he was 1,405 microgram per liter months
25 or parts per billion months.

1 And that -- if you go to Table 2 of the
2 Morbidity Study, that puts him in the high
3 exposure for PCE, which was greater than or equal
4 to 711 parts per billion months, so he's in the
5 high exposure.

6 Q. Okay. And so when we were talking
7 about Table 8, we were talking about the wrong
8 exposure.

9 A. He's high exposure, not medium.

10 Q. Okay. Would you agree the 2018
11 Morbidity Study had major limitations?

12 A. Every study has some limitations, and
13 they discuss them in their report. And just --
14 just for the record, so the high exposure on
15 Table 8 for PCE would place him with an odds ratio
16 of 2.07 with a 95% confidence interval of 1.12 to
17 3.82.

18 Q. Okay. And what were some of the
19 limitations of the 2018 Morbidity Study?

20 A. They discuss it on Page 54. Because it
21 was a survey and apparently 20% of people couldn't
22 get the survey. They -- they didn't confirm every
23 cancer diagnosis is my impression. Although I
24 think they looked in cancer registries to help
25 with that.

1 There was some uncertainty about
2 exactly where, what barracks people were located,
3 but they go through their painstaking method of
4 trying to determine that.

5 Q. Would you agree that the results from
6 the 2018 Morbidity Study should be interpreted
7 with caution?

8 A. Oh, I don't know. I don't -- none of
9 my opinions am I providing with caution here, so I
10 don't really know how else to answer that.

11 Q. Could you restate that? None of your
12 opinions what?

13 A. I'm not offering them with caution.

14 Q. Okay.

15 A. So maybe some of the things they say
16 should be interpreted with caution, but that's not
17 my interpretation in my opinion.

18 Q. Okay. Could you turn to Page 10? And
19 at the bottom of Page 10 the paragraph starting at
20 the very end states: Study results add to the
21 scientific literature and suggest possible
22 associations between the chemicals in the drinking
23 water at Camp Lejeune and these diseases.
24 However, results of this study need to be
25 interpreted with caution for several reasons.

1 Did I read that correctly?

2 A. You did.

3 Q. Okay. And so ATSDR here is stating
4 that the results of the study need to be
5 interpreted with caution, correct?

6 A. That's what this says.

7 Q. And then they go through a couple
8 reasons. First, the low response rate in small
9 numbers for some of the diseases of interest
10 resulted in wide confidence intervals.

11 Second, selection bias could have
12 impacted analyses comparing Camp Lejeune to Camp
13 Pendleton, like biasing results away from the
14 null, potentially overestimating the effect of the
15 exposures because those at Camp Lejeune with
16 health problems may have been more likely to
17 participate than those at Camp Lejeune with health
18 problems. The Camp Lejeune participants with
19 health problems may have been more likely to
20 participate because they were aware of the
21 contaminated drinking water and believed they were
22 affected by their exposures.

23 Did I read that correctly?

24 A. Yes.

25 Q. Okay. And do you disagree with that at

1 all?

2 A. Largely, no.

3 Q. And then on Page 12 at the top, at that
4 last paragraph there, ATSDR characterizes the
5 limitations as major limitations of this study.
6 Given the major limitations of the study, ATSDR is
7 conducting additional research at Camp Lejeune
8 cohorts to further evaluate the incidence of
9 cancer in this population, correct?

10 A. That's right.

11 Q. Okay. So let's turn to the Aschengrau
12 Study. Okay. Well, last, quickly going back to
13 the 2018 Morbidity Study, were you aware that the
14 2018 Morbidity Study was never submitted to a
15 peer-reviewed journal?

16 A. Correct. My understanding it was
17 peer-reviewed both internally at ATSDR and I think
18 externally peer-reviewed but not for external
19 publication.

20 Q. Would you agree that peer-review is a
21 key part of determining whether a study is
22 scientifically reliable?

23 A. Sure.

24 Q. Okay. Now let's turn to the Aschengrau
25 Study, Exhibit 15. Do you recognize Exhibit 15 to

1 be a true copy of the Aschengrau Study?

2 A. Yes.

3 Q. Okay. I'm going to jump back and forth
4 between your Criswell report, Exhibit 4, and the
5 Aschengrau Study.

6 You state in Paragraph 33: Regarding
7 Mr. Criswell's cumulative ingestion exposure to
8 PCE, his range of exposure of 119.809 to 183.584
9 milligrams is a -- is an exceedance of the 90th
10 percentile exposure group in Dr. Aschengrau's Cape
11 Cod PCE-contaminated Water Epidemiology Study
12 which showed 27.1 to 44.1 milligram of cumulative
13 PCE exposure and identified a 303% increase.

14 Did I read that correctly?

15 A. Yes.

16 Q. Okay. If you turn to Page 289, Table 4
17 there...

18 MR. RUZICKA: Exhibit 15, right?

19 MR. ANWAR: Correct.

20 Q. You'd agree that Aschengrau 1993 only
21 considered a single bladder cancer case to be
22 exposed when considering latency?

23 A. Yes.

24 Q. And because there was only a single
25 exposed bladder cancer case when considering

1 latency, Aschengrau 1993 did not calculate an odds
2 ratio for -- for bladder cancer when considering
3 latency, correct?

4 A. That's right.

5 Q. And isn't considering latency one way
6 that a study might account for the possibility of
7 a confounding variable or bias?

8 MR. RUZICKA: Objection, form.

9 A. It may.

10 Q. And in your report, you're relying
11 entirely on the data in Aschengrau 1993 that does
12 not consider latency, correct?

13 A. That's right.

14 Q. And you put Mr. Criswell in the 90th
15 percentile or high exposure group, correct?

16 A. That's right.

17 Q. Based on Dr. Reynolds' calculations,
18 correct?

19 A. Yes.

20 Q. And if we look at Table 4 with the
21 crude odds ratio for the cases without latency,
22 the odds ratio there is 6.04, correct?

23 A. That's right.

24 Q. Okay. And then the confidence interval
25 is 1.32 to 21.84, correct?

1 A. That's right.

2 Q. Okay. How would you characterize that
3 confidence interval?

4 A. I wouldn't other than that represents a
5 statistically significant finding. It's a 504%
6 increase odds of bladder cancer.

7 Q. Would you agree that's a wide
8 confidence interval?

9 MR. RUZICKA: Objection, form.

10 A. I wouldn't use an adjective.

11 Q. If we look at the low exposure group
12 for bladder cancer there, the finding is the odds
13 ratio is 1.16, and the confidence interval is 0.48
14 for the lower limit to 2.48 for the upper limit,
15 correct?

16 A. That's right.

17 Q. And then the column over any, the odds
18 ratio is 1.55, and the lower limit confidence
19 interval, lower limit is 0.74, and the upper limit
20 is 3.01, correct?

21 A. That's right.

22 Q. How would you characterize the -- the
23 confidence interval for the high category relative
24 to the low and the any categories?

25 A. Well, the high one was statistically

1 significant under historical interpretations and
2 the lower ones were not.

3 Q. You would agree that the -- the
4 confidence interval for the high -- the high
5 category is wider than the low and any category,
6 correct?

7 MR. RUZICKA: Objection, form.

8 A. I would agree with that.

9 Q. Would you agree the wider the
10 confidence interval, the more uncertainty in the
11 result?

12 A. No. The point estimate is what the
13 data show.

14 Q. How does uncertainty in your mind fit
15 into a confidence interval?

16 A. It's -- well, this confidence interval
17 is representative of -- of less power than if the
18 confidence interval were different, but the point
19 estimate is the point estimate, six times greater
20 odds of bladder cancer.

21 Q. What do you mean by less power?

22 A. Meaning that there's -- given numbers,
23 there's less ability to detect the change.

24 Q. Right.

25 A. Less ability to detect a true

1 difference.

2 Q. You would agree that the high category,
3 based on Table 4, is based on four cases, correct?

4 A. That's right.

5 Q. What does the number of cases tell you
6 about the confidence, or how does that relate to
7 sort of your confidence in the results?

8 A. Well, it doesn't. The results show a
9 point estimate of 6.04. You have less power
10 because there are four cases, and that's reflected
11 in the confidence interval, but the point estimate
12 is 6.04, six times odds of bladder cancer.

13 Q. And based on Dr. Reynolds' numbers
14 and based on these three studies, you opine that
15 Mr. Criswell experienced exposures at levels
16 recognized to be hazardous to humans for time on
17 base at Camp Lejeune to TCE, PCE, vinyl chloride
18 and benzene, is that right?

19 A. Yes. Where were you reading from?

20 Q. That was just my question.

21 A. I think the answer is, yes.

22 Q. I mean, we can read Paragraph 36 if
23 you'd like. It says: Based on the above, which
24 is Mr. -- or which is Dr. Reynolds' numbers and
25 the three studies we just discussed, as well as

1 the totality of my prior reports and reviewed
2 materials, it is my opinion to a reasonable degree
3 of medical, sci -- medical, scientific and
4 toxicological certainty that Mr. Criswell was
5 exposed to the relevant chemicals at Camp Lejeune
6 at levels individually or collectively known to be
7 hazardous to human health that were capable of
8 causing humans to develop cancer in general and
9 bladder cancer in particular that placed
10 Plaintiff, Mike Criswell, at an increased risk of
11 developing bladder cancer, is that correct?

12 A. That's right.

13 Q. Okay. And that -- the exposure and
14 risk estimate is based on Dr. Reynolds' numbers
15 and the three studies we just discussed, correct?

16 A. Correct.

17 Q. Okay. Do you have any other opinions
18 in Mr. Criswell's case that we haven't discussed?

19 A. Standby.

20 MR. RUZICKA: I'm going to just object
21 to the form of the question.

22 A. I would say my opinions are in my
23 report. There are opinions, things I state
24 regarding other aspects of the case, so my
25 opinions are contained in my report.

1 Q. Okay. I had a couple other questions
2 about this report I want to just ask you about.

3 On Page 7, Paragraph 16, Sub-bullet 5,
4 it says: Additionally, even when the barracks had
5 functioning air conditioning units, the military
6 would at times not turn on the air conditioning
7 units to stop energy waste. According to a 1982
8 utilities and management plan, the AC could only
9 run when temperatures exceeded 85 degrees
10 Fahrenheit.

11 Did I read that correctly?

12 A. You did.

13 Q. And that's a sub-bullet in support of
14 16(a), which is inhalation exposures through
15 barracks housing, is that right?

16 A. Yes.

17 Q. And Paragraph 16 states that
18 Dr. Longley noted the following historical
19 observations relevant to the likelihood of
20 increased inhalation of contaminated water for a
21 military service member at Camp Lejeune.

22 Did I read that correctly?

23 A. Yes.

24 Q. So specifically as it relates to
25 16(a)(5), if no air conditioning is used, isn't it

1 possible the windows would have been left open?

2 MR. RUZICKA: Objection, form.

3 A. Sure. To let hot, humid air in, sure.

4 Q. And letting air in, wouldn't that
5 increase ventilation in the room?

6 A. It may.

7 Q. And increased ventilation likely would
8 decrease exposures, right?

9 MR. RUZICKA: Objection, form.

10 A. It depends on a lot of circumstances,
11 so it may.

12 Q. If we stay on Paragraph 16 but on
13 Page 8, it's 16, Paragraph 16(c)(i), inhalation
14 exposures at mess halls is para -- is
15 Sub-paragraph C and then Sub-paragraph I states:
16 The amount of water used daily within the mess
17 halls was significant. The Marine Corps estimated
18 that the mess halls utilized 116,000 gallons of
19 water per day. Contemporaneous reports and
20 requests from the U.S. Marine Corps acknowledge
21 that the inadequate ventilation of steam within
22 the mess halls. Historical documents show the
23 lack of ventilation hoods on the mess hall
24 dishwashers until approximately 1976 or 1980 -- or
25 excuse me, 1986 or 1987. Dr. Longley noted HVAC

1 issues and poor ventilation in the mess hall,
2 which would provide a setting to increase the
3 quantity of inhalation exposure settings in which
4 there was VOC inhalation exposure included but
5 were not limited to eating in the mess halls where
6 steam tables with pans of hot water were used to
7 keep food warm, cooking with water in mess hall --
8 mess hall kitchens and using large dishwashers in
9 mess halls.

10 Did I read that correctly?

11 A. Yes.

12 Q. Now, you reference the mess halls
13 utilizing 116,000 gallons of water per day,
14 correct?

15 A. Yes.

16 Q. That would include -- that number
17 includes all the mess halls at Camp Lejeune,
18 correct?

19 A. Yes.

20 Q. It's not just limited to mess halls at
21 Hadnot Point.

22 A. I recall seeing the documents about
23 this 116,000, and I can't remember specifically
24 which mess halls it was, mess halls it were, was.

25 Q. Just looking a little beneath that to

1 16(c)(i) -- 16(d)(i)(1), D -- Subparagraph D says:
2 Inhalation exposures throughout military duties.

3 Subparagraph I, says: VOC inhalation
4 exposure settings that existed in the course and
5 scope of military duties included but were not
6 limited to.

7 And then 1, base-wide high-pressure
8 steam cleaning of all vehicles with steam from a
9 portable Steam Jenny mixed with water to remove
10 accumulations of oils, grease and dirt.

11 Did I read that correctly?

12 A. Yes.

13 Q. Do you know whether the steam cleaning
14 took place indoor or outdoors?

15 A. I don't recall seeing that. My own
16 experience in the military was that it would be
17 outdoors. And if outdoors, wouldn't the chemicals
18 dilute as they enter the atmosphere?

19 MR. RUZICKA: Objection, form.

20 A. They could.

21 Q. And then 16(d)(3) there -- (d)(i)(3),
22 excuse me, says: Laundry with or without the use
23 of Steam Jennies. Do you see that?

24 A. Yes.

25 Q. What is a Steam Jenny, do you know?

1 A. So a Steam Jenny, my recollection, is
2 that it's a portable unit that creates steam, and
3 it can also be under pressure.

4 Q. Do you recall any of the five bladder
5 cancer plaintiffs mentioning the use of a Steam
6 Jenny?

7 A. I recall one of them mentioning
8 cleaning the howitzers, but I don't know
9 specifically if a Steam Jenny was mentioned.

10 Q. Okay. If you want to turn to Page 9,
11 Paragraph 20, it states: Studies have shown that
12 damaged skin, a frequent -- a frequent hallmark of
13 Marine training and life at Camp Lejeune,
14 according to Dr. Longley's research, exhibits
15 increased absorption rates for both hydrophilic
16 and lipophilic compounds.

17 Did I read that correctly?

18 A. Yes.

19 Q. And then you cite, I think, Chang and
20 Tsai, is that right?

21 A. And Nielsen.

22 Q. And Nielsen, I'm sorry, yes. Do you
23 remember what the Tsai paper was about?

24 THE WITNESS: Just for the court
25 reporter, Tsai is T-S-A-I.

1 THE COURT REPORTER: Thank you.

2 A. I can't remember.

3 Q. If I told you that study involved the
4 use of acetone-disrupted hairless mouse skin as a
5 model, does that ring any bells?

6 A. It doesn't.

7 Q. Okay. Do you understand what I'm
8 referencing when I say acetone-disrupted hairless
9 mouse skin as a model?

10 A. Well, I know what that would mean.

11 Q. What would it mean?

12 A. It would mean applying acetone to
13 either a living hairless mouse or the skin of a
14 hairless mouse and looking at absorption or
15 transmission through it of various compounds.

16 Q. Is that an appropriate comparison for
17 water at Camp Lejeune?

18 A. It's one of three citations to
19 demonstrate how skin absorbs various compounds.

20 Q. Okay. But at least as to just that
21 citation, recognizing you also cite two other
22 articles, do you believe Tsai is an appropriate
23 citation, a hairless mouse model, as it relates to
24 water at Camp Lejeune?

25 A. Sure, if I didn't think it was

1 appropriate, I wouldn't have included it. It
2 demonstrates increased skin absorption when it's
3 damaged.

4 Q. And so you mentioned you also cite the
5 Nielsen paper, right?

6 A. Yes.

7 Q. Do you recall anything about that paper
8 sitting here today?

9 A. No.

10 Q. I'll represent to you that the name of
11 the paper is Percutaneous Penetration Through
12 Slightly Damaged Skin. Does that ring any bells?

13 A. No.

14 Q. Okay. As you sit here today, can you
15 identify any plaintiff that had compromised skin
16 while at Camp Lejeune?

17 A. Of these five bladder cancer patients,
18 I can't remember. I remember reading something
19 about it, but it may not have been one of these
20 five plaintiffs.

21 Q. Okay. Now, with respect to the other
22 four -- so we've just been talking about the
23 Criswell report. With respect to the other four
24 plaintiffs, part of the reason I'm asking you is I
25 think this might just speed things up, is for the

1 Raymond, Cagiano, Dyer and Laramore report, would
2 you agree that the numbers from Dr. Reynolds are
3 different, which impacts sort of the number -- the
4 numbers portion of the analysis, but much of the
5 rest of the report -- reports contain the same or
6 similar language?

7 A. That was a long one so...

8 Q. Yeah. I can try to clarify it if you
9 don't understand it.

10 A. The calculations of exposure from
11 Dr. Reynolds in my five reports differ because the
12 people lived and worked at Camp Lejeune at
13 different times and may have lived or worked in
14 different areas.

15 So the numbers are the numbers, and
16 then my interpretation of those numbers are based
17 upon the three articles, the 2018 Morbidity Study,
18 Aschengrau and the Bove 2024b Incidence Study.

19 The interpretation is
20 plaintiff-specific, so based on their numbers,
21 that is what my opinions are based upon.

22 Q. Fair enough. And thank you for that
23 clarification.

24 Would you agree, for instance, that the
25 portions where you're discussing Dr. Longley's

1 report and some of the paragraphs we just went
2 through, those are identical across reports?

3 A. Identical or similar, very similar. I
4 grant -- I grant you that.

5 Q. Okay. And ultimately for all five of
6 the bladder cancer plaintiffs, you concluded that
7 there was substantial exposure and not de minimis
8 exposure leading to increased risk of bladder
9 cancer, correct?

10 A. Yes. With each plaintiff meeting that
11 substantial exposure based on different chemicals
12 and at different levels.

13 Q. Okay. Let's take a look at the Raymond
14 report, which is Exhibit 5, and I want to compare
15 it to the Cancer Incidence Study, the 2023 study,
16 so you might keep that handy with you, which is
17 Exhibit 13, so Exhibit 5 and 13.

18 If we turn to Page 8 of your report for
19 Mr. Raymond, there at -- in Paragraph 25, you have
20 the dates that Mr. --

21 A. Page 9?

22 Q. Page 8.

23 A. Paragraph 25 is on Page 9.

24 Q. Oh, I'm sorry, Paragraph 24, sorry. I
25 might be losing it, long day.

1 So Raymond report, Page 8, Paragraph
2 24, you state there that Mr. Raymond was at Camp
3 Lejeune, resided and worked at Hadnot Point from
4 roughly November 1963 to December 1, 1965,
5 correct?

6 A. That's right.

7 Q. So Mr. Raymond was there for about
8 two years or 24 months?

9 A. Correct.

10 Q. Okay. And based on our discussion
11 before of the Cancer Incidence Study for medium
12 exposure in this study being classified as 7 to 10
13 quarters, which would be 21 to 30 months, correct?

14 A. That's right.

15 Q. And so Mr. Raymond fell into the medium
16 exposure group, correct?

17 A. For duration, correct.

18 Q. Okay. And so if we turn to Table 5
19 again.

20 A. Yes.

21 Q. In the middle of the page, urinary
22 bladder, medium duration at Camp Lejeune, the
23 adjusted hazard ratio is 1.18 with a lower
24 confidence interval limit of .95 and an upper
25 confidence interval limit of 1.46, correct?

1 A. That's right.

2 Q. Okay. And I -- we talked about the
3 meaning of that, the significance of a 1.18 hazard
4 ratio in the context of Mr. Criswell, correct?

5 A. That's right.

6 Q. Okay. And would your opinion be the
7 same as it relates to Mr. Raymond?

8 A. Yes.

9 Q. Okay. And then if you turn over to
10 Table 6, urinary bladder, the adjusted hazard
11 ratio is 1.18 and the lower confidence interval
12 limit is .80 and the upper confidence interval
13 limit is 1.75, correct?

14 A. That's right.

15 Q. Okay. And then even just to break it
16 down a little further, I don't think we talked
17 about this, but to the extent that Mr. Raymond's
18 and/or Mr. Criswell's bladder cancer could be
19 considered urothelial, here for Mr. Raymond if he
20 falls into the low and medium duration at --
21 group, for civilian workers, for urothelial the
22 hazard ratio, adjusted hazard ratio, is 1.23 and
23 the lower confidence limit is .83 and the upper
24 confidence limit is 1.84, correct?

25 A. That's right.

1 Q. And would you hold the same opinion
2 that we discussed earlier in the context of
3 Mr. Criswell about the significance of --
4 statistical significance of the findings?

5 A. Yes.

6 Q. Okay. In other words, for his time in
7 the Marines and either for -- based on the Cancer
8 Incidence Study, Table 4, Table 5 for service
9 members and Table 6 for civilians, under
10 traditional statistics the findings for the medium
11 duration group were not statistically significant,
12 correct?

13 MR. RUZICKA: Objection, form.

14 A. Yeah, I've said that a few times. The
15 point estimate is 1.18 with an 18% increased odds
16 of bladder cancer, but under historical
17 interpretations they would not be statistically
18 significant.

19 Q. Okay. And we talked about the 2018
20 ATSDR morbidity study and we talked about
21 Aschengrau in the context of Mr. Criswell,
22 correct?

23 A. That's right.

24 Q. Okay. And the same discussion would
25 apply to Mr. Raymond, correct?

1 A. Yes.

2 Q. In other words, the same limitations
3 would apply, but the -- the same opinions you
4 expressed about Mr. Criswell would also apply,
5 correct?

6 A. Correct.

7 Q. Okay.

8 A. Well, I mean, my opinions are specific
9 to each plaintiff, so I gave you my opinions about
10 Mr. Criswell.

11 So my opinions about Mr. Criswell are
12 not directly applicable to Mr. Raymond because
13 they're different individuals with different
14 exposure.

15 Q. Okay. The same issues that I -- that
16 we discussed, the limitations of the Aschengrau
17 Study and the 2018 Morbidity Study, those remain
18 unchanged, correct?

19 A. I agree with that.

20 Q. Okay. Let's take a look at Exhibit 6,
21 which is Mr. Cagiano's report.

22 THE WITNESS: Can we take five minutes,
23 get a cup of coffee and use the head?

24 MR. ANWAR: Sure. Yeah, absolutely.

25 Let's go off the record.

1 THE VIDEOGRAPHER: This is the end of
2 Media 3. Off the record, 2:13 p.m.

3 (Thereupon, a break was taken.)

4 THE VIDEOGRAPHER: This is the
5 beginning of Media 4. On the record at 2:20
6 p.m.

7 BY MR. ANWAR:

8 Q. We are back on the record from a short
9 break. Dr. Bird, are you okay to continue?

10 A. I am.

11 Q. Okay. I'm going to try to shortcut
12 this as much as possible so we don't have to go
13 through all five reports individually, given the
14 overlap of each of the reports, understanding that
15 you're making -- offering independent opinions
16 based on Dr. Reynolds' evaluation or exposure
17 numbers for each plaintiff, fair?

18 A. Fair.

19 Q. Okay. Could you turn back to
20 exhibit -- the Cancer Incidence Study? I think
21 that's 14. Table -- Cancer Incidence -- I'm
22 sorry, not 14, then it would be 13. Sorry about
23 that.

24 If you go back to Table 5.

25 A. I'm there.

1 Q. And Table 5 is the table we've been
2 discussing -- we've discussed with respect to
3 Mr. Criswell and Mr. Raymond already. It is the
4 results of the study as it relates to service
5 members' cancer outcomes by duration stationed at
6 Camp Lejeune compared with Camp Pendleton between
7 1975 and 1985, correct?

8 A. That's right.

9 Q. Okay. You would agree that for all
10 five of the bladder cancer plaintiffs in which
11 you're offering specific causation reports, they
12 all either fall into low, medium or high duration,
13 correct?

14 A. Correct.

15 Q. And if we look at urinary bladder and
16 urothelial bladder in the middle of the page
17 there, would you agree that the numbers there
18 listed for urinary bladder, so the adjusted hazard
19 ratios listed for urinary bladder across the low,
20 medium and high duration and then the urothelial
21 category across the low, medium and high duration,
22 under traditional statistical methods, those
23 adjusted hazard ratios are not statistically
24 significant?

25 A. I would agree with that.

1 Q. Okay. Then if you turn to Table 6,
2 this is the table that focuses on cancer outcomes
3 by duration at Camp Lejeune compared to Camp
4 Pendleton for civilian workers between October
5 1972 to December 1975, correct?

6 A. That's right.

7 Q. Okay. And you would agree -- again, so
8 this table has two columns, one that is low/medium
9 duration at Camp Lejeune and one is high duration
10 at Camp Lejeune, correct?

11 A. That's right.

12 Q. And you would agree that all five of
13 the bladder plaintiffs that you are offering
14 opinions about fall into one of these categories,
15 either the low/medium or the high duration
16 category, correct?

17 A. That's right.

18 Q. Okay. And so if you, again, look at
19 the table under urinary bladder for the adjusted
20 hazard ratio for the low/medium duration at Camp
21 Lejeune and the high duration at Camp Lejeune,
22 under traditional statistical methods those hazard
23 ratios are not statistically significant, correct?

24 A. That --

25 MR. RUZICKA: Objection, form.

1 A. That's right.

2 Q. Okay. And then under urothelial
3 bladder, just underneath that, the same is also
4 true?

5 A. Correct.

6 Q. Okay. You can set that aside.

7 And then we -- we already talked about
8 the 2018 Morbidity Study and the 1993 Aschengrau
9 Study, and we talked about those studies in the
10 context of your Criswell report, but any
11 limitations of those studies would also apply to
12 the other four bladder plaintiffs you're offering
13 opinions about, correct?

14 A. Correct.

15 Q. Okay. Dr. Bird, would you agree that
16 everyone is exposed to some carcinogens daily?

17 A. I would agree with that.

18 Q. What is your understanding of being
19 exposed to carcinogens on a daily basis? Why do
20 you say that?

21 A. Well, there are very low concentrations
22 of carcinogens in the air, such as NDMA. There
23 are some carcinogens, typically at very low
24 concentrations, in some of the food we eat or the
25 water we drink, so it's a part of life to have

1 very low exposures, background exposures, of
2 carcinogens.

3 Q. Would you agree that people are exposed
4 or have background exposures to TCE in everyday
5 life?

6 MR. RUZICKA: Objection, form.

7 A. There's probably a little TCE. There's
8 not a lot of background exposure to TCE, likely.

9 Q. Are you aware that ATSDR in their tox
10 profile for TCE assumes that the average daily air
11 intake of TCE is 11 to 33 micrograms per day?

12 A. That sounds about right.

13 Q. And if you multiply that over a year,
14 that would mean the average air intake of TCE
15 could range in a year from 4,015 to 12,045
16 micrograms in a year, would you agree with that?

17 A. That math sounds about right, so that
18 would be everyone's background exposure.

19 Q. Yeah. Likewise, are you aware that
20 people are exposed to benzene in everyday life?

21 A. Sure. There's background exposure to
22 benzene.

23 Q. Are you aware that raw bananas have
24 been found to have as much as 132 parts per
25 billion or micrograms per liter of benzene?

1 MR. RUZICKA: Objection, form.

2 A. No, I've never seen that study.

3 Q. Okay. If it's -- if that's in the
4 ATSDR benzene tox profile in 2007, do you have
5 any -- would you have any disagreement with that?

6 A. Well, I don't know. I'd ideally like
7 to see the source document for that.

8 Q. Okay. Cigarettes have benzene in them,
9 right?

10 A. Sure, there's low levels of benzene.

11 Q. Have you ever calculated someone's
12 exposure to benzene from cigarettes?

13 A. No. I wasn't asked to do that here.

14 Q. Have you ever done it in your career?

15 A. I don't believe so.

16 Q. You'd agree that smoking is a major
17 risk factor for bladder cancer, correct?

18 A. It's probably the number one modifiable
19 risk factor for bladder cancer.

20 Q. Okay. And studies show that it's
21 estimated that smoking causes approximately 40 to
22 50% of bladder cancer cases, right?

23 A. Sounds about right.

24 Q. Are you aware that several of the
25 plaintiffs had significant smoking histories?

1 MR. RUZICKA: Objection, form.

2 A. I'm aware that two of them had -- I
3 think two had smoking histories. I don't -- I
4 don't know about the adjective.

5 Q. Were you aware Mr. Raymond had a 50
6 pack-year smoking history?

7 A. I think that seems about right.

8 Q. And were you aware that Mr. Laramore
9 had anywhere from a 30 to 60 pack-year smoking
10 history?

11 A. That's my understanding.

12 Q. And for this case, you didn't calculate
13 Mr. Raymond's or Mr. Laramore's cumulative
14 exposures to benzene from cigarettes, correct?

15 A. That's right.

16 Q. And you didn't -- putting aside
17 calculating, you didn't take into account their
18 cumulative exposure to benzene from cigarettes,
19 correct?

20 MR. RUZICKA: Objection, form.

21 A. I don't know what you mean by take into
22 account accumulative exposure to benzene.

23 Q. When offering your opinion about
24 substantial exposure to Camp Lejeune water
25 being -- increasing the risk of bladder cancer for

1 Mr. Raymond and Mr. Laramore, did you consider
2 their respective smoking histories as part of that
3 opinion?

4 A. Sure.

5 Q. How so?

6 A. The chemicals from Camp Lejeune have
7 been shown to increase the risk of bladder cancer,
8 and I present that data. The risk -- any risk
9 they had from smoking is separate from the risk
10 from the Camp Lejeune chemicals, so any other
11 exposure they have is generally irrelevant to my
12 opinion about the chemicals from Camp Lejeune.

13 Q. Okay. And I think you agreed you did
14 an attempt to calculate their exposures from
15 cigarette smoking, correct, their benzene
16 exposures?

17 A. Correct.

18 Q. Were you aware that Mr. Criswell had a
19 smoking history as well?

20 MR. RUZICKA: Objection, form,
21 foundation.

22 A. I may be misremembering. I think he
23 had a low or infrequent smoking history. I can't
24 remember the details right now.

25 Q. Okay. His -- his smoking history was

1 about two to three cigarettes per day for
2 approximately two years. Does that sound right?

3 MR. RUZICKA: Objection, form and
4 foundation.

5 A. Sounds about right.

6 Q. Okay. And you -- would you agree that
7 two cigarettes per day for about two years would
8 be approximately 1,460 cigarettes?

9 A. If that's what that math is, right.

10 Q. Okay. And then three cigarettes per
11 day for two years is approximately 2,190
12 cigarettes. Do you have any reason to disagree
13 with that?

14 A. No.

15 Q. Are you aware of the CDC definition of
16 a nonsmoker being an adult that has smoked less
17 than 100 cigarettes in their lifetime?

18 A. I have read that.

19 Q. Okay. Do you agree with it?

20 A. That's the definition they use. See,
21 to me it seems low, but that's the definition they
22 use.

23 Q. So that would -- that would put
24 Mr. Criswell above the CDC threshold for being a
25 nonsmoker, right?

1 MR. RUZICKA: Objection, form and
2 foundation.

3 A. Assuming all those numbers are correct,
4 yes.

5 Q. Even smoking one cigarette per day for
6 two years would put Mr. Criswell above the
7 threshold for being a nonsmoker based on the CDC's
8 definition, correct?

9 MR. RUZICKA: Objection, form.

10 A. That's my understanding.

11 Q. Were you aware that Ms. Dyer smoked
12 less than a pack per day for approximately two
13 years?

14 MR. RUZICKA: Objection, form and
15 foundation.

16 A. I recall something about some very
17 infrequent use. I don't remember the details.

18 Q. Even like Mr. Criswell, even one
19 cigarette per day for two years would put her
20 above the CDC's definition of a nonsmoker,
21 correct?

22 MR. RUZICKA: Objection, form.

23 A. It would. Were that -- were that true.

24 Q. Were you aware that Ms. -- one of
25 Mrs. -- Ms. Dyer's treating physicians testified

1 about higher rates of urological cancer in the
2 area where she lived in North Carolina near the
3 Cape Fear River?

4 A. No.

5 Q. If that's what her treating physician
6 in that area testified, would you agree that her
7 environmental exposure in Southeast North Carolina
8 could have been the cause of her bladder cancer?

9 MR. RUZICKA: Objection, form,
10 foundation.

11 A. Well, there's a lot of potential ex --
12 maybe the -- first of all, I don't know where Cape
13 Fear is relative to Camp Lejeune. Maybe people
14 who are in the Marine Corps at Camp Lejeune all
15 live around Cape Fear, so they're getting bladder
16 cancer from their Camp Lejeune water
17 contamination. Those -- those are two
18 explanations.

19 Q. As a general matter, you didn't
20 calculate for any of the five bladder cancer
21 plaintiffs cumulative exposures to TCE, PCE,
22 benzene, vinyl chloride from any other source
23 other than Camp Lejeune water, correct?

24 A. Correct.

25 Q. And you didn't compare the cumulative

1 exposure doses for each of these five plaintiffs
2 to any data concerning background exposures to
3 TCE, PCE, benzene or vinyl chloride, correct?

4 A. I'm sorry, what was the first -- can
5 you say that again? I'm sorry.

6 Q. Sure, no problem.

7 You didn't compare the cumulative
8 exposure doses for each of these five plaintiffs
9 to any data comparing background exposures to TCE,
10 PCE, benzene or vinyl chloride, correct?

11 A. Well, I mean the exposure they had at
12 Camp Lejeune was certainly greater than the
13 background exposure.

14 Q. How do you know that?

15 A. Well, you referenced I think ATSDR
16 saying the background of 11 micrograms in the air
17 per day, and we can see that the concentrations at
18 Camp Lejeune were generally far higher than that.

19 Q. And your understanding of the levels at
20 Camp Lejeune are based solely on Dr. Reynolds'
21 numbers and ATSDR's water models, correct?

22 MR. RUZICKA: Objection, form.

23 A. And when you say ATSDR water model,
24 that's the Maslia, right?

25 Q. Correct.

1 A. So my calculations rely on those two
2 sources.

3 Q. What did you do to prepare for today's
4 deposition?

5 A. I reviewed my general causation report.
6 I reviewed my five specific causation reports. I
7 reviewed the deposition of Dr. Hatten. I reviewed
8 my previous deposition, I guess my general
9 causation deposition here, re-reviewed literature,
10 some of which we've talked about today and also
11 met with counsel.

12 Q. Is there -- strike that.
13 You mentioned you reviewed literature,
14 some of which we talked about today. Do you
15 recall the literature that you reviewed that we
16 haven't talked about today?

17 A. No.

18 Q. How many times did you meet with
19 counsel in preparing for your deposition today?

20 A. Once by Zoom and two phonecalls.

21 Q. Roughly, when did -- when did those
22 meetings take place?

23 A. Phonecalls in the last couple of days,
24 including today, and the Zoom I think it was last
25 week, it may have been at the beginning of the

1 week.

2 Q. Okay. Was there any -- who was present
3 at those meetings?

4 A. Most people had their camera off, so
5 I'm not entirely sure. I know Whitney Wallace was
6 on as well, Patrick Wallace. There may have been
7 a couple others.

8 Q. To the best of your knowledge is there
9 anyone that was on those calls or in those
10 meetings that was not part of the Plaintiffs'
11 legal team?

12 A. I can't imagine how or why that would
13 have been.

14 Q. Okay. Do you think it's possible that
15 someone could have been at Hadnot Point or Tarawa
16 Terrace between 1953 and 1987 without reaching
17 levels of exposure that are hazardous to humans or
18 are substantial for at least one or more of the
19 chemicals at issue?

20 A. Yes.

21 Q. Under what circumstances do you see
22 that as possible?

23 A. Depending on where they were, where
24 they worked and/or where they lived, depending on
25 the time that they were there and depending on

1 their duration on base, would be the principal
2 factors.

3 MR. ANWAR: I think I'm just about
4 finished. Let's take a quick break. I'd
5 like to confer with my colleague --

6 THE WITNESS: Sure.

7 MR. ANWAR: -- and then we can...

8 THE WITNESS: If you want to stay here,
9 I'm happy to step out.

10 THE VIDEOGRAPHER: This is the end of
11 Media 4. Off the record at 2:41 p.m.

12 (Thereupon, a break was taken.)

13 THE VIDEOGRAPHER: This is the
14 beginning of Media 5. On the record at
15 2:48 p.m.

16 MR. ANWAR: We are back on the
17 record from a short break. Dr. Bird, I do
18 not have any other questions for you. Thank
19 you for your time today, and nice seeing you
20 again.

21 THE WITNESS: Yeah, thank you,
22 likewise.

23 MR. RUZICKA: And I have no questions
24 and you can read and sign, and that will be
25 it for today. Thank you for your time.

1 THE WITNESS: Thank you, everyone.

2 THE VIDEOGRAPHER: This the end of
3 Media 5. This concludes the videotaped
4 deposition of Steven Bird. Off the record at
5 2:48 p.m.

6
7 (Thereupon, the deposition
8 concluded at 2:48 p.m.)
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1 STATE OF KENTUCKY)

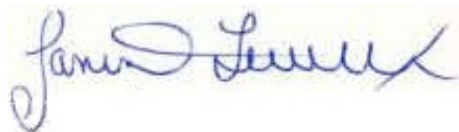
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2 COUNTY OF MONTGOMERY)

3 I, JANINE N. LEROUX, Court Reporter and
4 Notary Public in and for the State of Kentucky at
5 Large, certify that the facts stated in the
6 caption hereto are true, and that at the time and
7 place stated in said caption the witness named in
8 the caption hereto remotely appeared before me.

9 I further certify that after being duly
10 sworn by me the witness was examined by counsel
11 for the parties, and that said testimony was taken
12 in stenotype by me and later reduced to
13 computer-aided transcription, and that the
14 foregoing is a true record of the testimony given
15 by said witness.

16 The foregoing deposition has been
17 submitted to the witness for reading and signing.

18
19
20
21 
22

23 JANINE LEROUX - COURT REPORTER

NOTARY PUBLIC STATE-AT-LARGE

24 MY COMMISSION EXPIRES: NOVEMBER 26, 2027

25 NOTARY ID KYNP1406

1
2 I, _____, state that I have
3 read the foregoing deposition and that it is a
4 true and complete transcript of the testimony
5 given by me on July 18th, 2025 together with
6 corrections, if any, on the attached errata
7 sheet.

8
9 _____
10 Steven Bird, M.D.

11
12 STATE OF _____

13 COUNTY OF _____
14

15
16 Signed before me on this the _____ day of
17 _____, 2025

18 My commission expires:
19

20 _____
21 NOTARY PUBLIC
22
23
24
25

[illegible]

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

DISCLAIMER: THE FOREGOING FEDERAL PROCEDURE RULES ARE PROVIDED FOR INFORMATIONAL PURPOSES ONLY.

THE ABOVE RULES ARE CURRENT AS OF APRIL 1, 2019. PLEASE REFER TO THE APPLICABLE FEDERAL RULES OF CIVIL PROCEDURE FOR UP-TO-DATE INFORMATION.

VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

Veritext Legal Solutions is committed to maintaining the confidentiality of client and witness information, in accordance with the regulations promulgated under the Health Insurance Portability and Accountability Act (HIPAA), as amended with respect to protected health information and the Gramm-Leach-Bliley Act, as amended, with respect to Personally Identifiable Information (PII). Physical transcripts and exhibits are managed under strict facility and personnel access controls. Electronic files of documents are stored in encrypted form and are transmitted in an encrypted

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