

Exhibit 590

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

IN RE:

CAMP LEJEUNE WATER LITIGATION No. 7:23-CV-00897

THIS DOCUMENT RELATES TO:

ALL CASES.

VIDEOTAPED DEPOSITION OF
RICHARD HOPPE, M.D., FACR, FASTRO, FARS
Monday, June 9, 2025

Reported By:

KATHLEEN A. MALTBIE, STENOGRAPHIC REPORTER
California CSR 10068, Nevada CCR 995, Texas CSR
12212, RPR-RMR-CRR-CCRR-CLR-CRC-RDR

VIDEOTAPED DEPOSITION OF

RICHARD HOPPE, M.D., FACR, FASTRO, FARS

BE IT REMEMBERED that on Monday, June 9,
2025, commencing at the hour of 8:48 a.m. thereof,
before me, Kathleen A. Maltbie,
RPR-RMR-CRR-CCRR-CLR-CRC-RDR, a Certified
Stenographic Shorthand Reporter, in and for the
State of California, Nevada and Texas, personally
appeared RICHARD HOPPE, M.D., FACR, FASTRO, FARS, a
witness in the above-entitled court and cause, who,
being by me first duly sworn, was thereupon examined
as a witness in said action.

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23 ALSO PRESENT:

24 Alejandro Zamora-Ruiz, Videographer
25

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1 JUNE 9, 2025

8:48 A.M. PACIFIC TIME

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

3
4 MORNING SESSION

5
6 THE VIDEOGRAPHER: We are now on the
7 record. My name is Alejandro Zamora-Ruiz. I am the
8 videographer for Golkow. Today's date is June 9,
9 2025, and the time is 8:48 a.m. Pacific Time.

10 This video deposition is being held at the
11 Hilton Garden Inn, Palo Alto, at 4216
12 El Camino Real, Palo Alto, California 94306, in the
13 matter of In Re: Camp Lejeune Water Litigation, for
14 the United States District Court, for the Eastern
15 District of North Carolina.

16 The deponent is Dr. Richard T. Hoppe.

17 Counsel will be noted on the stenographic
18 record, and the court reporter will now introduce
19 herself and swear in the witness.

20 THE REPORTER: Good morning. My name is
21 Kathleen Maltbie. I am a certified Stenographic
22 Court Reporter, License No. 10068, also licensed in
23 Texas and Nevada. Today's date is June 9, 2025. We
24 are now on the record.

25 Would you raise your right hand, please?

1 MS. HORAN: Dr. Hoppe, you might need to
2 put your microphone on.

3 RICHARD HOPPE, M.D., FACR, FASTRO, FARS,
4 having been duly sworn,
5 was examined and testified as follows:

6 MS. HORAN: I guess we should notice
7 appearances. Alanna Horan on behalf of the United
8 States, and I'm joined by my colleague,
9 Matthew Elliott.

10 MR. MCGOWAN: Chad McGowan and Randy Lee
11 for the plaintiff.

12 EXAMINATION BY MS. HORAN
13 BY MS. HORAN:

14 Q. Good morning, Dr. Hoppe.

15 A. Good morning.

16 Q. Could you please state your full name for
17 the record?

18 A. Richard Thomas Hoppe.

19 Q. And what is your current address?

20 A. My current address is 340 East Edith
21 Avenue, Los Altos, California, 94022.

22 Q. Is that a personal home address or a
23 business address?

24 A. That's my home address.

25 Q. My name is Alanna Horan. I met you just a

1 moment, and I am an attorney with the Department of
2 Justice representing the United States in this case.

3 Do you understand that?

4 A. Yes.

5 Q. I'm going to go through a couple of ground
6 rules.

7 But you've been deposed before, correct?

8 A. Yes, I have.

9 Q. Roughly how many times?

10 A. About a dozen times.

11 Q. I'll go through some general rules of the
12 road. You're probably familiar with them, but just
13 to make sure we're on the same page.

14 During this deposition today, the court
15 reporter will record and transcribe everything we
16 say while we're on the record.

17 You understand that, right?

18 A. Yes.

19 Q. To make sure that everything gets
20 transcribed properly, I'll ask that you answer your
21 questions verbally and clearly. For example, if you
22 say "yes" or "no," please respond verbally instead
23 of shaking your head; is that fair?

24 A. Yes.

25 Q. We'll do our best to speak at a reasonable

1 pace for the court reporter, but if for whatever
2 reason you can't understand me, will you let me
3 know?

4 A. Sure.

5 Q. If you don't hear or understand my
6 question, will you please ask me to clarify. And if
7 you answer the question, I'm going to assume you
8 understood it; is that fair?

9 A. Yes.

10 Q. I will do my best to always let you finish
11 speaking before I start speaking, and I just ask
12 that you do the same; is that fair?

13 A. Okay.

14 Q. If you wish to take a break at any point
15 throughout today, that's entirely fine with me.
16 Please just ask for a break. If a question is
17 pending, meaning I've asked you and I'm waiting for
18 you to respond, I just ask that you respond to the
19 question before we take the break; fair?

20 A. Yes.

21 Q. Is there any reason why you would be
22 unable to give truthful and accurate testimony
23 today?

24 A. There's no reason.

25 Q. During the deposition today, you might

1 hear your attorney object to some of my questions.

2 Unless your attorney instructs you not to
3 answer the question, I ask that you answer the
4 question; fair?

5 A. Okay.

6 Q. What did you do to prepare for your
7 deposition today?

8 A. I generally reviewed the materials that I
9 submitted, the reports regarding the two plaintiffs
10 in this action. I spoke briefly with the attorneys
11 yesterday. And that really is the extent of my
12 preparation.

13 Q. For how long did you speak with the
14 attorneys yesterday in preparation of today?

15 A. An hour and a half.

16 Q. And was that over the phone, in person,
17 Zoom?

18 A. It was in person.

19 Q. Other than reviewing your reports, did you
20 review any other written materials, such as studies
21 or medical records?

22 A. Not -- not immediately prior to the
23 deposition, but I have over the course of the last
24 several months --

25 Q. Sure.

1 A. -- reviewed those materials.

2 Q. But not in preparation for today?

3 A. No. But I had summarized the medical
4 records and the specific causation reports that I
5 produced, and I reviewed those.

6 Q. And the summaries of the medical records,
7 is that the section in your report that goes through
8 medical histories, or is the summaries a separate
9 document?

10 A. No. No. It's what's in this -- in the
11 specific causation report.

12 Q. Understood.

13 And are the attorneys that you met with
14 yesterday the attorneys that are here today?

15 A. Yes.

16 Q. Have you communicated with anyone besides
17 the attorneys to prepare for your deposition today?

18 A. No.

19 Q. How did you first become aware of the
20 Camp Lejeune Water Litigation?

21 A. I guess I first became aware, there was
22 some announcement on TV or some TV coverage
23 regarding the existence of groundwater contamination
24 at Lejeune, I think advertising for plaintiffs at
25 the time.

1 Q. Do you recall if it was before or after
2 you were retained in the case?

3 A. I really can't recall. It may have been
4 around the same time, but I don't know if it was
5 before or after.

6 Q. Do you recall who first contacted you
7 about working on this matter?

8 A. It may have been Patrick Thelan,
9 T-H-E-L-A-N.

10 Q. Prior to this matter, had you worked with
11 Patrick Thelan before?

12 A. No, I did not.

13 Q. Did Patrick Thelan reach out to you or did
14 you reach out to Patrick Thelan to work on that
15 matter?

16 A. Oh, he reached out to me.

17 Q. And I had a chance to look at your
18 retainer agreement, and I believe it says you were
19 retained around June of 2023.

20 Is that accurate, to your memory?

21 A. Yes. But I'd have to look specifically at
22 those documents to confirm.

23 Q. Sure. Sure.

24 And in -- it looked like you might have
25 signed two retainer agreements.

1 Do you recall that?

2 Or been provided with two retainer
3 agreements?

4 A. I saw in the records, yes, that I had two
5 retainer agreements.

6 Q. One of those retainer agreements was
7 signed with PLG.

8 Is that your memory as well?

9 A. Not sure who PLG is.

10 Q. Okay. Do you know why you have two
11 retainer agreements?

12 A. Well, there were two plaintiffs. Perhaps
13 that's the reason.

14 Q. Sure.

15 Do you recall when you received the second
16 retainer agreement?

17 A. No, I don't.

18 Q. Okay. What has been your assignment in
19 this case?

20 A. My assignment was to review the medical
21 records of the two plaintiffs in this action and to
22 give an opinion on whether I thought their diagnoses
23 of non-Hodgkin lymphoma may have been related to
24 their exposure to groundwater contamination at
25 Camp Lejeune.

1 Q. Other than -- strike that.

2 The two plaintiffs' records that you
3 looked at are Cometto Davis and Allan Howard,
4 correct?

5 A. That's correct.

6 Q. Did you ever look through any other -- or
7 offer -- strike that.

8 Did you ever look through any other
9 plaintiffs' records or have you only ever worked on
10 Mr. Davis' and Dr. Howard's?

11 A. I've only ever worked on those two.

12 Q. I'm not asking about time working with
13 attorneys, but did anyone ever help you prepare your
14 reports and opinions, outside of attorneys? Perhaps
15 a student might have helped you --

16 A. No.

17 Q. -- or kind of an assistant.

18 A. They were generated totally by myself, and
19 nobody reviewed them.

20 Q. Sure.

21 MS. HORAN: I'm marking as Exhibit 1,
22 Hoppe Exhibit 1. This is the specific causation
23 expert report of Richard Hoppe for the case Davis
24 versus United States.

25 / /

1 BY MS. HORAN:

2 Q. And Mr. -- or Dr. Hoppe, I'm sorry, I
3 would just ask that you use this copy because it's
4 marked.

5 (Whereupon, Deposition Exhibit 1
6 was marked for identification.)

7 BY MS. HORAN:

8 Q. Dr. Hoppe, do you recognize this report?

9 A. Yes, I do.

10 Q. Is this the expert report you've submitted
11 in this case as it relates to Mr. Davis?

12 A. Yes, it is.

13 Q. Does this report contain all the opinions
14 you intend to offer in this case about Mr. Davis?

15 A. Well, I'm not sure I can say that. There
16 may be some questions that you ask that I haven't
17 addressed in this report, and I would feel obligated
18 to respond to those questions.

19 Q. Sure.

20 So setting aside any questions I might ask
21 you today, you're not here with new opinions that
22 you intend to offer that are not contained in this
23 expert report --

24 A. No.

25 Q. -- is that fair?

1 A. No. I'm not -- I'm not going to change
2 any of my opinions.

3 Q. And you reviewed this report, which is
4 marked as Exhibit 1, as -- in preparation for today,
5 right?

6 A. I did.

7 Q. And in your preparation, is there anything
8 that you wanted to edit or change while you were
9 reviewing it?

10 A. Well, there were a few typos, but nothing
11 of substance.

12 Q. And I just noticed, Dr. Hoppe, you have
13 some documents in front of you.

14 What are those?

15 A. Those are the two reports that I prepared.
16 The specific causation for Mr. Howard and Mr. Davis,
17 and also a copy of the subpoena and a copy of
18 requests for materials that I had reviewed.

19 Q. Okay. And your -- the copies that you
20 brought with you of the reports, for Mr. Davis, is
21 that the one that starts -- it starts on page 1 and
22 ends on page 12, the copy you brought?

23 A. I'm sorry, but it's not paginated --

24 Q. Oh.

25 A. -- so -- but I only have --

1 Q. Let me reask this: The packet that I
2 handed you includes references and your CV. I think
3 it also has your prior testimony.

4 But the copy of the report you brought is
5 just your opinions?

6 A. That's correct.

7 Q. Okay.

8 A. It does not include the references or my
9 CV or other attachments.

10 MS. HORAN: I'm marking as Exhibit 2.
11 This is a couple of different documents. These are
12 the materials considered lists that we have received
13 relating to your report for Mr. Davis.

14 (Whereupon, Deposition Exhibit 2
15 was marked for identification.)

16 BY MS. HORAN:

17 Q. Could you just take a look through those
18 and let me know if they seem complete and accurate
19 as to the materials you considered for Mr. Davis?

20 A. You know, I believe this looks correct,
21 but short of going through --

22 Q. Sure.

23 A. -- and checking each individual item, I
24 can't say with certainty.

25 Q. Sure.

1 But nothing jumps out at you as missing?

2 A. No. No.

3 MS. HORAN: I'm marking as Hoppe
4 Exhibit 3. This is the report that Dr. Hoppe
5 submitted as relates to Alan Howard.

6 (Whereupon, Deposition Exhibit 3
7 was marked for identification.)

8 BY MS. HORAN:

9 Q. Dr. Hoppe, do you recognize this report?

10 A. Yes, I do.

11 Q. And are these the complete opinions you
12 intend to offer in this case about Alan Howard,
13 except for answering any questions I might have --
14 ask you today?

15 A. Yes.

16 Q. And you reviewed this report in preparing
17 for today?

18 A. I did.

19 Q. And is there anything in your review that
20 you wanted to edit or change about the report?

21 A. Well, there was, actually, and it applies
22 to -- to both of these plaintiffs, a paper that came
23 to my attention by Yu and others, Y-U, that I don't
24 believe I included in my opinions, but applies to
25 both of them.

1 Q. Sure.

2 And we'll get to the Yu paper. I did see
3 that you updated your materials considered list to
4 include that report.

5 But other than the Yu report, are there
6 any edits or changes you wanted to make to
7 Mr. Howard's report in your review?

8 A. Again, only possible typographic problems
9 that are not of substance.

10 MS. HORAN: I'm marking as Hoppe
11 Exhibit 4. These are the materials considered lists
12 that we received relating to your report for
13 Mr. Howard.

14 (Whereupon, Deposition Exhibit 4
15 was marked for identification.)

16 BY MS. HORAN:

17 Q. Dr. Hoppe, if you could just review those
18 and let me know if they seem complete or if anything
19 is -- jumps out at you as missing.

20 A. Nothing jumps out at me as being missing.

21 Q. If you could turn to page 2.

22 Do you see on your list Number 3 and 4 are
23 two declarations by Mr. Howard, one is from
24 November 26th and the other January 30th?

25 A. Mm-hmm.

1 Q. Did you work with Mr. Howard in drafting
2 those declarations or have you ever worked with
3 Mr. Howard directly?

4 A. No. I've never met Mr. Howard or spoken
5 with him.

6 Q. So those declarations were provided to
7 you?

8 A. Yes.

9 Q. And then if you look at number 9, it says
10 (as read):

11 Allan W. Howard exposure
12 profile/chart produced
13 contemporaneously herewith.
14 Do you see that one?

15 A. Yes, I do.

16 Q. Did you create that exposure and profile
17 chart or was that provided to you?

18 A. That was provided to me.

19 Q. And you can flip back to Exhibit 2 if it
20 would be helpful, but I didn't notice any
21 declarations for Mr. Davis.

22 Did you review any declarations for
23 Mr. Davis?

24 A. If it's not listed, then I likely did not.

25 Q. And sitting here today, you don't recall

1 reading a declaration --

2 A. No.

3 Q. -- about Mr. Davis?

4 A. No.

5 Q. Have you read Dr. Ambinder's reports?

6 A. Yes, I did.

7 Q. I didn't see those on either of the
8 materials considered lists.

9 Are there any other materials that were
10 government expert reports that you reviewed, other
11 than Dr. Ambinder's reports?

12 A. There was -- there was another -- I forget
13 who generated the report. I'm sorry, I can't
14 remember offhand.

15 Q. Okay. If you recall at some point today,
16 would you mind letting me know?

17 A. Sure.

18 Q. I'll represent, I think I believe I did
19 see that you saw the transcript of Dr. Goodman.

20 Does it -- does Dr. Goodman's name ring a
21 bell to you?

22 A. Dr. Goodman's name is familiar.

23 Q. Okay. Do you think it's possibly
24 Dr. Goodman's report that you saw?

25 A. I -- the report that I saw was a response

1 to my report of specific causation. Similar -- you
2 know, same line as Dr. Ambinder.

3 Q. Okay. Does Dr. Bailey ring a bell?

4 No? Okay, if you can recall.

5 A. Sure.

6 Q. If you remember at some point throughout
7 the day, just if you could let me know.

8 A. Okay.

9 Q. When did you first read Dr. Ambinder's
10 reports?

11 A. When it was provided to me, which I'd have
12 to say was a few weeks after I submitted my specific
13 causation report.

14 Q. Are you familiar with Dr. Ambinder
15 professionally?

16 A. Yes.

17 Q. And Dr. Ambinder is a respected physician
18 in your field, correct?

19 A. Yes.

20 Q. And you did not file a rebuttal report for
21 either Mr. Howard or Mr. Davis in response to
22 Dr. Ambinder's report --

23 A. No.

24 Q. -- correct?

25 You didn't?

1 A. No, I did not.

2 Q. We received a number of your billing
3 records through February.

4 Have you worked on this matter since
5 February?

6 A. Yes.

7 Q. Roughly how many hours do you think you've
8 spent since February on this case?

9 A. Since February, I would say between eight
10 and ten hours.

11 Q. Okay. And -- strike that.

12 And are you currently serving as a
13 treating physician or are you retired from that
14 role?

15 A. I'm working full time, including
16 responsibilities for treating patients.

17 Q. And what percentage of your time is spent
18 as an expert witness?

19 A. Single-digit percent. 5 percent or less.

20 Q. And you said you've been deposed about a
21 dozen times?

22 A. Correct.

23 Q. And how many times have you testified in
24 court before?

25 A. One, two, three -- I can remember three

1 off the top of my head. So maybe four or five. But
2 at least three.

3 Q. Okay. And have you ever served as --
4 provided an expert report in a case that you were
5 not deposed in?

6 A. No. I don't recall ever doing that.

7 Q. Have you ever offered an opinion as an
8 expert in a case about the cause of someone's
9 disease?

10 A. Yes, I have.

11 Q. And what was the disease?

12 A. Mycosis fungoides.

13 Q. Do you recall the name of that case?

14 A. I don't.

15 Q. Was it in the last ten years?

16 More than ten years ago?

17 A. It was probably close to ten years.

18 Q. And what was the opinion you offered as to
19 the cause of their disease?

20 A. That I did not know the data to be able to
21 provide evidence of causation.

22 Q. And were you working for the plaintiffs or
23 the defendants in that matter?

24 A. I was working, I think, for neither. It
25 was a patient whom I had seen and managed his care,

1 so I'd have to say I probably was working for the
2 plaintiff.

3 Q. In that case, did you offer a written
4 report or were you there as a treating provider?

5 A. I was there as a treating provider, so it
6 was a -- just a deposition only.

7 Q. Throughout today, if you happen to
8 remember the name of that case, would you mind
9 letting me know?

10 A. Okay.

11 Q. Have you ever served as an expert witness
12 for a defendant?

13 A. Yes.

14 Q. And when was that?

15 A. Most recently, about three years ago.

16 Q. And do you recall the name of that case?

17 A. I'm sorry, I don't.

18 Q. Fair enough.

19 Were your opinions in that case about what
20 caused the individual's disease?

21 A. No.

22 Q. Prior to this case, had you ever worked as
23 an expert witness for any of the law firms that
24 you're now working with for Camp Lejeune?

25 A. No.

1 Q. You attached your resumé to your expert
2 reports. I think it should be the same for both of
3 them. So if you could turn to Exhibit 1. And your
4 resumé is, I think, like, maybe 15 or so pages in.

5 A. Yes.

6 Q. And this resumé is dated February 6th,
7 2025.

8 Do you see that?

9 A. Yes.

10 Q. Is there any updates you would like to
11 make today to bring this current?

12 A. Well, nothing of substance. I have some
13 additional leadership responsibilities within one of
14 the oncology organizations and a couple of
15 additional publications.

16 Q. So other than a couple of new leadership
17 positions and a couple of new publications, this
18 resumé attached to your report as Exhibit 1 is a
19 complete representation of your educational and
20 employment background?

21 A. Yes.

22 Q. And other than any updated publications,
23 this document is a complete list of your
24 publications --

25 A. Yes.

1 Q. -- prior to February --

2 A. Yes, it is.

3 Q. Have you offered any publications in your
4 resumé that investigated the cause of NHL?

5 A. I have some general publications and
6 textbooks that I may have edited and chapters in
7 textbooks that may have mentioned cautions of
8 lymphoma.

9 Q. Do any of those -- and you're welcome to
10 look through it if it would be helpful to you --
11 jump out at you as any of the ones you listed as
12 publications that include those causation analyses
13 that you just mentioned?

14 MR. LEE: Can we go off the record for a
15 moment?

16 MS. HORAN: Sure.

17 THE VIDEOGRAPHER: The time is 9:16 a.m.
18 Pacific Time. We're going off the record.

19 (Whereupon, a recess was taken from
20 9:16 a.m. to 9:16 a.m.)

21 THE VIDEOGRAPHER: The time is 9:16 a.m.
22 Pacific Time. We're back on the record.

23 THE WITNESS: In response to your last
24 question, for example, under publications,
25 monographs, number 1, I'm -- you know, may have

1 addressed causes in the general context of the
2 non-Hodgkin lymphomas. However, that -- that was
3 something that I published 40 years ago.

4 BY MS. HORAN:

5 Q. You said monographs?

6 A. Publications, dash, monographs.

7 Q. Would you mind reading --

8 A. Yeah.

9 Q. Oh, I see it. I see it.

10 That's Hoppe R., the non-Hodgkin's
11 lymphoma pathology staging treatment current
12 problems in cancer 1987?

13 A. Correct.

14 Q. Okay. Sorry about that.

15 (Reporter clarification.)

16 THE WITNESS: Okay.

17 BY MS. HORAN:

18 Q. Anything else jumping out at you, or just
19 that one?

20 A. No. That's -- that's the one that I would
21 remember.

22 Q. Are there any publications in your resumé
23 or articles that you've published involving the
24 causation analysis between TCE, PCE, Benzene and
25 NHL?

1 A. No.

2 Q. And you mentioned you're currently
3 treating patients?

4 A. Yes, I am.

5 Q. And what percentage of your work is
6 treating patients?

7 A. Well, it's basically 60 percent of my
8 time.

9 Q. And what do you do with the other
10 40 percent of your time?

11 A. So it's a combination of teaching,
12 research and administration.

13 Q. And you are a radiology oncologist; is
14 that fair?

15 A. Radiation oncologist, correct.

16 Q. Do you have any other specialties?

17 A. No.

18 Q. Radiation is a type of treatment for
19 cancer, right?

20 A. That's correct.

21 Q. So if someone has a specific type of
22 cancer, do they come to you for that specific type
23 of treatment, or would they come to you as a primary
24 oncologist to figure out what to do kind of to
25 create a whole care plan for their cancer?

1 A. They come both ways. So some patients are
2 referred to me from other physicians because the
3 other physicians know that they require radiation
4 treatment, or sometimes I see patients who just have
5 a recent diagnosis of cancer, lymphoma primarily,
6 since my practice is restricted to lymphoma. And if
7 radiation is not appropriate, then I would refer
8 them to one of my other colleagues in a different
9 specialty.

10 Q. You said your practice is limited to
11 lymphoma?

12 A. Correct.

13 Q. What did you -- what did you mean by that?

14 A. What I meant by that is that all of the
15 patients I see and manage have a diagnosis of
16 lymphoma, which includes Hodgkin's disease or
17 Hodgkin lymphoma, the non-Hodgkin lymphomas,
18 including the cutaneous lymphomas or skin lymphomas,
19 which is another component of my practice.

20 Q. What percentage of the patients that you
21 treat have non-Hodgkin's lymphoma?

22 A. Probably 90 percent have non-Hodgkin
23 lymphoma.

24 Let -- let me correct that. It's probably
25 80 percent.

1 Q. Sure.

2 How often in your practice do you inquire
3 into what caused a particular individual's
4 non-Hodgkin's lymphoma?

5 A. So my routine would be to take a good
6 occupational and social history. And if there were
7 items that I learned from their occupational or
8 social history that I think might have contributed
9 to lymphoma, or that diagnosis, then I would follow
10 up on them.

11 Q. What are the types of questions you ask or
12 would want to know about someone's occupational or
13 social history in order to conduct that inquiry?

14 A. Well, for example, if someone is -- has
15 had an occupation as an attorney, I wouldn't be so
16 concerned about potential occupational exposures to
17 agents that might be associated with lymphoma or
18 other diseases. But if their occupation was, for
19 example, in the dry cleaning business, I might ask
20 about their exposures to different chemicals in that
21 context.

22 With respect to social history, we're
23 always interested in tobacco and alcohol use. Also,
24 drug exposures and -- and their sexual histories.

25 Q. And why is it important for you to know

1 their occupational and social history -- I guess
2 why -- why investigate the cause of their NHL as
3 their treating physician?

4 A. Well, patients are often wondering, you
5 know, why did I get this. And those, you know,
6 question -- responses to those questions may be
7 helpful in us answering those questions from the
8 patients.

9 Q. And how often does a patient ask you what
10 caused their NHL?

11 A. Well, they -- they phrase it in different
12 ways. They might say, you know, am I -- what did I
13 do wrong to get this lymphoma.

14 And I would say that at least half of the
15 time, patients ask.

16 Q. And after you've collected their social
17 and occupational history, what steps do you take in
18 order to be able to provide them an answer?

19 A. Well, it's based on my general knowledge
20 and general experience.

21 Q. How often do you tell a patient that the
22 cause of their NHL is unknown?

23 A. Probably half the time. At least half the
24 time.

25 Q. Do you tell your patients that it's

1 impossible to know the cause of their NHL with any
2 certainty?

3 A. Yes.

4 Q. In your practice, to the best of your
5 knowledge, have you treated patients with NHL that
6 were at Camp Lejeune between 1953 and 1987?

7 A. Not to my knowledge.

8 Q. Have you discussed Camp Lejeune with any
9 of your NHL patients?

10 A. No, I haven't.

11 Q. You've never examined Cometto Davis or
12 Allan Howard, correct?

13 A. That's correct, I did not.

14 Q. And you've never spoken to them in, you
15 know, Zoom, phone call, in person?

16 A. Never.

17 Q. Have you ever told a patient that the
18 cause of their NHL was from an exposure to TCE?

19 A. No, I haven't.

20 Q. Have you ever told a patient that the
21 cause of their NHL was an exposure to PCE?

22 A. No, I haven't.

23 Q. Have you ever told a patient that the
24 cause of their NHL was an exposure to Benzene?

25 A. No, I haven't.

1 Q. Have you ever given a presentation or
2 spoke publicly about Camp Lejeune?

3 A. No, I haven't.

4 Q. You are not an epidemiologist, correct?

5 A. That's correct.

6 Q. And you don't have any certifications in
7 epidemiology, correct?

8 A. That's correct.

9 Q. And you've never been a principal
10 investigator for an epidemiological study; is that
11 right?

12 A. That's correct.

13 Q. You've never published peer-review
14 literature on epidemiology; fair?

15 A. That's correct.

16 Q. Have you ever taught any courses on
17 epidemiology?

18 A. No, I have not.

19 Q. Do you have any experience as an
20 epidemiologist?

21 A. No, I don't.

22 Q. And you are not a toxicologist, correct?

23 A. That's correct.

24 Q. You don't have a certification in
25 toxicology?

1 A. No, I don't.

2 Q. You've never been a principal investigator
3 for a toxicological study; fair?

4 A. That's correct.

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

7 A. Correct.

8 Q. Have you ever taught any courses on
9 toxicology?

10 A. No, I haven't.

11 Q. And do you have any experience as a
12 toxicologist?

13 A. No, I don't.

14 Q. And you don't have any degrees in
15 environmental health, correct?

16 A. That's correct.

17 Q. And you don't have any degrees in
18 occupational medicine; fair?

19 A. That's correct.

20 Q. And you're not offering an opinion in this
21 case on whether vinyl chloride causes NHL, right?

22 A. That's correct.

23 Q. And you are not an expert in environmental
24 risk assessments; fair?

25 A. That's fair.

1 Q. Have you ever conducted any human health
2 environmental risk assessments?

3 A. No, I haven't.

4 Q. You did not conduct a Bradford Hill
5 analysis in this case, right?

6 A. That's correct.

7 Q. Are you familiar with what Bradford Hill
8 is?

9 A. Somewhat, from reading the -- the papers
10 and documents that are cited here.

11 Q. Prior to this case, were you familiar with
12 what a Bradford Hill analysis was?

13 A. No, I was not.

14 Q. Your general causation analysis, which if
15 you turn to Exhibit 1 and Exhibit 3, which are your
16 two reports, that's found in the sections "Chemicals
17 at Camp Lejeune." It's on page 2 of Exhibit 1.

18 A. Okay.

19 Q. And general causation reports of
20 Dr. Felsher, Hu, Gilbert and Bird, which is the
21 section following it. Is that fair or --

22 A. I'm not sure I understand your question.

23 Q. Sure.

24 Well, let me step back. You offer the
25 same general causation analysis in your reports for

1 Mr. Howard and Mr. Davis, correct?

2 A. That's correct, although I always refer to
3 them as specific causation reports.

4 Q. Sure.

5 Do you understand the difference between a
6 general causation analysis and a specific causation
7 analysis?

8 A. Well, I'm not sure I understand
9 completely.

10 Q. What is your understanding between the
11 difference of a general causation and a specific
12 causation analysis?

13 A. Well, the specific causation analysis
14 relates to an individual plaintiff and evidence that
15 may relate to their exposure to a noxious agent and
16 the likelihood of developing a disease. And the
17 general causation would be a more overriding review
18 of all of the epidemiological data related to
19 causation of diseases related to exposures.

20 Q. Sure.

21 So kind of using those two ideas of what
22 specific causation is versus general causation, you
23 offer the same analysis for both Mr. Howard and
24 Mr. Davis on whether TCE, PCE and Benzene are
25 capable of causing NHL --

1 A. Yes.

2 Q. -- is that fair?

3 A. Yes, that's correct.

4 Q. Okay. And so in your reports, the
5 opinions are the same for both Mr. Howard and
6 Mr. Davis, correct?

7 A. Yes.

8 Q. Okay. So looking at -- or thinking of the
9 general causation opinions, which are both -- are
10 the same for both, they are found in your report for
11 Mr. Davis on -- in your sections that are titled
12 "Chemicals at Camp Lejeune"?

13 A. Okay.

14 Q. TCE, Benzene, PCE, ATSDR.

15 A. Right.

16 Q. And then general causation reports of
17 Dr. Felsher, Hu, Gilbert and Bird.

18 A. Right.

19 Q. Are there any other sections in your
20 report that go to general causation?

21 A. Well, unless you, you know, refer to my
22 conclusions and the differential diagnosis
23 methodology, but for the most part, I would say that
24 the general causation is in those sections that you
25 cited.

1 Q. Sure.

2 And if you turn to Exhibit 3, which is
3 Mr. Howard's report, the general causation opinions
4 you offer are in the sections 4, 5 and 6.

5 A. Correct.

6 Q. Were you -- or are you aware that the
7 expert reports in this case are phased such that
8 general causation was considered phase 2 and
9 specific causation is considered phase 3?

10 A. I'm not familiar with that terminology.

11 Q. And you reviewed the reports of
12 Drs. Felsher, Hu, Gilbert and Bird; is that fair?

13 A. Yes. I -- I recall reviewing --

14 Q. Page 6 --

15 A. -- Dr. Felsher and Dr. Hu, and the third
16 one, Bird, yes.

17 Q. I think I asked you this already, but you
18 don't recall whether you've reviewed the report of
19 Dr. Goodman?

20 A. No. I -- I don't recall reviewing the
21 report of Dr. Goodman.

22 Q. Have you reviewed the report of
23 Dr. Lipscomb?

24 A. That name is not familiar.

25 Q. Have you reviewed the report of

1 Dr. McCabe?

2 A. I don't believe so.

3 Q. Have you reviewed the report of
4 Dr. Shields?

5 A. Not to my knowledge.

6 Q. If it would be helpful, you're welcome to
7 look at your material considered lists that were
8 marked as Exhibits 2 and 4.

9 A. Oh, okay.

10 Q. And I believe you looked at
11 Dr. Goodman's -- or you've considered Dr. Goodman's
12 transcript.

13 To the best of your memory, have you
14 reviewed any other of the United States experts'
15 deposition transcripts?

16 A. To the best of my knowledge, no.

17 Q. Turning to your report, do you do your own
18 general causation analysis or did you reply -- rely
19 on the reports of Dr. Felsher, Hu, Gilbert and Bird
20 for their determinations?

21 A. Certainly a lot of it was my own. I may
22 have reviewed Dr. Felsher and -- and Hu's general
23 causation, but I think I put together most of this
24 based on my own review of the materials.

25 Q. If you turn to page 6 of Exhibit 1.

1 The section general causation reports of
2 Dr. Felsher, Hu, Gilbert and Bird.

3 Do you see that section?

4 A. Yes.

5 Q. You state (as read):

6 I have reviewed and considered
7 the general causation reports of
8 Drs. Felsher, Hu, Gilbert and Bird.
9 Based on my background, education,
10 and experience, the reports of
11 these experts are robust and
12 reliable.

13 Did I read that correctly?

14 A. Yes, you did.

15 Q. What did you do to conclude the reports
16 were robust and reliable?

17 A. Well, I -- I read their -- their
18 scientific analysis of the data, which, in my mind,
19 seemed rigorous. And their conclusions were
20 reasonable.

21 Q. Did you review all of the studies that
22 they reference in their reports?

23 A. No, I did not review all of the studies
24 that were referenced.

25 Q. The studies that you did review for

1 general causation are -- those are the studies that
2 you cite to in your report, correct?

3 A. Yes.

4 Q. When you were developing your general
5 causation opinions, what steps did you take to do
6 so?

7 A. Well, I read a number of references,
8 highlighted certain points, took some notes and then
9 I synthesized that together to make this report.

10 Q. And to gather your references, did you run
11 searches, or what steps did you take to gather your
12 references?

13 A. I did some searches. Also initially,
14 there was some references, citations provided to me
15 by the attorneys.

16 Q. Do you recall what searches you ran?

17 A. They were on PubMed. PubMed searches for
18 the PCA -- PCE, TCE and Benzene related to
19 non-Hodgkin lymphoma.

20 Q. Do you recall any of the specific search
21 terms you used?

22 A. PCE, TCE, Benzene, non-Hodgkin lymphoma.
23 Probably also searched spelling out those chemical
24 names.

25 Q. If you turn to -- or maybe you're still at

1 page 6 of your report for Mr. Davis.

2 A. Yes.

3 Q. You state (as read):

4 Based on all available
5 evidence, I also agree that TCE,
6 PCE and Benzene all cause NHL at or
7 exceeding the "at least as likely
8 as not" standard.

9 Did I read that correctly?

10 A. I'm not sure.

11 Where on that page is it?

12 Q. Oh, sorry. So it's the middle of the
13 page. Just above your general causation reports of
14 the other experts.

15 A. Okay.

16 Q. I can read it again. It's the last
17 sentence. It says (as read):

18 Based on available evidence, I
19 also agree that the TCE, PCE and
20 Benzene all cause NHL at or
21 exceeding the "as likely as not"
22 standard.

23 A. Right.

24 Q. Did I read that correctly?

25 A. Yes.

1 Q. How did you decide to use the at least as
2 likely as not standard?

3 A. I believe that it was the attorneys that
4 advised me of that standard.

5 Q. Do you know if that standard is found in
6 the Camp Lejeune Justice Act or not?

7 A. I don't know.

8 Q. Have you ever read the Camp Lejeune
9 Justice Act?

10 A. I don't believe I have.

11 Q. Other than in this case, have you ever
12 professionally used the standard at least as likely
13 as not when offering an opinion on causation?

14 A. No, I haven't used that standard.

15 Q. So if you could keep Davis, page 6, open,
16 and then also open -- or get the Howard report and
17 open that to page 6.

18 A. Okay.

19 Q. In the Davis report, there's a paragraph
20 that begins (as read):

21 The data from the ATSDR
22 reports.

23 Do you see that paragraph?

24 A. That's on page 6 of the --

25 Q. So on the Davis report.

1 A. Oh.

2 Q. I don't see it in the Howard report.
3 That's what I want to ask you.

4 A. Oh, okay. All right. So back to the
5 Davis report.

6 Q. Yeah.

7 A. So what did you want to bring to my
8 attention there?

9 Q. Sure.

10 So there's a paragraph. It's the third
11 one from the top.

12 A. Mm-hmm.

13 Q. It says (as read):

14 The data from the ATSDR
15 reports combined with the
16 meta-analysis related to TCE
17 exposure.

18 A. Yes.

19 Q. There's a parentheses (as read):

20 Provide compelling evidence
21 that the TCE exposure increases the
22 risk for developing NHL. The ATSDR
23 reports combined with the cohort
24 study of Linet, et al. (2015)
25 provide a similar degree of

1 evidence for the relationship
2 between Benzene exposure and NHL.
3 Do you see that?

4 A. Yes, I do.

5 Q. So if you could -- that paragraph applies
6 equally to Mr. Howard, correct?

7 A. Yes, it would.

8 Q. So I didn't see it in the Howard report.
9 That was not intentional or did you intend
10 to leave that paragraph out of the Howard report?

11 A. No, I didn't intend to leave that out.
12 You know, I could, I suppose, amend the Howard
13 report and include that.

14 Q. Oh, they're combined? Okay.

15 MR. MCGOWAN: It appears as though it's
16 just not another paragraph.

17 MS. HORAN: Oh, thank you, Chad.

18 MR. MCGOWAN: But it doesn't include --
19 I'm not saying all the words are identical, but
20 there's something in there that's similar.

21 BY MS. HORAN:

22 Q. Okay. So that analysis applies to both
23 Howard and Davis?

24 A. Yes.

25 Q. Okay. And then the paragraph above it, in

1 the Davis report in 2024, "the ATSDR were
2 published," do you see that?

3 A. Yes.

4 Q. That paragraph is not in the Howard
5 report, but would apply similarly -- or it's not in
6 the same place in the Howard report.

7 A. Well, it would not apply because I -- in
8 this paragraph, I deal with the specific diagnosis
9 of marginal zone B-cell lymphoma, which is the
10 cancer that Mr. Davis had, not the cancer that
11 Mr. Howard had.

12 Q. Do you know if the 2024 Bove study also
13 studied the cancer that Mr. Howard has?

14 A. Yes, it did.

15 Q. Okay. Why didn't you include that study
16 for Mr. Howard in your general causation analysis?

17 A. Well, I -- I think I may have. Let me --
18 let me go back and look.

19 Q. So for Howard, if you turn to page 11, you
20 have it in your specific causation analysis --

21 A. Okay.

22 Q. -- at the bottom, I think --

23 A. Yes, that's correct.

24 Q. -- that's the same study.

25 A. Yes.

1 Q. Okay. So there was no intention to leave
2 it out of the general causation part of Mr. Howard's
3 report?

4 A. No, because I didn't look upon a
5 separation of general causation and specific
6 causation --

7 Q. Okay.

8 A. -- when I put together these reports.

9 Q. Got it. Okay.
10 So that study applies equally to
11 Mr. Howard as it does to Mr. Davis?

12 A. Yes.

13 Q. Okay. So keeping whichever report open,
14 if you could turn back to page 6.

15 In your opinion, is there sufficient
16 evidence to conclude that TCE causes NHL?

17 A. In my opinion -- could you rephrase the
18 question, please?

19 Q. Sure.

20 A. Or repeat it.

21 Q. Sure.

22 Is there sufficient evidence to conclude
23 that TCE causes NHL?

24 A. Yes. I believe that there is sufficient
25 evidence that TCE causes NHL.

1 Q. In your opinion, is there sufficient
2 evidence to conclude that Benzene causes NHL?

3 A. Yes. In my opinion, there is sufficient
4 evidence that Benzene may cause NHL.

5 Q. In your opinion, is there sufficient
6 evidence to conclude that PCE causes NHL?

7 A. In my opinion, there's equipoise and above
8 evidence that PCE may cause NHL.

9 Q. Is equipoise and above the same as
10 sufficient?

11 A. No.

12 Q. So in your opinion, there is not
13 sufficient evidence to conclude that PCE causes NHL?

14 A. There's equipoise and above evidence.

15 Q. And equipoise and above is below
16 sufficiency -- sufficient evidence for causation, in
17 your mind?

18 Or how do those terms, "equipoise" and
19 "above" and "sufficient" --

20 A. Yes.

21 Q. -- relate?

22 A. Equipoise and above is a lower level of
23 evidence than sufficient.

24 Q. So in your opinion -- excuse me.

25 In your opinion, the evidence of causation

1 between PCE and NHL does not reach the level of
2 sufficient evidence?

3 A. That's correct.

4 Q. Are you offering opinions on each chemical
5 individually being sufficient to cause NHL or
6 collectively mixed, as they've alleged to be at
7 Camp Lejeune, were capable of causing NHL?

8 A. Well, I believe there's evidence in some
9 studies that individual agents are related to the
10 potential development of NHL, and in other studies,
11 combinations of those agents. There wouldn't be any
12 reason for me to think that the -- there would be
13 any protective effect of multiple agents, that they
14 may be additive or potentially synergistic.

15 Q. What research did you do into the
16 synergistic impact of the chemicals?

17 A. Well, only reading papers where people
18 were exposed to more than one of those agents. I
19 have to say I did not uncover anything that appealed
20 to the -- appeared to be synergistic.

21 Q. What do you mean you didn't uncover
22 anything that appeared to be synergistic?

23 A. Well, there wasn't any evidence in any
24 studies that indicated risks that would be more than
25 additive.

1 Q. And you're offering the opinion that, to
2 the standard of at least as likely as not, each of
3 PCE, TCE and Benzene are independently -- or
4 independently could cause NHL; they're not just a
5 contributing factor; is that fair?

6 A. I'm sorry, but I don't understand your
7 statement.

8 Q. That's all right.

9 You're offering the opinion that
10 independently, TCE, PCE and Benzene are, themselves,
11 independently can cause NHL?

12 A. Each one of those agents may cause NHL,
13 yes.

14 Q. You agree with the principal that the dose
15 makes the poison, right?

16 A. I'm sorry?

17 Q. The dose makes the poison.

18 Have you heard that before?

19 A. No, I have not. I'm not familiar with
20 that expression.

21 Q. Do you agree with it?

22 A. I'm not familiar with the expression so I
23 can't say I agree with it.

24 Can you explain it to me?

25 Q. Sure.

1 So the dose makes the poison, water can
2 become toxic to an individual if they drink too much
3 water, right?

4 A. Yes.

5 Q. But a glass of water would not be toxic;
6 fair?

7 A. I hope not.

8 Q. So the dose of how much water you would
9 have would determine whether water is toxic or
10 poisonous to an individual --

11 A. Right.

12 Q. -- fair?

13 With that understanding, would you agree
14 that the dose makes the poison?

15 A. In general, yes.

16 Q. Would you agree that the dose of TCE, PCE
17 and Benzene that someone was exposed to is important
18 in determining whether those chemicals are toxic to
19 an individual?

20 A. Yes.

21 Q. You would agree that, in general, the risk
22 of developing a disease from a chemical exposure
23 increases with the dose they've been exposed to;
24 fair?

25 A. In general, yes.

1 Q. Do you offer the opinion or know what
2 level of exposure to TCE, PCE or Benzene is
3 necessary to cause non-Hodgkin lymphoma?

4 A. No, I don't offer that opinion.

5 Q. Do you know?

6 A. Well, I would go by the studies that I've
7 cited related to levels of exposure and likelihood
8 of developing non-Hodgkin lymphoma.

9 Q. And you say you don't offer that opinion.

10 Did you do any analysis to determine
11 whether Mr. Davis or Mr. Howard were exposed at
12 levels necessary to cause -- wherein PCE, TCE or
13 Benzene could cause their NHL?

14 A. Yes, I was provided with those data.

15 Q. And how did you determine that there was
16 sufficient exposure to cause PCE, TCE and Benzene --
17 that TCE, PCE and Benzene could cause their NHL?

18 A. Well, by the -- the levels of exposure
19 that were provided to me were in excess of levels
20 that were reported in various studies to be related
21 to the development of non-Hodgkin lymphoma.

22 Q. So you compared the levels that were
23 provided to you of their exposure with the studies
24 that you had reviewed --

25 A. Yes.

1 Q. -- fair?

2 A. Yes.

3 Q. Is it your opinion that exposure to any
4 amount of TCE, PCE or Benzene is sufficient to cause
5 NHL?

6 A. There may be threshold effects. I think
7 it's been well demonstrated, for example, in Benzene
8 exposure that very low levels of exposure are not
9 associated with development of non-Hodgkin lymphoma,
10 but after a certain threshold is reached, then
11 they -- the likelihood increases.

12 Q. So as to Benzene, it's your opinion that
13 there's a threshold amount wherein your risk of
14 developing non-Hodgkin lymphoma would increase --

15 A. Yes.

16 Q. -- if exposed to Benzene?

17 A. Yeah.

18 Q. Is that your opinion for TCE and PCE as
19 well?

20 A. I'm not as familiar with data -- strong
21 data that say one way or the other on those
22 chemicals.

23 Q. Is that something you looked into for your
24 report?

25 A. Not specifically.

1 MR. MCGOWAN: We've been going about an
2 hour. Do you want to take five, ten minutes?

3 THE WITNESS: Sure.

4 MS. HORAN: Sure.

5 MR. MCGOWAN: Is now a good stopping
6 point?

7 MS. HORAN: Yeah. That's fine.

8 THE VIDEOGRAPHER: The time is now
9 9:58 a.m. Pacific Time. We're going off the record.

10 (Whereupon, a recess was taken from
11 9:58 a.m. to 10:09 a.m.)

12 THE VIDEOGRAPHER: The time is 10:09 a.m.
13 Pacific Time. We're back on the record.

14 BY MS. HORAN:

15 Q. Dr. Hoppe, in doing -- in looking at
16 general causation, you've both done your own
17 analysis and relied upon the work of other experts,
18 Drs. Felsher, Bird, Hu and Gilbert and Milan; is
19 that fair?

20 A. Yes.

21 Q. Looking at -- and you're welcome to use
22 your reports, if it would be helpful.

23 But can you identify any studies where
24 PCE, TCE or Benzene exposure was found to have
25 caused NHL at a dose that is similar to what is

1 alleged here?

2 A. I would have to say that my recollection
3 is that in the various reports that I cited, the
4 exposure levels were less than those that the
5 plaintiffs experienced at Camp Lejeune.

6 Q. So generally, the studies you cited, you
7 tried to cite studies where the exposure was less to
8 PCE, TCE and Benzene at Camp Lejeune.

9 A. I didn't -- sorry for interrupting.
10 I didn't try to, but I think that those
11 studies just happen to -- you know, they, in
12 general, were lower levels of exposure.

13 Q. You would agree that people with no
14 exposure to TCE, PCE or Benzene can still get NHL,
15 right?

16 A. Yes. I agree.

17 Q. The exact relationship between the
18 interactions of TCE, PCE, Benzene and vinyl chloride
19 is not known, correct?

20 A. I'm not aware of any studies showing any
21 interaction.

22 Q. I believe you said that you -- it was your
23 understanding that there was an additive effect
24 between TCE, PCE and Benzene; is that fair?

25 A. I don't think I said that.

1 Q. Okay. What is your understanding of the
2 relationship between TCE, PCE and Benzene exposure?

3 A. Well, that each of them independently may
4 be associated with the development of non-Hodgkin
5 lymphoma. I think it's difficult to define
6 additivity or synergy when -- when -- when multiple
7 exposure -- exposure to different chemicals is
8 apparent.

9 Q. So are you offering an opinion on this
10 case on this synergistic of additive effects of TCE,
11 PCE, Benzene and vinyl chloride on developing NHL?

12 A. No. I'm not offering an opinion on the
13 additivity.

14 Q. Association is not the same as causation,
15 correct?

16 A. Can you be more specific?

17 Q. When you're looking at a study, it might
18 tell you association or it might tell you causation;
19 fair?

20 A. Yes.

21 Q. Is it your understanding that when looking
22 at whether, for example, TCE causes NHL, an
23 association is not the same as a causation; is that
24 fair?

25 A. I think that's a semantic issue. I'm

1 not -- I'm not sure I can answer that.

2 Q. So if a study showed that two -- that TCE
3 was associated with the development of NHL, you
4 would view that study as showing that TCE causes
5 NHL?

6 A. That it may cause.

7 Q. May cause?

8 A. Yes.

9 Q. Okay. And what is the distinction you're
10 drawing in "may cause" as opposed to "causes" when
11 an association is shown between a particular
12 chemical and the development of a disease?

13 A. Well, cause means -- if it causes, that
14 means you have come to the conclusion that the
15 etiologic agent is responsible for the development
16 of the disease. If you say may cause, then it's
17 possible that the agent caused the disease.

18 Q. So generating an opinion on causation is
19 not as simple as just having a study that shows a
20 statistically significant association between a
21 substance and a disease, correct?

22 A. Could you repeat that, please?

23 Q. Sure.

24 Generating an opinion on causation is not
25 as simple as just having a study that shows a

1 statistically significant association between a
2 substance and a disease; fair?

3 A. I'm sorry, but that's a lengthy statement.
4 Can you --

5 Q. Sure. Sure.

6 A. Before I say I agree or not.

7 Q. That's fair.

8 So you said that association, in your
9 view, is the same as "may cause"; fair?

10 A. Yes.

11 Q. And "may cause" can be used as evidence of
12 causation --

13 A. Yes.

14 Q. -- correct?

15 So if you're creating an opinion on
16 causation, having a study that shows association or
17 may cause is not in and of itself sufficient to
18 provide you with enough evidence to decide -- to
19 provide an opinion that something would cause the
20 disease?

21 A. Not -- not one study that simply shows
22 that.

23 Q. So you would not draw a conclusion about
24 causation from just a single study showing an
25 association or a may cause?

1 A. That's correct.

2 Q. And it's possible to have a study that
3 shows statistically significant association or may
4 cause between a substance and a disease and still
5 not be able to conclude that the substance causes
6 the disease; fair?

7 A. In an individual case.

8 Q. If there's a study that shows -- just one
9 study that shows a statistically significant
10 association, you'd want to see that study replicated
11 to some degree so you can rule out that its findings
12 were a result of chance, right?

13 A. Yes.

14 Q. And you would want to assess all of the
15 available epidemiological literature on evaluating
16 causation before you drew your opinion on causation,
17 right?

18 A. Within reason, yes.

19 Q. What do you mean, "within reason"?

20 A. Well, the entire -- to review the entire
21 field and all of the papers that have been published
22 would be a challenge.

23 Q. Why would that be a challenge?

24 A. Because there are many hundreds of
25 articles related to exposures and development of

1 cancer, and, you know, this is not my primary
2 responsibility in terms of my career to do these
3 type of analyses.

4 Q. And when you say this is not your primary
5 part of your career, you're referring to determining
6 whether a particular substance can cause a disease?

7 A. No. I'm -- I'm referring to my role on
8 this -- in this case versus the rest of my
9 responsibilities in life.

10 Q. And when you say your role in this case,
11 are you referring to your specific causation -- your
12 differential diagnosis, or what are you referring
13 to?

14 A. I'm referring to my respons- -- my overall
15 responsibilities in this case.

16 Q. Okay. How, then -- or I understood you to
17 say there could be hundreds of articles about a
18 particular chemical causing a disease.

19 How do you determine you've reviewed
20 enough of them in order to be able to offer your
21 opinion that a particular substance causes a
22 disease?

23 A. Well, I judge the quality of the journals
24 and the frequency of citations of different articles
25 in -- in my -- in reading the literature.

1 Q. And if you continue to see the same ones
2 you've known, you've seen a mass of them, or how
3 does that work?

4 A. Yeah. So, you know, if I read, for
5 example, a multivariate analysis and it cites
6 publications that have a large number of patients
7 with long followup, then I might go to that specific
8 paper more selectively than a report that has a
9 small number of patients and very limited followup.

10 Q. The authors of an epidemiological study
11 provides statistical results that indicate the
12 risk -- the levels of risk observed; fair?

13 A. Can you repeat that?

14 Q. The authors of an epidemiologic- --
15 epidemiology study provide statistical results that
16 indicate the levels of risk observed; is that fair?

17 A. Yes.

18 Q. And it's important to analyze those risks
19 odd ratios in a study, in the study results; fair?

20 A. Yes.

21 Q. And the risk ratio indicates the level of
22 association observed?

23 A. Yes.

24 Q. And 1.0 or 1 indicates no association,
25 correct?

1 A. Well, that indicates no significant
2 increase.

3 Q. Right.

4 So it indicates that there's -- strike
5 that.

6 What do you mean, "no significant
7 increase"?

8 A. Well, that -- that would be, you know,
9 conventionally, 95 percent likelihood that there's
10 no increase in incidence.

11 Q. In your opinion, what level of increased
12 risk reflects a moderate association?

13 A. I would say anything above 1.

14 Q. And what level of increased risk reflects
15 a sizeable association?

16 A. Well, a hazard ratio in excess of, I'd
17 say, 1.3.

18 Q. So anything over 1 reflects a modest
19 association and anything over 1.3 reflects a
20 sizeable association, in your opinion?

21 A. Yeah, I've never thought of it in that
22 way, but I think that would be a reasonable way to
23 define it.

24 Q. How do you typically think about it, if
25 not in the increased risk as the risk ratio

1 increases?

2 A. Well, usually it's not in such
3 quantitative terms. It's sort of more you know it
4 when you see it.

5 MS. HORAN: I'm marking as Hoppe
6 Exhibit 5. This is the United States Environmental
7 Protection Agency, dated April 30th, 2019. The
8 subject is Pyrethroids: Tier II Epidemiological --
9 Epidemiology Report.

10 (Whereupon, Deposition Exhibit 5
11 was marked for identification.)

12 BY MS. HORAN:

13 Q. Dr. Hoppe, have you seen this before?

14 A. It's not familiar to me, so I'd have to
15 say no.

16 Q. Okay. Could you turn to page 10? Or I
17 guess turn to page 8.

18 Do you see Section 5 says, "Data
19 evaluation"?

20 A. Yes.

21 Q. And then Section 5.2 says, "Study review
22 and quality assessment"?

23 A. Yes.

24 Q. If you could turn to page 10. I guess
25 about the third paragraph down, do you see it says

1 (as read):

2 Risk assessments -- strike
3 that.

4 (As read):

5 Risk estimates, estimates of
6 effect reported in epidemiological
7 studies were generally
8 characterized as follows.

9 And then there's five bullets that follow.
10 Do you see that section?

11 A. Yes.

12 Q. The first bullet reads (as read):

13 No evidence of a positive
14 association between exposure and
15 outcome, which is, e.g., OR equals
16 1, OR is less than 1.

17 Do you agree with that?

18 A. Yes.

19 Q. The second bullet reads (as read):

20 No evidence of a significant
21 positive association, EGOR is
22 greater than 1, but not
23 significant.

24 Do you agree with that?

25 A. Yes.

1 Q. The third bullet reads (as read):
2 Evidence of a slight positive
3 association, e.g., OR is greater
4 than 1, but less than 1.3 and
5 significant.
6 Do you agree with that?

7 A. Well, not -- it's not consistent with what
8 I previous- -- previously said to you, would be my
9 take on a modest increase and a substantial
10 increase.

11 Q. Where did your belief that a modest
12 association is between 1 and 1.3 come from?

13 A. Well, that's -- my feeling that if you
14 have a risk of developing a disease of 1.3, that
15 that's substantial.

16 Q. And how would you -- or strike that.
17 In a risk of developing a disease at 1.01,
18 how would you characterize that?

19 A. That was -- that would be a minimal
20 increase in risk.

21 Q. Turning back to Exhibit 5, the fourth
22 bullet reads (as read):
23 Evidence of a positive
24 association, e.g., OR is greater
25 than equal to 1.3 or less than 2

1 and significant.

2 Do you agree with that statement?

3 A. I agree that that would be a positive
4 association, yes.

5 Q. And then the last bullet (as read):

6 Evidence of a moderately
7 strong, e.g., OR is greater than
8 equal to 2 or less than 3 and
9 significant or strong, e.g., OR is
10 greater than or equal to 3 and
11 significant positive association.

12 Do you agree with that bullet?

13 A. I agree with that bullet.

14 Q. It's -- you can set that exhibit aside.
15 It's important to analyze confidence
16 intervals in a studies results, correct?

17 A. Yes.

18 Q. And a confidence interval evaluates how
19 precise the risk assessment is; fair?

20 A. Yes.

21 Q. The wider the confidence interval, the
22 less confidence in the point estimate; fair?

23 A. Fair.

24 Q. A confidence interval that includes 1 or
25 the null suggests no association; is that fair?

1 A. Well, it suggests that a -- an association
2 could not be demonstrated.

3 Q. And a confidence interval that includes
4 less than 1 suggests that the association could not
5 be found, correct?

6 A. Well, it suggests that it could not be
7 found at the statistical level of significance, as
8 it's commonly defined.

9 Q. Turning to dose, when the odds ratio
10 increases as exposure increases, you can be more
11 confident that an association is present, correct?

12 A. Yes.

13 Q. And considering the amount of exposure
14 is -- or the dose is a more precise way to classify
15 an exposed population than just exposed versus
16 unexposed, correct?

17 A. Could you repeat that?

18 Q. Sure.

19 Assessing the dose that someone was
20 exposed to is a more precise way to classify an
21 exposed population than just as exposed versus not
22 exposed?

23 A. Yes.

24 Q. An opinion on causation in the absence of
25 a dose response should explain why a dose response

1 was not seen; fair?

2 A. I'm sorry.

3 Q. Sure.

4 A. Could you repeat that?

5 Q. An opinion on causation in the absence of
6 a dose response should explain why a dose response
7 wasn't seen; fair.

8 A. Reasonable.

9 Q. And that's because you would expect to see
10 a dose response if there was causation, right?

11 A. It may be difficult at times, I think, to
12 demonstrate that a dose response relationship
13 exists.

14 Q. Why would that be difficult to
15 demonstrate?

16 A. Well, if -- if a disease occurs with high
17 frequency at even low levels of exposure, it may be
18 hard to demonstrate an even higher risk with higher
19 exposures.

20 Q. So if someone drew a conclusion about that
21 chemical causing a particular disease and there
22 wasn't a dose response for the reason you just
23 stated, you would expect the paper to say as much,
24 correct?

25 A. Yes. Yes.

1 Q. Would you agree that the number of
2 participants in a study is relevant to the power of
3 that study?

4 A. Generally, yes.

5 Q. In general, a study with a larger number
6 of participants in the investigative population
7 carries more weight than a study with a fewer number
8 of participants; fair?

9 A. Yes.

10 Q. In assessing epidemiological evidence, how
11 do you compare the value of a cohort study with an
12 ecological study?

13 A. I'm not so familiar with ecological
14 studies.

15 Q. What do you -- if you -- what do you mean,
16 you're not so familiar with an ecological study?

17 A. I'm not -- I'm not sure about that term.

18 Q. Fair enough.

19 What is a cohort study, to the best of
20 your understanding?

21 A. So a cohort study is where two different
22 populations are compared and -- to look at incidence
23 of events in one population versus another.

24 Q. And then I believe you said you're not
25 familiar with the term "ecological studies"?

1 A. No.

2 Q. So you don't have an opinion on whether
3 cohort studies or ecological studies are more
4 valuable in an epidemiological evidence review?

5 A. Correct.

6 Q. I want to turn to your opinions on
7 Mr. Davis.

8 I believe you testified that you have not
9 communicated with Mr. Davis himself. But have you
10 spoken to any of his family members, physicians or
11 friends?

12 A. No, I've not spoken with any of them. I
13 believe I had access to deposition by treating
14 physicians.

15 Q. Sure.

16 But you didn't pick up the phone to call
17 anyone --

18 A. No, I did not.

19 Q. -- about Mr. Davis?

20 So you've written two reports. Obviously,
21 one on Mr. Davis and one on Mr. Howard. Some of
22 your studies you reference in both reports, some
23 studies are only in one. I -- to the extent you
24 have any question about which plaintiff or if my
25 question is not clear as to which plaintiff, or your

1 answer only applies to one plaintiff, please just
2 ask for clarification throughout this day. But I
3 will do my best to --

4 A. Okay.

5 Q. -- to be clear about who I'm talking
6 about.

7 Deal?

8 A. Yes.

9 Q. Okay. Could you turn to Mr. Davis'
10 report, which is marked as Exhibit 1, and turn to
11 page 6?

12 A. Okay.

13 Q. The section "Concentrations of
14 Contaminants at Camp Lejeune."

15 Do you see that?

16 A. Yes.

17 Q. And in determining the concentration of
18 contaminants for which individuals were exposed, in
19 that first paragraph, you reference Appendix H1 and
20 state (as read):

21 It appears that the
22 concentrations of PCE --
23 I believe you meant were --

24 A. That's correct.

25 Q. (As read):

1 -- in excess of 100 micrograms
2 per liter of water peaking at 182
3 micrograms per liter in June 1984.
4 Do you see that?

5 A. Yes.

6 Q. Are you offering any opinion on the
7 reliability of the mean monthly concentrations of
8 the various contaminants as determined by Mr. Maslia
9 in his report?

10 A. No. I relied on those reports.

11 Q. Sure.

12 And you -- strike that.

13 And you took them at face value as
14 correct?

15 A. Correct.

16 Q. How did you -- or why did you include or
17 compare the June 1984 micrograms with
18 100 micrograms?

19 A. Are you asking why I used 100 micrograms.

20 Q. That's right.

21 Why 100 micrograms as a benchmark?

22 A. Well, I -- I don't think that was so much
23 a benchmark as that was kind of the -- the
24 approximate level of the minimum concentration
25 reported during that period of time.

1 Q. And why report the minimum concentration?

2 A. Well, because, you know, they -- there
3 are, you know, established levels of concentrations,
4 that if they're exceeded, are associated with
5 events.

6 MS. HORAN: I'm marking as Exhibit 6,
7 Hoppe Exhibit 6. This is the expert report of
8 Morris Maslia.

9 (Whereupon, Deposition Exhibit 6
10 was marked for identification.)

11 BY MS. HORAN:

12 Q. Dr. Hoppe, have you seen this report
13 before?

14 A. No, I haven't.

15 Q. You see this is the expert report dated
16 October 24th, 2024?

17 A. So I think I've seen portions of this
18 report. But not -- not the entire report.

19 Q. Okay. Exhibit 6, though, you do see that
20 that's the Morris Maslia report from -- dated
21 October 24th, 2024?

22 A. Yes.

23 Q. If it's helpful to you, please reference
24 Davis' report as needed.

25 But could you turn to page 185?

1 Do you see this is Appendix H1?

2 A. Yes.

3 Q. Is this the appendix you were referencing
4 in your report for Mr. Davis?

5 A. All right.

6 Q. And if you could turn to page 195 of
7 Exhibit 6.

8 A. Okay.

9 Q. Actually, if you could turn to page 196.

10 A. Okay.

11 Q. You see stress period 402, it's the 7th
12 from the bottom, it says June 1984?

13 A. Yes.

14 Q. And then for single species using MT3DMS,
15 it shows 182.13 PCE --

16 A. Right.

17 Q. -- micrograms per liter?

18 A. Right.

19 Q. Is that the number you were referencing in
20 your report?

21 A. Yes. Although, I rounded it off to 182.

22 Q. Sure.

23 But this is where you got that number
24 from?

25 A. Yes.

1 Q. And then if you keep looking on that row,
2 it goes to -- there's four more columns, and across
3 the top it says (as read):

4 Multispecies, multiphase using
5 TechFlowMP model.

6 Do you see that?

7 A. Right.

8 Q. And that reports 158.14 micrograms per
9 liter PCE.

10 Do you see that?

11 A. Right.

12 Q. So why did you decide to rely on the
13 MT3DMS model instead of the TechFlowMP model in your
14 report?

15 A. I don't recall.

16 Q. Do you know the difference between the
17 MT3DMS and the TechFlowMP models?

18 A. I believe I read at the time, but I don't
19 recall.

20 Q. You would agree that Tarawa Terrace, where
21 Mr. Davis lived for a portion of his time on base --
22 and you have the chart in your report if you would
23 like to reference it.

24 But you would agree that this H1 does not
25 reflect that there was Benzene at Tarawa Terrace,

1 correct?

2 A. I would have to go back and look at this.

3 Q. Okay.

4 A. I don't recall.

5 Q. Turning back to Exhibit 1, which is your
6 report for Mr. Davis, do you see the section that
7 says (as read):

8 Camp Lejeune connection to NHL
9 and Mr. Davis?

10 A. I'm sorry, do you have a -- oh, yeah.
11 Okay.

12 Q. So middle of the page says (as read):
13 Camp Lejeune connection to NHL
14 and Mr. Davis.

15 A. Right.

16 Q. The second paragraph, third sentence, says
17 (as read):

18 According to the ATSDR 2017
19 report, Hadnot Point Chapter A fact
20 sheet.

21 A. Yes.

22 Q. Do you recall which ATSDR report you were
23 referencing there?

24 A. Well, I'd have to say it was the ATSDR
25 2017 report, Chapter A.

1 Q. Would that be -- if you could turn to your
2 materials considered list, which for Mr. Davis is
3 Exhibit 2.

4 A. Okay.

5 Q. Do you see number 2 is ATSDR public health
6 assessment for Camp Lejeune --

7 A. Right.

8 Q. -- drinking water?

9 A. Right.

10 Q. Do you recall reviewing that study?

11 A. So I recall that I reviewed it. I can't
12 recall specifics of what it says.

13 Q. Okay. Turning back to Exhibit 1, which is
14 your report for Mr. Davis, if you could turn to
15 page 10.

16 A. Okay.

17 Q. Do you see at the top of the page it says
18 (as read):

19 Similarly based on the Maslia
20 report, Appendix H2, the water at
21 Tarawa Terrace exceeded the MCL for
22 those -- these contaminants for the
23 entire time Mr. Davis was on base?

24 A. Yes, I see that.

25 Q. And could you turn back to Exhibit 6,

1 which is the Maslia report?

2 A. Okay.

3 Q. If you could turn to page 198.

4 Do you see Appendix 198 says -- strike
5 that.

6 Do you see page 198 says (as read):

7 Appendix H2 Tarawa Terrace
8 Water Treatment Plant reconstructed
9 (simulated) mean monthly finished
10 water concentration of
11 single-specie tetrachloroethylene,
12 PCE and a range of concentrations
13 derived from the Monte Carlo
14 simulation?

15 A. Yes.

16 Q. This is the Appendix H2 that you relied on
17 or reference in your report of Mr. Davis on page 10,
18 correct?

19 A. Right. Right.

20 Q. You would agree that Appendix H2 talks
21 only about PCE?

22 A. Yes.

23 Q. Why reference the Monte Carlo simulation
24 on page 10 of your report and then the MT3DMS
25 numbers on page 6 of your report?

1 A. Can you tell me again where Appendix H1
2 was?

3 Q. It started on page 185.

4 A. I can't say with certainty, other than the
5 fact that both of them -- both of those appendices
6 indicated that there was an excess amount of PCE in
7 the groundwater at those times.

8 Q. And excess in terms of what?

9 What are you referencing as the benchmark
10 for excess?

11 A. Well, the absolute levels --

12 Q. Okay.

13 A. -- exceeded the -- the MCL.

14 Q. Are you offering an opinion on whether the
15 MT3DMS, TechFlow or Monte Carlo simulation numbers
16 should be used to determine exposure?

17 A. No. Well, I'm not -- I'm not saying that
18 one or the other is preferable.

19 Q. Do you know if Dr. Reynolds relied on
20 MT3DMS, TechFlow or Monte Carlo simulations in
21 determining Mr. Davis' exposure?

22 A. I'm not aware.

23 Q. Okay. You can set aside Exhibit 6.

24 You rely on Dr. Reynold's exposure
25 assessment for determining how much PCE, TCE and

1 Benzene Mr. Davis was exposed to; fair?

2 A. Yes.

3 Q. Did you do your own exposure analysis in
4 addition to Dr. Reynolds or are you relying on
5 Dr. Reynolds?

6 A. I'm relying on Dr. Reynolds.

7 Q. So you did not independently calculate the
8 amount of TCE, PCE or Benzene to which Mr. Davis was
9 exposed to during his time at Camp Lejeune?

10 A. I did not.

11 Q. If you turn to page 6 of your report, the
12 last sentence says (as read):

13 Considering his days at these
14 locations and cumulative
15 contaminant exposure
16 concentrations, and based upon his
17 deposition-based informed
18 activities, his cumulative
19 consumption total micrograms equals
20 days multiplied by concentration
21 per deposition exposure assumptions
22 for TCE was 2,036,600 micrograms,
23 for PCE was 503,816 micrograms, and
24 for Benzene was 33,244 micrograms.
25 Did I read that correctly?

1 A. Yes, you did.

2 Q. Part of that sentence says (as read):

3 Based upon his
4 deposition-based informed
5 activities.

6 What did you mean by that?

7 A. Well, I believe that Dr. Reynolds took
8 into account what Mr. Davis reported in his
9 deposition regarding his exposure, which I detail at
10 some point.

11 Q. Perhaps page 10.

12 A. Yeah. At the -- towards the bottom of
13 page 10, according to testimony, Mr. Davis, and then
14 I list four different responses that he gave in his
15 deposition regarding his exposure.

16 Q. So if you turn to page 11, the first
17 sentence, those are the same numbers as you provide
18 on page 6; fair?

19 A. Yes.

20 Q. And these are the numbers you relied on in
21 forming your opinion as to whether Mr. Davis' NHL
22 was caused by his exposure to TCE, PCE and Benzene?

23 A. Right.

24 Q. Did you do any investigation into the
25 reliability of Dr. Reynolds' exposure assessment?

1 A. No.

2 Q. Have you ever personally calculated the
3 cumulative consumption of an individual of a
4 particular chemical?

5 A. No, I haven't.

6 MS. HORAN: I'm marking as Exhibit Hoppe
7 Exhibit 7. This is the cumulative exposure expert
8 report of Kelly A. Reynolds. It's dated
9 February 7th, 2025.

10 (Whereupon, Deposition Exhibit 7
11 was marked for identification.)

12 BY MS. HORAN:

13 Q. Dr. Hoppe, have you seen this report
14 before?

15 A. I've seen portions of it.

16 Q. Could you turn to Appendix 17, which is
17 about two-thirds of the way through or so?

18 A. Okay.

19 Q. And I'm just going to give you a sticky
20 note if you want to just mark that page in case you
21 ever want to reference it again.

22 Okay. Do you see Appendix 17 is for
23 Cometto J. Davis?

24 A. Yes.

25 Q. Okay. And if you turn to page 1 of

1 Appendix 17, it's the Davis exposure data summary
2 chart.

3 A. Okay.

4 Q. The numbers you attribute to Dr. Reynolds
5 in your report are not in Dr. Reynolds' report for
6 Mr. Davis, correct?

7 A. Can you repeat that?

8 Q. Sure.

9 So if we look back at your report, on
10 page 6 or page 11, you would agree that
11 Dr. Reynolds' does not opine that Mr. Davis was
12 exposed to 2,036,600 micrograms per liter of TCE?

13 A. Well, I would have to review more of this
14 to say that these numbers are not what he said.

15 Are you indicating to me that --

16 Q. We can step back.

17 Where did you get these numbers from
18 Dr. Reynolds that are in your report?

19 A. I believe that tables provided to me by
20 the attorneys included these numbers, tables from
21 Dr. Reynolds.

22 Q. Okay. Okay. Well, do you have any reason
23 to -- if you turn to the first page of Exhibit 7,
24 which is Dr. Reynolds' report.

25 A. I'm sorry, which page?

1 Q. Just the cover.

2 Do you see that it's signed by
3 Dr. Reynolds on the bottom?

4 A. Yes.

5 Q. Do you have any reason to doubt that this
6 is a complete and accurate copy of Dr. Reynolds'
7 expert report as provided in the case?

8 A. I have no reason to doubt.

9 Q. Okay. And you would agree that
10 Appendix 17 states Cometto J. Davis' name, which is
11 the name of the individual that you -- that you're
12 offering specific causation analysis on?

13 A. Yes.

14 Q. And you would agree at page 1 of
15 Appendix 17 at the bottom says, "Davis exposure data
16 summary"?

17 A. Yes.

18 Q. And you would agree that
19 2,036,600 micrograms of TCE exposure is not found in
20 this chart as attributed to Mr. Davis?

21 A. That -- that exact number is not listed in
22 this table.

23 Q. And you would agree that
24 503,816 micrograms per liter of PCE is not listed in
25 Davis' exposure data summary table?

1 A. Correct.

2 Q. And you would agree --

3 A. It is not listed in the table that I'm
4 looking at.

5 Q. And you would agree that 33,244 micrograms
6 per liter of Benzene is not listed in the Davis
7 exposure data summary?

8 A. That's correct.

9 Q. Kind of looking through the rest of
10 Exhibit 17 [sic], if you flip through it, it's about
11 eight or so more pages.

12 To the best of your memory, have you seen
13 these charts before?

14 A. I don't recall seeing these exact charts.

15 Q. Turning back to page 1 of Appendix 17, you
16 see the first column says (as read):

17 Cumulative micrograms per
18 liter-capital M.

19 I think that's for month.

20 A. Right.

21 Q. Do you understand what micrograms per
22 liter-M means?

23 A. Yes.

24 Q. What does it mean?

25 A. Well, it means micrograms per liter per

1 month of exposure.

2 Q. So is it the addition of all of the months
3 that Mr. Davis was exposed to the chemical or --

4 A. It's per month.

5 Q. So you see -- okay.

6 So it's your understanding that based on
7 this chart, that Mr. Davis was exposed to
8 29,132 micrograms per liter per month of TCE, or is
9 it cumulatively he was exposed -- if you add it --

10 (Simultaneous speakers - inaudible.)

11 THE WITNESS: I would say that's per
12 months, yeah.

13 BY MS. HORAN:

14 Q. So you would say he -- this is stating
15 that he was offered -- he was exposed to
16 29,132 micrograms per liter per month?

17 Sorry, I'm sorry. Sorry. On average.

18 A. Per month, yes.

19 Q. So on average, he was exposed per month to
20 29,132 micrograms per liter of TCE?

21 A. Correct.

22 Q. And then the same would follow for PCE, VC
23 and Benzene?

24 A. Correct.

25 Q. Okay. And you would agree that columns 3,

1 4, 5 and 6, which associate with across the top
2 charts, 1, 2, 3 and 4, are in total microgram?

3 A. Which columns did you say?

4 Q. So they're the third, fourth, fifth, sixth
5 column over, and they're associated with charts 1, 2
6 3 and 4.

7 Those are in total micrograms?

8 A. Right.

9 Q. Okay. And so those are numbers that
10 Mr. Davis was exposed to as an absolute amount of
11 TCE, PCE, VC or Benzene; fair?

12 A. Yes.

13 Q. Do you have an opinion upon whether
14 chart 1, chart 2 -- or strike that.

15 Do you have an opinion on whether it's
16 most appropriate for your purposes as a specific
17 causation expert to apply the numbers in chart 1,
18 chart 2, chart 3 or chart 4 to Mr. Davis?

19 A. I would say chart 2.

20 Q. And why is that?

21 A. Well, because he was a Marine in training
22 stationed there. And his deposition supported
23 certain additional exposures --

24 Q. What are you referencing --

25 A. -- and this also -- sorry.

1 Q. I didn't mean to cut you off.

2 A. Chart 2.

3 Q. Mm-hmm. Sorry. I think you said
4 referenced additional exposures.

5 What did you mean by that?

6 A. From his deposition.

7 Q. Oh, as referenced in your report?

8 A. Yeah. Yeah.

9 Q. Okay. Turning back to your report, on
10 page 6, the numbers that you attribute to
11 Dr. Reynolds are in micrograms.

12 Do you see that?

13 A. Yeah.

14 Q. And then if you turn to page 11.

15 A. Of my report?

16 Q. Of your report, yes, which is Exhibit 1.

17 The numbers you attribute to Dr. Reynolds
18 are in microgram per liter month.

19 Do you see that?

20 A. Yes.

21 Q. What is -- is it your opinion that
22 micrograms and micrograms per liter per month are
23 the same unit?

24 A. No.

25 Q. What is the unit that you intended to use?

1 A. So -- so I can see that I inadvertently
2 put per month. This should probably be just
3 micrograms per liter in the -- in the report.

4 Q. Flipping back, I guess, to Dr. Reynolds'
5 report, which is Exhibit 7, Appendix 17, you see
6 Dr. Reynolds has opinions in micrograms per liter
7 month and total micrograms --

8 A. Right.

9 Q. -- fair?

10 A. Right.

11 Q. So in your report, did you intend to use
12 total micrograms?

13 A. Yes.

14 Q. Okay. So your opinion is based on an
15 absolute number of exposure to the various
16 contaminants as opposed to an average exposure over
17 the month?

18 A. Yes.

19 Q. And why did you determine that an absolute
20 number for amount of exposure is the proper way to
21 assess someone's likelihood of developing NHL?

22 A. Well, 'cause that -- that takes into
23 account the duration of the exposure.

24 Q. How does that take into account the
25 duration of the exposure?

1 A. Well, it's the total amount, so it's the
2 entire time that somebody was exposed.

3 Q. Sure.

4 But you would agree that an individual
5 could have been exposed to 100 micrograms of TCE in
6 one day or they could have been exposed to
7 5 micrograms per TCE over 20 days and both absolute
8 would be 100 micrograms, right?

9 A. Yes.

10 Q. So turning to page 11 of your report, the
11 second sentence says (as read):

12 In my opinion, the level of
13 exposure to TCE, PCE and Benzene
14 that Mr. Davis experienced during
15 his 1,000-plus days living and
16 working on Camp Lejeune was more
17 than sufficient to cause his NHL.
18 Did I read that correctly?

19 A. Yes.

20 Q. So in doing your analysis, you took into
21 account the number of days Mr. Davis was at
22 Camp Lejeune; fair?

23 A. Yes.

24 Q. Did you do any analysis to determine,
25 based on the total exposure, the amount Mr. Davis

1 was exposed to on a daily or monthly basis?

2 A. No.

3 Q. And you don't use the numerical measure of
4 parts per billion in your report, do you?

5 A. No, I don't.

6 Q. Is it your understanding that parts per
7 billion is the same as micrograms?

8 A. I think it would be the same.

9 Q. What is that based off of, that you think
10 it would be the same?

11 A. Well, I think they're both measures in
12 concentration.

13 Q. Did you do any analysis as part of your
14 work for this case in determining whether micrograms
15 and parts per billion are a one-to-one ratio for
16 conversion?

17 A. No, I didn't.

18 Q. Have you seen any published studies where
19 they study the total exposure of an individual to a
20 particular dose as opposed to looking at a dose over
21 time to determine if Benzene, TCE or PCE caused NHL?

22 A. Can you repeat that?

23 Q. Sure.

24 Have you seen any published studies or do
25 any come to mind where they studied a total exposure

1 of an individual as opposed to a dose over time that
2 an individual was exposed to for PCE, TCE or
3 Benzene?

4 A. Well, I guess I don't quite understand the
5 distinction between the two as you -- as you asked
6 them. Can you --

7 Q. Sure.

8 So have you seen any published studies
9 where they studied that someone was, for example,
10 exposed to 100 micrograms of TCE as opposed to a
11 study that might say they were exposed to
12 5 micrograms of TCE over 20 months?

13 Does my question make more sense now?

14 A. I'm not sure it does.

15 Q. Okay. Do you recall any studies that the
16 study looked at the -- just the absolute amount of
17 exposure to PCE, TCE or Benzene and determined
18 whether it caused NHL?

19 A. Yes.

20 Q. And which study was that?

21 A. I would have to go back and look.

22 Q. It would be in your report, though?

23 A. Yeah.

24 Q. Okay. You can set aside Mr. Davis' report
25 and Dr. Reynolds' report, but if you'd like to

1 reference either at any point, you're welcome to.

2 Do you know one way or the other whether
3 the use of total mass of ingested chemicals is a
4 standard exposure metric in risk assessment?

5 A. Can you repeat that?

6 Q. Sure.

7 Do you know whether Dr. Reynolds' use and
8 your use of the total mass of ingested chemicals is
9 a standard exposure metric in a risk -- risk
10 assessment?

11 A. I don't know.

12 Q. Do you know whether the United States put
13 forward an expert in risk assessment for Mr. Davis
14 or Mr. Howard?

15 Have you seen any report like that?

16 A. I haven't seen any reports.

17 Q. Okay. Do you know whether total mass
18 ingested is generally accepted in the field of
19 toxicology?

20 A. I don't know.

21 Q. Is total ingestion metric a methodology
22 that you commonly use in your practice in
23 determining a toxic exposure?

24 A. No, I don't commonly have patients who
25 have toxic exposures.

1 Q. And when you do have a patient who has a
2 toxic exposure, would you use the total ingestion
3 metric as a methodology for determining their risk
4 of developing NHL?

5 A. No, I wouldn't.

6 Q. You did not identify a threshold amount of
7 exposure to TCE, PCE or Benzene, or a mixture
8 thereof, whereby an individual is likely to develop
9 NHL; fair?

10 A. I didn't indicate in my report. But a
11 subsequent paper that's come to my attention by
12 Dr. Yu indicated a threshold, a very clearly defined
13 threshold for Benzene.

14 Q. Have you identified any papers or have any
15 opinion on a threshold amount for TCE or PCE?

16 A. No.

17 Q. And it's your opinion that the Yu paper
18 identifies a threshold whereby an individual is
19 likely to develop NHL if exposed to Benzene?

20 A. Right.

21 Q. If a patient of you -- yours asked for a
22 threshold amount whereby Benzene could cause their
23 NHL, would you point them to the Yu paper?

24 A. I would suggest that they have an analysis
25 done by one of these experts first.

1 Q. When you say, "one of these experts," are
2 you talking about a risk assessment expert or what
3 expert are you referencing?

4 A. Someone who could do an analysis related
5 to what their Benzene exposure was.

6 Q. Have you ever recommended a patient get
7 that done?

8 A. No.

9 Q. And is that because you've never had a
10 patient who would -- had been exposed to Benzene or
11 is that why -- why haven't you recommended someone
12 get that done?

13 A. Yes. It's because I've never had a
14 patient who had a history of exposure to Benzene
15 where that was an issue.

16 Q. And then at the point that the patient got
17 the exposure analysis or risk assessment done, would
18 you then apply those numbers to the Yu study to
19 determine the threshold of likelihood or what
20 would --

21 A. Yes.

22 Q. If you could reopen Exhibit 1, which is
23 Mr. Davis' expert report, and turn to page 11.

24 Your sentence that says -- that starts "in
25 my opinion," it's the second sentence down, do you

1 see that?

2 A. Oh, yes. I'm sorry.

3 Q. It looks like in that sentence, you
4 reference the level of exposure that you got from
5 Mr. -- or Dr. Reynolds and the number of days
6 Mr. Davis was living and working at Camp Lejeune to
7 determine that it was more than sufficient to cause
8 his NHL.

9 Other than Dr. Reynolds' numbers and the
10 number of days Mr. Davis was there as in over 1,000
11 days, was there anything else that you relied on in
12 determining it was more than sufficient to cause his
13 NHL?

14 A. No.

15 Q. What methodology did you use to determine
16 more than sufficient?

17 A. Well, the studies that I cited in the
18 general causation statements, in addition to the
19 fact that he had no other risk factors for
20 developing non-Hodgkin lymphoma.

21 Q. So the studies in general causation and
22 then your differential diagnosis methodology; is
23 that fair?

24 A. Yes.

25 Q. You reference -- in your report on page 9,

1 you reference the MCLs.

2 Do you see that?

3 A. Yes.

4 Q. What is your understanding of what an MCL
5 is?

6 A. So that's the contaminant level above
7 which there is significant risk and, you know, it's
8 recommended by agencies, such as the EPA, that
9 contents be kept below those levels.

10 Q. Do you know whether the EPA uses MCLs
11 which are maximum contaminant levels to evaluate
12 potential risks to human health?

13 A. Yes.

14 Q. And do you know how the EPA establishes an
15 MCL?

16 A. Not exactly, but I assume they review the
17 data that had been published in scientific studies.

18 Q. Are you aware that MCLs are designed to be
19 acceptable daily drinking water concentrations over
20 a lifetime of exposure of about 70 years?

21 A. Yes.

22 Q. Are -- sorry. I didn't mean to cut you
23 off.

24 Are you aware of the health protective
25 assumptions that go into determining an MCL?

1 A. No.

2 Q. Do you know whether the EPA uses
3 cumulative dose averaged over a lifetime to evaluate
4 cancer risk?

5 A. I don't know.

6 Q. Would you agree that an exposure to
7 drinking water concentration in excess of the MCL
8 does not necessarily constitute a health risk?

9 A. If it's of limited frequency.

10 Q. Page 7 of your report, do you see the top
11 paragraph?

12 A. Yes.

13 Q. And you offer the opinion that Mr. Davis
14 would have been exposed through inhalation and
15 dermal routes as well; fair?

16 A. Right.

17 Q. You did not quantify Mr. Davis' exposure
18 via dermal or inhalation; is that fair?

19 A. That's fair.

20 Q. And why not?

21 A. I left that to the experts.

22 Q. And by the "experts," you're referencing
23 Dr. Reynolds?

24 A. Yes.

25 Q. You say to -- okay.

1 The fourth sentence in that paragraph
2 reads (as read):

3 To a reasonable degree of
4 medical probability, these
5 additional routes would add to
6 Mr. Davis' exposure during his
7 day-to-day activities and add to
8 his risk of developing NHL from
9 exposure to the water at
10 Camp Lejeune.

11 And then you have a cite to a Weisel study
12 from 1996.

13 A. Right.

14 Q. Other than the Weisel study from 1996, do
15 you rely on anything else for that proposition?

16 A. No.

17 Q. Other than the Weisel 1996 study, do you
18 have -- excuse me. I'll start over.

19 Other than the Weisel 1996 study, are
20 there any other studies you have in support of the
21 proposition that dermal and inhalation routes would
22 add to his risk of developing NHL?

23 A. I don't have specific studies, no.

24 Q. How did you determine that it would add to
25 his risk of developing NHL?

1 A. Well, by absorption, as is described in
2 this report, absorption through dermal exposure,
3 that that will increase the concentration above and
4 beyond what is ingested.

5 Q. Anything beyond that study?

6 A. No.

7 Q. If you turn to page 10 of your report, you
8 have a section titled "Mr. Davis' time and exposure
9 at Camp Lejeune."

10 A. Right.

11 Q. Are you aware that not all parts of
12 Camp Lejeune have been alleged to be part of the
13 water systems that were contaminated?

14 A. I believe I have seen maps showing areas
15 that were contaminated and -- yeah. That not all
16 areas were contaminated.

17 Q. Do you know one way or the other whether
18 Camp Geiger was contaminated?

19 A. I don't recall. I would have to look --
20 look back at those reports.

21 Q. Underneath the chart, the first sentence
22 reads (as read):

23 During his time at
24 Camp Lejeune, Mr. Davis would do
25 normal day-to-day activities,

1 eating, drinking, showering and
2 cleaning with the contaminated
3 water provided by the water system.
4 Do you see that sentence?

5 A. Yes.

6 Q. And you -- or I don't -- did you assume or
7 was this outside -- was this Dr. Reynolds' sphere
8 whether 100 percent of the water Mr. Davis was
9 exposed to was contaminated or not?

10 A. I -- I did not assume, and I relied on the
11 reports of the experts to define what the exposure
12 was.

13 Q. Okay. So number 1 below that sentence,
14 the first one reads (as read):

15 Was on field duty for extended
16 periods where he would live on --
17 in the field and get his water from
18 what he referred to as a water
19 bowl.

20 Do you see that?

21 A. Yes.

22 Q. You don't make any determination about
23 whether the water in those water bowls was
24 contaminated or not; fair?

25 A. Correct.

1 MR. MCGOWAN: Are you at a stopping point?
2 I don't want to --

3 MS. HORAN: Yeah.

4 MR. MCGOWAN: -- interfere with your mojo.

5 MS. HORAN: Just one moment, and then I
6 think we're good to break.

7 MR. MCGOWAN: That's fine.

8 MS. HORAN: Yeah. We're good to take a
9 break now.

10 MR. MCGOWAN: Okay.

11 THE VIDEOGRAPHER: The time is 11:28 a.m.
12 Pacific Time. We're going off the record.

13 (Whereupon, a recess was taken from
14 11:28 a.m. to 11:43 a.m.)

15 THE VIDEOGRAPHER: The time is 11:43 a.m.
16 Pacific Time. We're back on the record.

17 BY MS. HORAN:

18 Q. Dr. Hoppe, in your expert report for
19 Mr. Davis, which is marked as Exhibit 1 on page 7,
20 you have a section that says "Plaintiff
21 Cometto Davis."

22 Do you see that?

23 A. Yes, I do.

24 Q. And this section contains your summary of
25 his medical history; is that fair?

1 A. That's correct.

2 Q. How did you go about developing the
3 summary of Mr. Davis' medical history?

4 A. I reviewed all of the medical records that
5 were submitted to me by the attorneys, and I think
6 are listed in the beginning of my report.

7 Q. Were there any medical records you wished
8 you had been able to see but were not provided to
9 you?

10 A. No. Along the way, there may have been
11 things that I inquired of that were then found and
12 submitted to me.

13 Q. But everything that you were looking for,
14 in terms of being able to provide this summary, was
15 provided to you?

16 A. Yes.

17 Q. And you never spoke to any of his treating
18 providers; fair?

19 A. Correct.

20 Q. On page 7, the third paragraph down, the
21 fourth sentence says (as read):

22 He had an uncertain history of
23 asbestos exposure.

24 Do you see that?

25 A. Yes.

1 Q. Why did you include that as part of
2 Mr. Davis' medical history?

3 A. Well, asbestos exposure is associated with
4 the development of lung cancer and other cancers in
5 the thorax, and so prior to having a biopsy
6 diagnosis of lymphoma, one of those cancers would
7 certainly be in the differential diagnosis based on
8 the imaging.

9 Q. Is asbestos exposure a risk factor for
10 developing NHL?

11 A. No.

12 Q. On page 8, the third paragraph down, the
13 second sentence begins (as read):

14 He tolerated chemotherapy
15 relatively well. On
16 July 5th, '22, he underwent an
17 end-of-treatment PET CT. This
18 revealed improved size of lung
19 lesions, which remained
20 non-hypermetabolic. The plan was
21 to enter a surveillance phase with
22 regular follow-up examinations.
23 Did I read that correctly?

24 A. Yes.

25 Q. Mr. Davis has completed treatment for NHL?

1 A. Yes.

2 Q. And Mr. Davis is just being monitored for
3 any recurrence of NHL at present, correct?

4 A. Correct.

5 Q. The bottom of page 7, the last paragraph,
6 the fifth sentence reads (as read):

7 He had longstanding neuropathy
8 in his distal lower extremities.

9 Did I read that correctly?

10 A. Yes.

11 Q. And then on page 8, the fifth paragraph,
12 reads (as read):

13 Mr. Davis had suffered from
14 peripheral neuropathy for more than
15 ten years, but this appeared to be
16 more bothersome during his
17 chemotherapy.

18 Can we go off the record for a moment,
19 please?

20 THE VIDEOGRAPHER: The time is 11:47 a.m.
21 Pacific Time. We're going off the record.

22 (Whereupon, a recess was taken from
23 11:48 a.m. to 11:48 a.m.)

24 THE VIDEOGRAPHER: The time is 11:48 a.m.
25 Pacific Time. We're back on the record.

1 BY MS. HORAN:

2 Q. Dr. Hoppe, we were just looking at the --
3 Exhibit 1, Mr. Davis' report, the fifth paragraph
4 down, which reads (as read):

5 Mr. Davis had suffered from
6 peripheral neuropathy for more than
7 ten years, but this appeared to be
8 more bothersome during his
9 chemotherapy. He was evaluated by
10 neurology and thought to have a
11 small fiber sensory neuropathy.
12 Following the completion of
13 chemotherapy on August 27th,
14 2022, an EMG suggesting
15 demyelinating sensory motor axon
16 loss. Repeat EMG on March 30th,
17 2023 showed a moderately severe
18 sensorimotor mixed axonal and
19 demyelinating polyneuropathy,
20 chemotherapy-induced neuropathy was
21 considered as a possible
22 aggravating factor.
23 Did I read that correctly?

24 A. Yes.

25 Q. Are you aware that Mr. Davis has tested

1 positive for HNPP?

2 A. No.

3 Q. Did you consider Mr. Davis' positive
4 test -- strike that.

5 So you didn't consider Mr. Davis' positive
6 test for HNPP as part of his medical history?

7 A. What do you define as "HNPP"?

8 Q. We'll get to that in just one second.

9 You would agree that NHL did not cause
10 Mr. Davis' neuropathy?

11 A. Yes, I agree.

12 Q. And you agree that Mr. Davis had
13 neuropathy before NHL and before chemotherapy; fair?

14 A. Yes.

15 MS. HORAN: I'm marking as exhibit --
16 Hoppe Exhibit 8. These are UNC Health medical
17 records 00043_DAVIS_VC_0000000380 through -457.

18 (Whereupon, Deposition Exhibit 8
19 was marked for identification.)

20 BY MS. HORAN:

21 Q. Dr. Hoppe, have you seen these records
22 before?

23 A. I looked at many medical records,
24 including some from UNC Health, but I don't recall
25 if these specific records I have seen.

1 Q. If you could turn to the Bates ending
2 in -387.

3 A. The what?

4 Q. So the Bates number at the bottom, those
5 are the -- the stamped copies for the litigation.

6 A. Oh, okay.

7 Q. The page ending in -387.

8 A. Right.

9 Q. And you see that this -- these are records
10 for a visit date of March 30th, 2023?

11 A. Right.

12 Q. And your report references a March 30th,
13 2023 appointment; fair?

14 A. Yeah. So I did see these records, yes.

15 Q. Great.

16 Could you turn to the page ending in -390?
17 The -- do you see a section with
18 conclusions?

19 A. Yes.

20 Q. The last two sentences read (as read):

21 Given the multiple
22 entrapments, HNPP is in the
23 differential. Superimposed
24 chemotherapy-induced neuropathy and
25 paraproteinemic neuropathy may need

1 to be considered as well.

2 Did I read that correct?

3 A. Yes.

4 Q. So on May 3 -- excuse me, March 30th,
5 2023, the differential was HNPP.

6 A. Okay.

7 Q. Do you know --

8 A. It was in the diff- -- in the
9 differential.

10 Q. What's the distinction?

11 A. I'm sorry?

12 Q. Sorry.

13 I think I said is the differential, and
14 you said is in the differential.

15 What distinction were you drawing there?

16 A. Well, HN- -- excuse me. HNPP -- and I'm
17 not certain what HNPP is referring to, okay -- that
18 etiology or disease was in the differential means
19 that it was among the diseases or causations to
20 consider, okay. And then the following sentence
21 says (as read):

22 Superimposed chemo,
23 chemotherapy, induced neuropathy
24 and paraproteinemic neuropathy may
25 need to be considered as well.

1 Q. And that's what you have in your report
2 when you say chemotherapy-induced neuropathy was
3 considered as a possible aggravating factor?

4 A. Yes.

5 Q. Okay. If you could turn to Bates ending
6 in -401.

7 A. Right.

8 Q. Do you see this is notes from, again, the
9 March 30th, 2023 appointment?

10 A. Right.

11 Q. And then if you turn to -402, under
12 "History of Present Illness," it says (as read):

13 Chief complaint is numbness,
14 tingling and burning in his feet
15 for the last ten years or so.

16 A. Yes.

17 Q. And then about the eighth sentence down
18 reads (as read):

19 Symptoms have been gradually
20 progressive over the years.

21 A. Yes.

22 Q. And if you turn back to -382.

23 A. Okay.

24 Q. The top says -- the first
25 paragraph -- strike that.

1 You see this is a telephone appointment
2 note with Mr. Cometto Davis from May 9th, 2023?

3 A. Mm-hmm. Yes.

4 Q. And it says -- this is Dr. Chaudhry (as
5 read):

6 I talked with the patient. I
7 told him that his genetic testing
8 for a disease called HNPP is
9 positive.

10 Do you see that?

11 A. Yes.

12 Q. And you're not familiar with HNPP?

13 A. I don't know what the abbreviation stands
14 for.

15 Q. Could you turn to page -423?

16 A. Okay.

17 Q. Do you see the section -- and I apologize.
18 This is not the clearest copy, but this is what we
19 have.

20 Do you see where it says (as read):

21 What is a positive PMP22
22 result?

23 A. Yes.

24 Q. And the last sentence in that section says
25 (as read):

1 Different positive PMP22
2 variants can cause hereditary
3 neuropathy with liability to
4 pressure policies (HNPP).

5 A. Oh, okay.

6 Q. Do you see that?

7 A. Yes. That defines HNPP.

8 Q. Are you familiar with hereditary
9 neuropathy with liability to pressure policies?

10 A. No.

11 Q. Does it suggest to you that it's a
12 hereditary type of neuropathy?

13 A. Yes.

14 Q. So if you could turn back to -382.

15 A. All right.

16 Q. Does -- Dr. Chaudhry states in these notes
17 with his call that he told Mr. Davis that he had
18 HNPP, which we saw is a hereditary type of
19 neuropathy; fair?

20 A. Right.

21 Q. You can set those aside.

22 And you did not take into account
23 Mr. Davis' hereditary neuropathy in your assessment
24 or summaries of his medical history, correct?

25 A. No. But I did acknowledge that he had had

1 peripheral neuropathy for ten years. I didn't
2 speculate on the cause, but I didn't -- didn't hide
3 the fact.

4 Q. And are you offering the opinion that
5 Mr. Davis' neuropathy was made worse by his
6 chemotherapy treatment?

7 A. I think it may very well have been made
8 worse. In fact, in Dr. Chaudry's note on -382, he
9 says if she -- and I --

10 Q. One second. Do you mind if I just get to
11 the page? I can work with you.

12 You're on -382 of Exhibit 8?

13 A. Right.

14 Q. Okay.

15 A. His concluding sentence is (as read):

16 If she needs chemotherapy, we
17 should avoid neurotoxic drugs given
18 his underlying neuropathy due to
19 genetic causes.

20 Now, this is already after the fact. He
21 already had received the neurotoxic drugs, but I
22 think Dr. Chaudhry was saying if he should need
23 chemo in the future to avoid neurotoxic drugs.

24 Q. Sure.

25 And do you know -- look at your report,

1 anything you need to know -- what neurotoxic drugs
2 Mr. Davis was exposed to, if any, in his
3 chemotherapy regimen?

4 A. Yes. Vincristine.

5 Q. Vincristine.

6 Any others?

7 A. No. Others are not associated with
8 neurotoxicity.

9 Q. You think it's possible vincristine could
10 have made Mr. Davis' neuropathy worse; fair?

11 A. Yes.

12 Q. But you have not talked to Mr. Davis about
13 that specifically?

14 A. No, I haven't.

15 Q. Is there any medical records that you're
16 relying on for that opinion that it may have made
17 his chemo -- his neuropathy worse?

18 A. Well, it's well known medically that
19 vincristine causes neurotoxicity. Oftentimes the
20 drug has to be discontinued because of the severity
21 of that neurotoxicity. And it's medically
22 reasonable to assume that someone who already has
23 neuropathy, it would be made worse with neurotoxic
24 drugs, exactly as Dr. Chaudhry specifies in his
25 note.

1 Q. Did you look at any records from -- strike
2 that.

3 Would you agree that to the extent
4 vincristine -- am I saying that correctly,
5 vincristine?

6 A. Vincristine.

7 Q. Vincristine.

8 You agree that to the extent vincristine
9 worsened Mr. Davis' neuropathy, any worsening would
10 stop with the end of treatment?

11 A. No.

12 Q. What do you rely on for that?

13 A. Well, my experience in seeing patients who
14 have had vincristine exposure, that the neuropathy
15 often continues for many months after the completion
16 of chemotherapy. And in occasional patients, they
17 have residual neuropathy that doesn't recover.

18 Q. Sure.

19 Does the neuropathy just not recover or
20 does the neuropathy get worse after you stopped
21 using vincristine?

22 A. Some patients reported getting a little
23 worse before it gets better. So the maximum
24 severity is not necessarily at the very conclusion
25 of treatment. It may get a bit worse before

1 potential improvement occurs.

2 Q. And so for how long would it get -- at
3 what point would you stop telling a patient the
4 vincristine is what's making their neuropathy worse?

5 A. Probably -- well, I would expect in a
6 patient who doesn't have any underlying neuropathy
7 who has been treated with vincristine who develops
8 neuropathy that it shouldn't get any worse beyond
9 two to four months after the completion of
10 treatment.

11 Q. And then, at that point, it may get
12 better?

13 A. At that point, it often gets better.

14 Q. And for a patient such as Mr. Davis who
15 has a genetic neuropathy, when would you tell a
16 patient with a genetic neuropathy that the
17 vincristine was no longer the cause of their
18 worsening neuropathy?

19 A. Well, if it's -- if it's progressing
20 beyond a -- a couple months from the completion of
21 treatment, I would say it's not likely that the
22 progression is due to vincristine.

23 Q. And what -- did you look at any studies
24 for that, or is that based on your experience as a
25 physician?

1 A. It's based on my experience.

2 MR. MCGOWAN: Can we take five minutes to
3 get this whole lunch thing squared away?

4 MS. HORAN: Absolutely. Can we go off the
5 record?

6 THE VIDEOGRAPHER: Time is 12:05 p.m.
7 Pacific Time. We're going off the record.

8 (Whereupon, a recess was taken from
9 12:05 p.m. to 12:09 p.m.)

10 THE VIDEOGRAPHER: The time is 12:09 p.m.
11 Pacific Time. We're back on the record.

12 MS. HORAN: I'm marking as Hoppe
13 Exhibit 12. This is a study by Li, 2024, that's
14 titled "Characterizing vincristine-induced
15 peripheral neuropathy in adults: Symptom
16 development and long-term persistent outcomes."

17 (Whereupon, Deposition Exhibit 12
18 was marked for identification.)

19 BY MS. HORAN:

20 Q. Dr. Hoppe, have you seen this study
21 before?

22 A. No, I haven't.

23 Q. Could you turn -- strike that.

24 Are you familiar with any of the authors
25 of this study?

1 A. No, I don't know any of these authors.

2 Q. Could you turn to --

3 A. They're all from Australia.

4 Q. -- page 8?

5 Do you see the second paragraph on page 8
6 begins "The coasting"?

7 Do you see that paragraph?

8 A. Yeah.

9 Q. The study says (as read):

10 The coasting phenomenon
11 whereby symptoms worsen after end
12 of treatment was also previously
13 associated with VIPN. However, the
14 present study incorporating
15 multiple assessment techniques
16 found that symptoms had reached
17 their peak by the end of treatment.
18 As observed in a prior study,
19 symptom improvement occurred soon
20 after treatment completion with
21 significant improvements in three
22 months post vincristine.
23 Did I read that correctly?

24 A. Yes.

25 Q. Do you agree with that finding of the

1 study?

2 A. Well, that was the findings that the
3 authors present in this study. I wouldn't disagree
4 with what they found in their study.

5 Q. Do you agree with it --

6 A. Well --

7 Q. -- in your professional experience and
8 expertise?

9 A. I would -- I would agree also with the
10 first sentence that you read that there's a coasting
11 phenomenon whereby symptoms worsen after the end of
12 treatment.

13 I sometimes see that in patients, or
14 sometimes they have reached their maximum at the end
15 of treatment.

16 I don't think I stated that every patient
17 sees an increase in neuropathy after completion of
18 treatment. Some patients do.

19 Q. You can set that aside.

20 You also include in your report
21 Dr. Jayaram's concern that Mr. Davis was developing
22 multiple myeloma; is that fair?

23 A. Yes.

24 Q. You're not offering an opinion or analysis
25 in this case about whether the water at Camp Lejeune

1 caused Mr. Davis' multiple myeloma?

2 A. No.

3 Q. You're not, correct?

4 A. I am not.

5 Q. And you're not offering an opinion or
6 analysis in this case on whether NHL can cause
7 multiple myeloma; fair?

8 A. No, I'm not.

9 Q. You're not offering that opinion?

10 A. No.

11 Q. Would you agree that there's no known
12 cause for most -- most cases of NHL?

13 A. Yes.

14 Q. What percentage of NHL cases that you've
15 sought to understand the cause of have had an
16 unknown cause?

17 A. Perhaps 10 percent.

18 Q. So 90 percent of the cases that you've
19 sought to have an understanding of what caused the
20 NHL you've been able to determine the cause?

21 A. I have not been able.

22 Q. Oh.

23 A. 90 percent I have not been able to.

24 Q. And about 10 percent of the time you have
25 been able to --

1 A. Yes.

2 Q. -- determine the cause?

3 Prior to this case, have you
4 thought -- strike that -- have you sought to
5 understand the cause of marginal zone lymphoma in an
6 individual?

7 A. Yes.

8 Q. How many times?

9 A. Most of the time that I see a patient with
10 marginal zone lymphoma.

11 Q. They often ask you what the cause was?

12 A. No. I often consider what the cause might
13 be.

14 Q. And when you consider the cause of
15 marginal zone lymphoma in your patients, how often
16 have you been able to determine the cause?

17 A. About a third of the time.

18 Q. And two-thirds of the time, you've not
19 been able to determine the cause of marginal zone
20 lymphoma?

21 A. Right.

22 Q. The one-third that you've been able to
23 determine the cause of, what have those causes been?

24 A. Generally, it's been chronic *Helicobacter*
25 *pylori* infection related to gastric marginal zone

1 lymphoma.

2 Q. Have you ever determined marg- -- the
3 cause of marginal zone lymphoma in a patient's lung?

4 A. No.

5 Q. Do you know if there are any unique causes
6 of marginal zone lymphoma in an individual's lung?

7 A. There have been some cases where there's
8 been implication of a Cronobacter infection.

9 Q. And the Cronobacter infection leads to
10 multiple marginal zone lymphoma in the lung?

11 A. It -- it causes inflammation that is
12 thought to lead to marginal zone lymphoma of the
13 lung.

14 Q. Anything besides the Cronobacter?

15 A. No.

16 Q. Different subtypes of NHL have different
17 risk factors; fair?

18 A. Yes.

19 Q. Would you agree that known causes of
20 marginal zone lymphoma do not account for the
21 mast -- vast majority of marginal zone lymphoma
22 found in the United States?

23 A. Yes.

24 Q. Are you familiar with the term
25 "idiopathic"?

1 A. Yes.

2 Q. And what does that mean?

3 A. It means unknown cause.

4 Q. So if I use the term "unknown cause"
5 throughout today, you'll understand -- or if I use
6 the term "idiopathic," you'll understand they mean
7 the same thing?

8 A. Yes.

9 Q. And you have done a differential diagnosis
10 methodology for both Mr. Howard and Mr. Davis; fair?

11 A. Yes, I have.

12 Q. What is a differential diagnosis
13 methodology?

14 A. Yes. Well, in this context, the
15 differential diagnosis is considering all known risk
16 factors for, in this case, developing non-Hodgkin
17 lymphoma and considering each of them and ruling
18 them in or out as potential causes.

19 Q. And you said, "in this case."

20 Is that -- did you do something in this
21 case different than what you do in your general
22 practice in terms of differential diagnosis
23 methodology?

24 A. Well, in medical practice, differential
25 diagnosis refers to something slightly different,

1 okay. It's seeing an abnormality, for example, on a
2 chest X-ray and listing the possible findings as --
3 as to their significance. So it lists different
4 entities. So it's a slightly different usage of the
5 term compared to how it's used in this document.

6 Q. And how did you use it in this document?

7 And you pointed to your report, which is
8 Exhibit 1?

9 A. Yeah. So in this document, I used it in
10 the context that had been described to me by the
11 attorneys as appropriate to look at for causation.
12 And that is to examine each of the potential causes
13 of lymphoma and to define whether Mr. Davis or
14 Mr. Howard had that characteristic or that exposure
15 or that history that would contribute to the
16 lymphoma.

17 Q. And the methodology that you used in this
18 case and the way you used the term "differential
19 diagnosis methodology," do you also do that in your
20 practice as a physician?

21 A. Not quite in the same formal way.

22 Q. What do you mean by that?

23 A. Well, you know, if a -- if a patient, for
24 example, has an organ transplant, then the
25 immunosuppression that's associated with that organ

1 transplant may result in the development of
2 lymphoma. And one need not go through -- I -- I
3 feel that, you know, all of the potential risk
4 factors for developing lymphoma when one is obvious.

5 Q. As applied to this case, the differential
6 diagnosis methodology you used requires ruling in
7 all reasonable potential causes of the NHL; fair?

8 A. Yes.

9 Q. Did you consider an idiopathic or no known
10 cause in your differential diagnosis in this case?

11 A. Well, by definition, that's unknown, so I
12 dealt with the -- with the known risk factors.

13 Q. And did you consider that most NHLs have
14 an unknown cause at all in your analysis?

15 A. Sure.

16 Q. How did you consider it as part of your
17 analysis?

18 A. Well, if there was no other factor that
19 could be identified as a risk factor, then I would
20 have to conclude that it was idiopathic.

21 Q. So if there's any possible risk factor
22 that you've not been able to rule out, then you
23 don't -- then you would consider that to be the
24 known cause of the ailment?

25 A. So if there's no known risk factor.

1 Q. Let me rephrase the question. There's a
2 lot of negative.

3 A. Okay.

4 Q. If you have not been able to rule out a
5 none risk factor that you've ruled in, then you
6 consider that to be the cause of the ailment?

7 A. I'm sorry, I'm confused. I'm confused
8 what you're saying.

9 Q. Sure.

10 So if you have a known risk factor of NHL,
11 and you've ruled that in because it's a known risk
12 factor --

13 A. Yes.

14 Q. -- and you haven't ruled it out for a
15 particular patient, then you would consider that
16 known risk factor to be the cause?

17 A. Yes.

18 Q. Okay.

19 A. Or a likely cause.

20 Q. What -- you said known or likely cause.
21 What's the distinction you're drawing
22 there?

23 A. What was the -- what were the two --

24 Q. I said a known cause, and you said or a
25 likely cause.

1 And I said -- and I'm just wondering what
2 distinction you were drawing there between telling
3 someone it was a known cause or telling it was a
4 likely cause.

5 A. Oh. Well, I would have to say that if
6 it's a known cause, that it's also a likely cause.

7 Q. Is it your opinion that idiopathic
8 etiology can only exist in the absence of known risk
9 factors?

10 A. It can exist -- only exist in the absence
11 of known risk factors, but there may be factors --
12 risk factors that are unknown.

13 Q. Okay. So if you can turn to page 12 of
14 your report. And this is the report of Mr. Davis.
15 This is Exhibit 1. Your last paragraph reads, from
16 the beginning (as read):

17 Given the otherwise rarity of
18 this disease, the low grade
19 immunosuppression suffered by
20 Mr. Davis for an extended period,
21 the lack of any other risk factors
22 for the development of NHL, e.g.,
23 immunosuppression, autoimmune
24 disorders and the increased risk
25 for marginal B-zone lymphoma in a

1 person -- in personnel at
2 Camp Lejeune versus Camp Pendleton
3 in the ATSDR report, I conclude
4 that it is more likely than not
5 that Mr. Davis' exposure to TCE and
6 Benzene increase the risk of and
7 was more likely than not a
8 significant and substantial
9 contributing cause of his B-cell
10 marginal zone lymphoma.

11 Did I read that sentence correctly?

12 A. Yes.

13 Q. Okay. So it looks like you've identified
14 four factors, the first being rarity of this
15 disease.

16 Is that fair?

17 A. Yes.

18 Q. On page 11, the second paragraph from the
19 bottom, discusses that it's your -- the NH- --
20 strike that.

21 You say on page 11, the second paragraph
22 from the bottom (as read):

23 Adding to my conclusion, the
24 NHL that Mr. Davis suffered from is
25 an uncommon one, only 8 percent of

1 NHL, and his presentation is
2 uncommon for marginal zone B-cell
3 lymphoma.

4 Do you see that?

5 A. Yes.

6 Q. Do you have -- where did you get the
7 statistics in this paragraph from?

8 A. Well, firstly, my general knowledge, but
9 then I likely looked up to be very specific with
10 respect to the 8 percent number. And what -- what
11 source I looked at for defining that must have been
12 some large database, but I can't tell you exactly
13 which one.

14 Q. Further on in the paragraph, you state (as
15 read):

16 The lung is involved as a
17 primary --
18 (Reporter clarification.)

19 BY MS. HORAN:

20 Q. I'll go slower.

21 (As read):

22 The lung is involved as a
23 primary site for this lymphoma only
24 about 1 percent of the time.

25 A. Yes.

1 Q. Do you see that?

2 Do you have a cite for that statistic?

3 A. Yeah. It was probably the same source.
4 I'm not sure if it's addressed in one of the papers
5 that I cite here on marginal zone lymphoma. But,
6 again, it's my -- my general experience. I -- I see
7 these marginal zone lymphomas of the lung very
8 infrequently compared to marginal zone lymphomas of
9 the skin or the stomach or the ocular adnexal
10 structures. So they're relatively uncommon even
11 among marginal zone lymphomas.

12 Q. Why does the rarity of the disease lead
13 you to believe it's related to water exposure at
14 Camp Lejeune?

15 A. Yeah. Well, I -- it's a combination of
16 the -- the report from the ATSDR looking at the
17 comparison of Marines stationed at Pendleton versus
18 Lejeune where there was a remarkable increase in
19 risk for this particular type of lymphoma. And --
20 and that -- which is otherwise an uncommon lymphoma.
21 That's one of the reasons that -- that led me to
22 that conclusion.

23 Q. And the study you're referencing is on
24 page 12, the second paragraph from the bottom?

25 A. Right.

1 Q. It's that paragraph.

2 A. Right.

3 Q. And the statistics -- or the risk that you
4 were just referencing is the 1.45 95 percent
5 confidence interval of .92, 2.28?

6 A. Yes.

7 Q. And you would agree that the confidence
8 interval for the ATSDR study of 2024 includes the
9 null of 1?

10 A. Yes.

11 Q. Other than the ATSDR study and your -- of
12 2024 and your experience, is there anything else
13 that led you to come to the conclusion that the
14 rarity of the disease suggests it's related to water
15 at Camp Lejeune?

16 A. No.

17 Q. Is the alternative true, if it's a common
18 NHL, then it's likely not caused by Camp Lejeune
19 water?

20 A. No.

21 Q. Why not?

22 A. Well, I -- I just said that the rarity was
23 not necessarily a result of the Camp Lejeune, and
24 then -- so it's the reverse, that the common
25 lymphomas wouldn't necessarily be related, if I'm

1 understanding you correctly.

2 Q. Sure.

3 In Mr. Davis' report, you reference the
4 rarity of the disease as a factor you thought made
5 it more likely that it was from the Camp Lejeune
6 water.

7 A. Yes.

8 Q. And we can go, and we can look now if you
9 want, but I didn't see you discussing the rarity or
10 commonality of diffuse large B-cell lymphoma that
11 Mr. Howard as part of your analysis in that --

12 A. Right.

13 Q. -- opinion.

14 And so I'm wondering if -- is it just that
15 it's a rare disease that leads you to that
16 understanding, or is it the commonality of a disease
17 that is somehow part of or related to Camp Lejeune?

18 A. I guess it's just, you know, the rare- --
19 rarity of the disease makes it provocative to find
20 an explanation.

21 Q. The second thing you list on page 12 of
22 your factors is the low-grade immunosuppression
23 suffered by Mr. Davis for an extended period.

24 Do you see that?

25 A. Yes.

1 Q. And that -- the further explanation of
2 that is the bottom of page 11, going to the page --
3 top of page 12.

4 A. Right.

5 Q. And you say at the bottom of page 11 that
6 Mr. Davis was lymphopenic for three years preceding
7 his diagnosis?

8 A. Yes.

9 Q. Are you offering the opinion that
10 lymphopenia is a cause of Mr. Davis' NHL?

11 A. No. I would say that his lymphopenia may
12 be a contributing factor to developing NHL.

13 Q. And what is that -- what studies or what
14 is that based off of?

15 A. Well, that's based off of the fact that
16 lymphocytes are important in -- as part of the
17 immune system, including surveillance of foreign
18 antigens or proteins, and that if you have a
19 deficiency of lymphocytes, that may lead to the
20 development of lymphoma or other cancers, most
21 notably, for example, at the extreme end of the
22 spectrum, people infected with the HIV virus where
23 there is a severe depletion in certain subsets of
24 the lymphocytes, you're at very high risk for
25 developing non-Hodgkin lymphoma.

1 Q. Are there studies that say that -- so
2 understanding that HIV is -- and those types of
3 illnesses, those are extreme immunosuppressed, that
4 low level immunosuppression would have the same --
5 or would have an impact on developing NHL?

6 A. Whether it's cause or effect is unclear.
7 But certainly for lymphomas, if they occur in the
8 presence of a low lymphocyte count, that's an
9 adverse factor.

10 Q. And you attribute his lymphopenia to his
11 exposure to TCE; is that fair?

12 A. Yes.

13 Q. And you say (as read):

14 Studies cited above indicate
15 that exposure to TCE may cause
16 lymphopenia.

17 What studies were you referencing?

18 A. Whatever studies were above.

19 Q. So those, are they the studies found on
20 page 2 and 3 in your TCE section, or somewhere else?

21 A. Yes.

22 Q. It looks like you might have put your
23 finger on some -- which studies are you
24 referencing --

25 A. So, for example, on page 3, the third

1 paragraph, Bassig, et al., 2016.

2 Q. Any others?

3 A. That's -- that's the main one here.

4 Q. Did you apply your differential etiology
5 methodology for determining the cause of Mr. Davis'
6 lymphopenia?

7 A. No.

8 Q. Did you consider any other risk factors
9 for determining -- for the cause of lymphopenia?

10 A. No.

11 Q. Turning to page 12 again, the third thing
12 you listed as part of your conclusion was (as read):

13 The lack of any other risk
14 factors for the development of NHL,
15 e.g., immunosuppression, autoimmune
16 disorders.

17 Do you see that?

18 A. Yes.

19 Q. Do you believe that all NHLs have the same
20 risk factors or do they differ by subtype?

21 A. They differ by subtype.

22 Q. And for Mr. Davis, did you consider only
23 risk factors specific to marginal zone lymphoma?

24 A. I -- I considered the risk factors
25 specific to marginal zone lymphoma as well as the

1 risk factors for lymphoma in general.

2 Q. How did you determine what are the risk
3 factors for NHL in general and specifically marginal
4 zone lymphoma?

5 A. From my general experience and -- and
6 knowledge of the lymphomas.

7 Q. Did you run any searches in to
8 publications or anything of that nature?

9 A. Regarding --

10 Q. Risk factors?

11 A. -- risk factors? No.

12 Q. Do you have any studies that you rely on
13 in determining risk factors for NHL or marginal zone
14 lymphoma?

15 A. Well, you know, I've read studies over the
16 years. So it's really a combination of all of that
17 knowledge.

18 Q. But sitting here today, there's not one in
19 particular --

20 A. No.

21 Q. -- that you can point me to?

22 What are the risk factors in your view --
23 we'll do generally NHL first and then marginal zone
24 lymphoma separately.

25 A. Okay.

1 Q. So in your opinion, what are the risk
2 factors for developing non-Hodgkin's lymphoma
3 generally?

4 A. They can include immunosuppression,
5 infection with certain viruses, Epstein-Barr virus
6 most notably, exposure to chemical agents. What
7 else did I consider here? Those are the main ones.

8 Q. And what are the risk factors you
9 considered for marginal zone lymphoma?

10 A. Chronic infection and inflammation
11 secondary to infection.

12 Q. The chronic infection, is that the barium
13 bacterium you were talking about?

14 A. The Cronobacter, yeah.

15 Q. Yeah.

16 The Cronobacter is the infection that you
17 would consider?

18 A. Yes.

19 Q. Any other infections you would consider?

20 A. Well, for marginal zone lymphoma of
21 different organs, there are different infectious
22 agents.

23 Q. Ah, okay. So for the lung, you just
24 considered the Cronobacter --

25 A. Right. Cronobacter.

1 Q. Sorry, could you just say it one more
2 time?

3 A. Cronobacter.

4 Q. Cronobacter.

5 Any other risk factors you can think of
6 sitting here today?

7 A. Not for marginal zone lymphoma, other than
8 those that are generally contributory to non-Hodgkin
9 lymphoma.

10 Q. And other than the three you've listed,
11 immunosuppression, infection with Epstein-Barr virus
12 and exposure to chemical agents, are there any other
13 risk factors for developing non-Hodgkin's lymphoma?

14 A. Well, there may be very remote genetic
15 predispositions. We know that from family studies.
16 But it's not a common causality.

17 Q. And do you mean a family history of NHL or
18 what are you referencing?

19 A. Yeah.

20 Q. Anything else?

21 A. No.

22 Q. Earlier today -- and I might have
23 misunderstood -- I think you said when you were
24 working with a patient to try to understand the
25 cause of their ailment, you would ask them their

1 social history in addition to their occupational
2 history. And the social history you would ask about
3 would include tobacco, alcohol, drug exposures and
4 sexual histories.

5 Am I remembering that correctly?

6 A. Yes. Yes.

7 Q. Are tobacco, alcohol, drug exposures and
8 sexual histories part of the risk factors for
9 developing NHL, or why ask those of your patients?

10 A. Well, they're always important with
11 respect to tolerance for treatment, okay, or
12 likelihood to adhere to treatments. So in -- in the
13 general context, it's important to know about those
14 things.

15 With respect to lymphoma and etiologic
16 agents, tobacco is not associated, alcohol is not
17 associated. If there is, you know, risk for HIV
18 infection, for example, then that needs to be tested
19 for, but that could -- that could be a causative
20 factor.

21 Q. And you also ask about drug exposures.

22 Why drug exposures?

23 A. Well, to know whether the patient is at --
24 at risk for abusing agents or whether their previous
25 history of drug use might affect their tolerance for

1 treatment.

2 Q. Okay. So drug -- prior drug exposures is
3 not considered in your view a risk factor for
4 developing NHL?

5 A. No.

6 Q. Is it possible that -- strike that.
7 Do you consider age as a risk factor for
8 developing NHL?

9 A. Well, lymph- -- certainly the risk for
10 developing lymphoma increases with age.

11 Q. And is that also true of marginal zone
12 lymphoma?

13 A. Yes.

14 Q. So marginal zone lymphoma becomes more
15 common in men as they age?

16 A. Yes.

17 Q. How much more common has marginal zone
18 lymphoma become in men as they age?

19 A. Well, it -- it probably plateaus at a
20 certain point, because certainly, you know, it's not
21 common in men in their 20s or 30s. But it
22 increases, probably plateaus in the 60s.

23 Q. You state on page 11, the fifth paragraph
24 (as read):

25 The only known or potential

1 cause of the NHL here was the
2 exposure to water at Camp Lejeune.
3 Do you see that?

4 A. Yes.

5 Q. Is it possible that Mr. Davis'
6 non-Hodgkin's lymphoma is idiopathic and there's
7 actually no known cause?

8 A. Yes, it's possible.

9 Q. The paragraph following that sentence says
10 (as read):

11 For instance, there is no
12 evidence of any other exposures to
13 toxins either at home or at work,
14 see, e.g., Davis.
15 And you have a cite to his deposition
16 transcript. (As read):

17 There is also no evidence of
18 any family history that is
19 germane.

20 Another cite to a deposition transcript
21 (as read):

22 No evidence of other
23 exposures in the Marines.

24 Another cite transcript to his deposition
25 (as read):

1 And no medical history of any
2 NHL precursors.

3 And, again, you have a cite to the
4 deposition transcript.

5 Do you see that?

6 A. Yes.

7 Q. So all of your understanding of the risk
8 factors and Mr. Davis' application of them to
9 Mr. Davis came from his deposition?

10 A. No. There was some statements in medical
11 records that I reviewed.

12 Q. Do you recall what you saw in medical
13 records that you reviewed as to his risk factors?

14 A. Well, for example, family history was
15 noted on a number of occasions. And his past
16 medical history was recorded on a number of
17 occasions in his medical records.

18 Q. Other than his deposition and medical
19 records, are there any other places you found
20 relevant statements about his risk factors?

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

22 Q. Did you have any risk factors that you
23 were not able to -- that you considered that you
24 were not able to rule out either through his medical
25 history or his deposition?

1 A. No.

2 Q. You state no medical history of any NHL
3 precursor.

4 What did you mean by "NHL precursor"?

5 A. So, for example, history of chronic
6 infections that have been implicated in developing
7 marginal B-cell lymphoma, and no medical history of
8 prior EBV infection that might be a contributor to
9 developing non-Hodgkin lymphoma.

10 Q. Other than the factors listed in the
11 paragraph we've been referencing that begins with,
12 "for instance," are there any other risk factors
13 that you ruled in or ruled out as to Mr. Davis in
14 your differential diagnosis?

15 A. I think that covers it.

16 Q. Your next paragraph says (as read):

17 Considering the potential
18 causes of the NHL in this case, and
19 the weak or absent evidence for all
20 but the water at Camp Lejeune, I am
21 left with the conclusion that the
22 contaminated water was more likely
23 than not the cause of Mr. Davis'
24 NHL.

25 What did you consider as weak evidence of

1 other causes?

2 A. Well, I'd say weak or absent. And
3 primarily, it was absent.

4 Q. Were there any other causes that you
5 considered to have weak evidence?

6 A. No.

7 Q. In the paragraph with deposition
8 citations, you reference no evidence of other
9 exposures to toxins.

10 What other toxins would be of concern that
11 you would be thinking of in assessing that?

12 A. Well, for example, you know, defoliants
13 like Agent Orange.

14 Q. Anything else?

15 A. You know, herbicides that have been
16 implicated, insecticides that have been implicated.

17 Q. Anything else you can think of?

18 A. Not offhand.

19 Q. You would agree that most marginal zone
20 lymphoma patients do not have a family history of
21 NHL?

22 A. Correct.

23 Q. You state in the paragraph with the
24 deposition citations (as read):

25 No evidence of any family

1 history that is germane.

2 When you say, "family history that is
3 germane," are you referencing family members with
4 non-Hodgkin's lymphoma or what would be a germane
5 family history?

6 A. Yeah, no -- none that is germane, meaning
7 that none -- there's no family history of any
8 lymphoma, like one of his parents or -- had colon
9 cancer or some other solid tumor, but no history of
10 lymphomas in the family.

11 Q. You would agree that there are marginal
12 zone lymphoma patients with no known toxic
13 exposures, no known germane family history and no
14 medical history of any NHL precursor?

15 A. Yes.

16 Q. And you would agree that as to age,
17 Mr. Davis is a typical -- is typical of patients
18 diagnosed with marginal zone lymphoma?

19 A. Yes.

20 Q. And you -- strike that.

21 You determined the Camp Lejeune water
22 caused Mr. Davis' NHL because it's the only factor
23 left ruled in to your differential diagnosis?

24 A. Yes.

25 Q. And if you turn to page 6 of your report,

1 the paragraph in the middle that says, "based upon
2 my years of experience," includes the sentence (as
3 read):

4 Based on available evidence, I
5 also agree that TCE, PCE and
6 Benzene all cause NHL at or
7 exceeding the at least as likely as
8 not standard.

9 Fair?

10 A. Fair.

11 Q. Have you ever assessed a risk factor for
12 NHL before where you ruled it in as a cause that's
13 at least as likely as not?

14 A. Well, I -- I hadn't used this terminology
15 until this case came to my attention. And then I
16 reviewed the ASTDR's recommendations -- ATSDR's
17 recommendations for definitions.

18 Q. So how do you weigh a factor that's as
19 likely as -- strike that -- that's --

20 How do you weigh a factor that's as least
21 as likely as not cause in a differential diagnosis?

22 A. Well, by the weight of evidence from
23 multiple studies that have looked at the
24 relationship between exposure and development of
25 lymphoma.

1 Q. And how did you weigh that against the
2 fact that most non-Hodgkin's lymphomas and marginal
3 zone lymphomas are of an unknown cause?

4 A. Well, because if I were to apply the
5 differential diagnosis approach, in most cases of
6 marginal B-cell lymphoma, with the exception of
7 those that arise in the stomach, I would not be able
8 to identify any risk factor as a causation.

9 Q. So in weighing your conclusion that TCE,
10 PCE and Benzene all cause NHL at least as likely or
11 not standard, they reach that at least, and when you
12 weigh that against the fact that known -- most
13 marginal zone lymphomas and NHLs in general have no
14 known cause, without this opinion as to TCE, PCE and
15 Benzene, you would be left with an unknown cause?

16 A. But we have a cause.

17 Q. Sure.

18 And I'm -- I'm trying to understand how
19 you weigh the standard you've applied to TCE, PCE
20 and Benzene with the known fact that most NHLs and
21 marginal zone lymphomas have no known cause. Is it
22 that once you've ruled it in from your general
23 causation analysis, it's now -- do you, at that
24 point, consider the weight of the evidence as part
25 of your differential diagnosis or is it just fully

1 ruled in 100 percent?

2 Does that make any sense?

3 A. Not quite, but --

4 Q. Well, let me try again.

5 So you've ruled in TCE, PCE and Benzene
6 causing NHL at a standard that is, at minimum, at
7 least as likely as not; fair?

8 A. Yes.

9 Q. Okay. And when you take that ruling-in
10 factor and you apply it to your differential
11 diagnosis methodology, at that point, is it a binary
12 it's been ruled in, it's been ruled out, or do you
13 still consider the sufficiency of the evidence or
14 the amount of evidence you've used to rule it in
15 when you weigh it against other factors?

16 A. I guess I still don't understand exactly
17 what point you're trying to make. You know, in this
18 case for Mr. Davis, we do have his exposure history.
19 We do have a known relationship between these
20 exposures and the development of lymphoma in
21 multiple studies, some of which are cited and
22 mentioned here. So he has the risk factor.

23 Q. Sure.

24 And once you've determined he has the risk
25 factor, do you consider that risk factor against the

1 evidence supporting unknown causation of most NHLs
2 or is that no longer part of your idiopathic, no
3 longer part of your assessment because you've ruled
4 in a known possible risk?

5 A. Yes. Idiopathic is only if you've ruled
6 out all possible risk factors.

7 Q. Understood.

8 A. So essentially it's what we call a
9 diagnosis of exclusion.

10 Q. Okay. So is what you did a diag- -- what
11 did you just call it? A diagnosis of exclusion?

12 A. Diagnosis of exclusion if you rule
13 everything else out.

14 Q. Okay. If you turn to page 12 of your
15 report.

16 You also -- your fourth factor that you
17 considered was this -- the 2024 ATSDR report in
18 Camp Lejeune versus Camp Pendleton --

19 A. Right.

20 Q. -- fair?

21 And how would you characterize the
22 strength of the finding of ATSDR as a two marginal
23 zone B-cell lymphoma of 1.45 with a 95 percent
24 confidence interval of .92, 2.28?

25 A. So I would consider the hazard ratio of

1 1.45 to be quite high, and that given the small
2 numbers of people with that diagnosis in either
3 Camp Lejeune or Camp Pendleton, it's -- it's no
4 surprise that the 95 percent confident -- confidence
5 intervals are what they are.

6 But that's simply, you know, the
7 95 percent of the bell-shaped curve and that there's
8 parts of the bell-shaped curve above and below those
9 95 percent estimates. And I would attach
10 significance to the 1.45 hazard ratio. It was not a
11 marginal hazard ratio. It wasn't 1.1 or 1.05. It
12 was 1.45.

13 MS. HORAN: I'm marking as Exhibit 9.

14 Sorry, what?

15 MR. LEE: Is that Number 10 or 9?

16 MR. MCGOWAN: We skipped a couple.

17 MS. HORAN: 9. Yeah, we actually went to
18 12, and now we're going to go back to 9. Sorry.

19 BY MS. HORAN:

20 Q. This is the Bove study titled "Cancer
21 Incidence Among Marines and Navy Personnel and
22 Civilian Workers Exposed to Industrial Solvents in
23 Drinking Water at U.S. Marine Corps Base
24 Camp Lejeune: A Cohort Study." That's Hoppe
25 Exhibit 9.

1 (Whereupon, Deposition Exhibit 9
2 was marked for identification.)

3 BY MS. HORAN:

4 Q. This is the study, Dr. Hoppe, that you
5 reference in your report, correct?

6 A. Yes.

7 Q. Do you know whether the 2024 incident
8 study performed any statistical significance
9 testing?

10 A. Yes. The -- the numbers that they report
11 include the confidence intervals.

12 Q. Do you know if the study has any
13 individualized exposure assessment?

14 A. I don't think it does, no.

15 Q. Do you know if the study controlled or
16 considered other potential occupational exposures
17 among Marines or Navy service members?

18 A. No. I believe it assumed roughly
19 equivalence because they were -- they just so
20 happened to be assigned to different base camps.

21 Q. Turn to Table 3. It says (as read):

22 Comparison of cancer outcomes
23 at Camp Lejeune versus
24 Camp Pendleton among the
25 Marine/Navy personnel subgroup who

1 began active duty and were
2 stationed at either base between
3 1975 and 1985.
4 Do you see that?

5 A. Yes.

6 Q. All right. And if you look down, marginal
7 zone B-cell lymphoma is maybe 20 percent up from the
8 bottom.

9 A. Right.

10 Q. There were 43 cases.

11 A. Right.

12 Q. Do you see that?

13 And the adjusted hazard ratio is 1.45 and
14 then with a confidence interval of .92, 2.28?

15 A. Mm-hmm.

16 Q. So this is where you got that statistic
17 for your report?

18 A. Yes.

19 Q. And if you look up on this study, do you
20 see the overall non-Hodgkin's lymphoma heading?

21 A. Yes.

22 Q. And you see there were 550 cases of
23 non-Hodgkin lymphoma?

24 A. Right.

25 Q. And the adjusted hazard ratio is 1.01?

1 A. Yes.

2 Q. With a confidence interval of .90, 1.14?

3 A. Yes.

4 Q. And you would consider -- would you
5 consider 1.01 to show an association or not?

6 A. A very weak association with the overall
7 diagnosis of non-Hodgkin lymphoma.

8 Q. And then if you look a few down, do you
9 see diffuse large B-cell?

10 A. Yes.

11 Q. And diffuse large B-cell is what
12 Mr. Howard has, correct?

13 A. Yes.

14 Q. And you relied on this study in forming
15 your opinions as to Mr. Howard, correct?

16 A. Yes. I -- I mentioned the civilian
17 experience, not the Marine experience.

18 Q. Sure.

19 And as to Table 3, which is what you
20 applied to Mr. Davis --

21 A. Yeah.

22 Q. -- diffuse large B-cell lymphoma has a
23 hazard ratio of .89 and a confidence interval of
24 .72, 1.10?

25 A. Right.

1 Q. So you would agree there's no association
2 for diffuse large B-cell?

3 A. Well, again, it's that bell-shaped curve.
4 And, you know, there's a possible association, but
5 it's not within the 95 percent confidence interval.

6 Q. Would you agree that a hazard ratio of .89
7 shows no association?

8 A. Statistically, it shows no association.

9 Q. You mentioned a minute ago that you
10 applied the civilian standard for Mr. Howard?

11 A. Yeah.

12 Q. Why?

13 A. Well, that was another exposure,
14 another -- an exposure that supported the
15 relationship between exposures and development of
16 lymphoma.

17 Q. Mr. Howard was not a civilian, correct?

18 A. Correct.

19 Q. And so you did not cite the part of this
20 study that does not support your opinion, but you
21 cited a part of this about civilians?

22 A. I did.

23 Q. Could you turn to Table 5?

24 Do you see that this says (as read):

25 Cancer outcomes by duration

1 stationed at Camp Lejeune compared
2 with Camp Pendleton between 1975
3 and 1985, Marine/Navy personnel
4 subgroup?

5 A. Yes.

6 Q. Okay. Do you see the line for non-Hodgkin
7 lymphoma?

8 A. Yes.

9 Q. Okay. Do you see for low duration, there
10 is a hazard ratio of 1.02?

11 A. Right.

12 Q. And for medium duration, there's a hazard
13 ratio of 1.01?

14 A. Yes.

15 Q. And for high duration, there's a hazard
16 ratio of 1.0?

17 A. Right.

18 Q. So the hazard ratio is actually going down
19 as the duration at Camp Lejeune goes up; is that
20 fair?

21 A. Well, but the confidence intervals are
22 almost the same for all of them.

23 So I think it's difficult to say that, you
24 know, it's truly going down.

25 Q. Does this data suggest a no dose response

1 for NHL?

2 A. I would say yes.

3 Q. And then if you look at diffuse large
4 B-cell, which is what Mr. Howard was diagnosed with,
5 do you see there's -- for low duration at
6 Camp Lejeune, it's .91 hazard ratio?

7 A. Yes.

8 Q. And for medium duration, it's .97 hazard
9 ratio?

10 A. Right.

11 Q. And for high duration, it's .78 hazard
12 ratio?

13 A. Right.

14 Q. So none of the hazard ratios for diffuse
15 large B-cell show an association between any time at
16 Camp Lejeune, low or high, and the development of
17 diffuse large B-cell?

18 A. Well, statistically.

19 Q. Right. I'm asking statistically.

20 A. Yeah.

21 Q. And in fact, the association goes down the
22 longer you're at Camp Lejeune; fair?

23 A. Well, again, the confidence intervals
24 overlap so significantly it's hard to say one way or
25 the other.

1 Q. So does this suggest there is no dose
2 response?

3 A. Yes.

4 Q. And then if you look at marginal zone
5 B-cell, do you see that row?

6 A. Yes.

7 (Reporter clarification.)

8 BY MS. HORAN:

9 Q. Sure.

10 For marginal zone B-cell, the low duration
11 at Camp Lejeune is 1.39, correct?

12 A. Yes.

13 Q. And the medium duration at Camp Lejeune is
14 1.64?

15 A. Yes.

16 Q. And the high duration at Camp Lejeune is
17 1.57, correct?

18 A. Yes.

19 Q. Does that also suggest no dose response
20 for the development of marginal zone B-cell
21 dependent on the duration of time spent at
22 Camp Lejeune?

23 A. Yes.

24 Q. So there's no dose response, according to
25 this study, for NHL or diffuse large B-cell or

1 marginal zone B-cell lymphoma; fair?

2 A. Well, it -- it doesn't say that there
3 isn't a threshold. And -- but beyond a threshold,
4 these data do not support there being a dose
5 response.

6 Q. And do you know if there is a threshold
7 that's been identified for exposure to water at
8 Camp Lejeune and the development of NHL?

9 A. No.

10 Q. And you're not offering an opinion on one,
11 correct?

12 A. No.

13 Q. Turning back to your report, which is
14 Exhibit 1 for Mr. Davis.

15 MR. MCGOWAN: Are we at a stopping point,
16 it's 1:17?

17 MS. HORAN: Sure.

18 THE VIDEOGRAPHER: The time is 1:17 p.m.
19 Pacific Time. We're going off the record.

20 (Whereupon, a lunch recess was taken
21 from 1:17 p.m. to 1:49 p.m.)
22
23
24
25

AFTERNOON SESSION

THE VIDEOGRAPHER: The time is 1:49 p.m.
Pacific Time. We're back on the record.

BY MS. HORAN:

Q. Dr. Hoppe, could you look back at
Exhibit 1 and turn to page 12? And that's
Mr. Davis' report.

A. Okay.

Q. The last paragraph has the four factors of
rarity of the disease, low grade immunosuppression,
your consideration and lack of any other risk
factors for developing NHL, and the increased risk
of marginal zone lymphoma from the ATSDR report.

Are there any other factors that you
considered in drawing your conclusion that
Mr. Davis' exposure to TCE and Benzene increased the
risk of and was more likely than not a significant
and substantial contributing factor for his NHL?

A. Well, I would say the studies that were
discussed in the general causation.

Q. In addition, anything else other than
those?

A. No.

Q. You did not conclude that PCE was the
cause or a substantial contributing factor of

1 Mr. Davis' NHL; fair?

2 A. Correct.

3 Q. How did you rule out PCE as the cause?

4 A. Well, I -- I don't think I addressed it.
5 I don't really rule it out. I just didn't address
6 it.

7 Q. You say that the -- or is it fair to say
8 that you -- it's your opinion that his exposure to
9 TCE and Benzene increased his risk of B-cell
10 lymphoma, the marginal zone lymphoma?

11 A. Yes.

12 Q. You didn't quantify the increased risk?

13 A. Sorry?

14 Q. You didn't quantify how much that
15 increased risk is, correct?

16 A. No, I didn't.

17 Q. The last sentence says (as read):

18 Furthermore, I conclude to a
19 reasonable degree of scientific and
20 medical certainty that Mr. Davis'
21 exposure to TCE and Benzene, while
22 stationed at Lejeune, was an
23 independent cause of his lymphoma
24 held to a more likely than not
25 standard.

1 Do you see that sentence?

2 A. Yes.

3 Q. How did you decide to use more likely than
4 not as your standard?

5 A. I thought the evidence was very
6 substantial that that was the case.

7 Q. Is more likely than not the type of
8 standard you would typically use with your patients
9 if they asked you about what the cause of their NHL
10 was?

11 A. It's not the typical terminology I would
12 use.

13 Q. What is the typical terminology that you
14 would use?

15 A. Well, I would say, for example, for a
16 patient who has marginal zone B-cell lymphoma on the
17 stomach with a -- in the setting of Helicobacter
18 pylori infection that their lymphoma was likely
19 caused by the Helicobacter pylori infection.

20 Q. So is it -- is that a stronger association
21 than what you're offering for Mr. Davis and his
22 association to Camp Lejeune water?

23 A. No, I wouldn't say. I mean, that's, you
24 know, the clinical medical terminology that's used.
25 And this is, you know, epidemiological legal

1 terminology.

2 Q. And if you translated that into medical
3 terminology, what medical terminology would you use?

4 A. Likely.

5 Q. I want to turn to your section of your
6 report that talks about prognosis, which is on
7 page 9 of your report.

8 A. Okay.

9 Q. In the middle of the page, do you see it
10 says (as read):

11 Although Mr. Davis was without
12 evidence of lymphoma at the time of
13 his last followup, marginal zone
14 lymphoma has a long, natural
15 history. Two-thirds of patients
16 will ultimately relapse and only
17 half of those relapses develop
18 within the first five years of
19 followup.

20 And you cite to Thieblemont 2000.

21 Do you see that?

22 A. Yes.

23 Q. Did you rely on any other studies in
24 determining the rate of relapse?

25 A. No. I -- you know, that was my general

1 knowledge, but I wanted to find some data that, you
2 know, were -- that I could cite.

3 Q. You don't determine Mr. Davis' specific
4 chance of relapse, but rather the population rate of
5 relapse?

6 A. That's correct. Mr. Davis is part of the
7 population.

8 Q. Do you have any reason to believe that
9 Mr. Davis specifically will relapse?

10 A. Only within these limits.

11 Q. And if he does relapse, you don't know
12 what course of treatment would be used, correct?

13 A. No. It depends on what the nature of his
14 relapse was.

15 Q. So sitting here today, though, you can't
16 say, if he relapses, X, Y and Z will be his
17 treatment?

18 A. Correct.

19 Q. You say there's an 8 percent possibility
20 that his disease could transform into a more
21 aggressive large cell lymphoma, and you cite
22 Thieblemont 2000 again.

23 A. Yes.

24 Q. Do you see that?

25 A. Yes.

1 Q. Does that mean there's a 92 percent chance
2 that his disease would not transform into a more
3 aggressive large cell lymphoma?

4 A. Correct.

5 MS. HORAN: I'm marking as Hoppe
6 Exhibit 10. This is a study titled
7 "Mucosa-associated lymphoid tissue lymphoma is a
8 disseminated disease in one-third of 150 patients
9 analyzed," and Thieblemont is the lead author.

10 (Whereupon, Deposition Exhibit 10
11 was marked for identification.)

12 BY MS. HORAN:

13 Q. Dr. Hoppe, is this the study you relied
14 on?

15 A. Yes.

16 Q. Could you turn to Figure 1, which is
17 page 805?

18 A. Correct. Okay.

19 Q. Do you see Figure 1 says, as its
20 description (as read):

21 Overall survival of 158 MALT
22 lymphoma patients, according to the
23 stage of the disease, predicted
24 overall survival of patients with
25 localized and disseminated disease

1 was similar. 86 percent at five
2 years and 80 percent at ten years
3 with a median follow-up time of
4 four years.

5 Did I read that correctly?

6 A. You read that correctly.

7 Q. Do you agree?

8 A. I agree that you read it correctly, but I
9 do not agree that that text applies to that figure.

10 Q. Why not?

11 A. Well, because the figures are, obviously,
12 transposed.

13 Q. Well, do you agree with the accuracy of
14 the statement that I just read?

15 A. Yes.

16 Q. You just think it doesn't properly
17 describe the figure?

18 A. Correct.

19 Q. But substantively, it's correct?

20 A. Yes.

21 Q. You can set that aside.

22 Okay. We're going to turn to Mr. Howard,
23 so we can set Mr. Davis' report aside as well.

24 MS. HORAN: So I'm asking Dr. Hoppe to
25 pull up Exhibit 3, which is Mr. Howard's expert

1 report.

2 BY MS. HORAN:

3 Q. Dr. Hoppe, have you communicated with
4 Mr. Howard, his family or any physicians for him?

5 A. No, I have not.

6 Q. Could you turn to page 10 of his report?

7 According to your chart, Mr. Howard was
8 only exposed to contaminated water at Hadnot Point;
9 fair?

10 A. Yes.

11 Q. And underneath the chart, you have a
12 number of -- you have a list of descriptions of
13 Mr. Howard's exposure from his deposition
14 transcript; is that fair?

15 A. That's correct.

16 Q. And you did not do any assessment
17 personally to determine whether the water he was
18 exposed to, for example, when he was drinking out of
19 water buffaloes, was contaminated or not; fair?

20 A. That's correct.

21 Q. And you talk about him showering, laundry,
22 swimming and mopping; is that fair?

23 A. Yes.

24 Q. And you did not attempt to quantify those
25 exposures; fair?

1 A. Correct.

2 Q. If you turn to page 6.

3 A. I'm sorry?

4 Q. Sorry. Page 6.

5 At the bottom of page 6, you have

6 Mr. Howard's exposure as attributed to

7 Dr. Reynolds'; fair?

8 A. Yes.

9 Q. And those are absolute numbers is his
10 total exposure, correct?

11 A. Yes.

12 Q. You have those listed as PPB?

13 A. Hmm. Yeah. Yeah.

14 Q. Do you see that?

15 A. Yes.

16 Q. Okay. And did you rely on Dr. Reynolds
17 for Mr. Howard's exposure analysis or did you do any
18 of your own exposure?

19 A. I relied on Dr. Reynolds.

20 Q. Okay. If you could pull back up
21 Dr. Reynolds' report, which is Exhibit --

22 A. 7.

23 Q. 7?

24 And turn to Appendix 10, which is for
25 Allan W. Howard. And I would say it's about -- it's

1 closer to the first third.

2 A. Okay.

3 Q. I can give you a sticky note if you want
4 to mark that. Okay.

5 Comparing the numbers you attribute to
6 Dr. Reynolds in your report on page 6 with the
7 numbers Dr. Reynolds has in her Appendix 10 for
8 Allan Wayne Howard, you cite to the range between
9 chart 3 and chart 4; is that fair?

10 A. Yes.

11 Q. And those are in micrograms, correct?

12 A. Correct.

13 Q. Did you -- so you're determining that one
14 part per billion is the same as one microgram?

15 A. No. I suspect that was just an oversight
16 and that I should have used the micrograms per liter
17 from -- from this table.

18 Q. Is the table micrograms or micrograms per
19 liter?

20 A. Well, it's -- it's micrograms.

21 Q. Okay.

22 A. The table -- the table has both, has the
23 micrograms per liter and then the total.

24 Q. Ah, so you're pointing to the second
25 column, which is cumulative micrograms per liter

1 with the big M?

2 A. Yes.

3 Q. And then columns 3, 4, 5 and 6, which are
4 associated with charts --

5 A. Chart 3 and chart 4, yeah.

6 Q. And chart 1 and chart 2?

7 A. Yeah.

8 Q. Those are all just micrograms, right?

9 A. Yeah.

10 Q. And in your report, you cite to the
11 numbers associated with just the microgram?

12 A. Correct.

13 Q. Why offer the range between chart 3 and
14 chart 4 as your assessment of Mr. Davis' exposure?

15 A. Well, I guess there was variable
16 interpretations of exposure reflected in charts 3
17 and 4.

18 Q. How did you determine to rely on 3 and 4
19 as opposed to 2, chart 2?

20 A. So I -- I don't recall.

21 Q. You do not include in your report the
22 contaminant levels for chart 1 or chart 2; is that
23 fair?

24 A. That's fair.

25 Q. And you didn't consider them in forming

1 your opinion?

2 A. Correct.

3 Q. You might want to leave that open to
4 Mr. Howard's appendix, and if you could turn back to
5 your report, which is Exhibit 3, and turn to page 9.

6 A. Okay.

7 Q. Do you see it says (as read):

8 During Mr. Howard's 449 days
9 of exposure at Camp Lejeune, he
10 would have likely been exposed to
11 5,937 parts per billion/liters-M of
12 TCE, 251 parts per billion per
13 liter-M of PCE, and 343 parts per
14 billion/liter per M of vinyl
15 chloride and 70 parts per
16 billion/liters-M of Benzene.

17 Do you see that?

18 A. Yes.

19 Q. Again, Dr. Reynolds' opinions are
20 micrograms per liter-M, not the parts per billion,
21 correct?

22 A. I assume that that's also the case, from
23 the appropriate table.

24 Q. You can -- if you want to look at the --
25 if it's Dr. Reynolds' report, Appendix 10, I believe

1 you used the numbers --

2 A. Yeah.

3 Q. -- from the cumulative column --

4 A. Right.

5 Q. -- correct?

6 A. Right. It's micrograms.

7 Q. And you offered this number in
8 Mr. Howard's exposure assessment. You offer the
9 cumulative micrograms per liter month.

10 What is it -- why offer it for
11 Mr. Howard's analysis?

12 A. Well, it's part of the expert report.

13 Q. How did it play into your analysis of his
14 exposure as it relates to your opinion?

15 A. Well, that would indicate a high exposure.

16 Q. As compared to what?

17 A. As compared to what one is normally
18 exposed to outside of Camp Lejeune.

19 Q. Is it your opinion that the numbers on
20 page 9 of your report, for example, the
21 5,937 micrograms per liter-M means that -- what does
22 that number mean as applied to your exposure
23 analysis?

24 A. Well, it's high.

25 Q. So -- but the parts per billion liter M,

1 is that unit -- what do you understand that unit to
2 mean?

3 A. Well, that's the concentration of the
4 agent in water.

5 Q. Is it his total concentration if you add
6 up all the months, is it the average over every
7 month that he was there?

8 Do you know what that number means?

9 A. Well, that -- that's -- that would be an
10 average per month.

11 Q. So it's your opinion that -- or your
12 understanding of Dr. Reynolds' opinion is that
13 Mr. Howard was exposed to 5,937 parts per billion
14 per liter month every month he was at Camp Lejeune?

15 A. On average.

16 Q. Okay. If you look on page 9 of your
17 report.

18 A. Yes.

19 Q. Do you see the paragraph above that says,
20 in the middle (as read):

21 Reconstructed TCE
22 concentrations at Hadnot Point
23 drinking water reached a maximum
24 level of 546 micrograms per liter
25 during December of 1978?

1 A. Yes, I see that.

2 Q. Okay. So the maximum level he was exposed
3 to was 546 micrograms per liter per -- assuming the
4 average is a range?

5 A. Okay. So that level was reached during
6 December 1978, yeah.

7 Q. So turning back to the next paragraph,
8 could you turn to Dr. Reynolds' report again, and to
9 Appendix 10? And then do you see -- I apologize. I
10 don't know why this happened. If you turn to the
11 page after the summary charts. I apologize, it
12 looks like some of the headings got cut off in the
13 printing.

14 But do you see that that first chart has
15 the 5,937, 251, 343 and 70?

16 A. Yes.

17 Q. Do you know or have you done any analysis
18 to determine if those numbers are the addition of
19 all the numbers above them?

20 A. Well, as I look at this table, I assume
21 that they are sums of those numbers above.

22 Q. Okay. So if 5,937 is the sum of the TCE
23 values per month for the time that Mr. Howard was at
24 Camp Lejeune, does that make sense to you?

25 A. Well, I think so, but it would be nice to

1 see the headings of these columns.

2 Q. Yeah. I don't know why they got cut off
3 when we printed. I apologize for that.

4 A. So I don't know if these are measurements
5 on different days or -- I simply don't know.

6 Q. Okay. If I represent to you that these
7 are the concentrations of the addition of the months
8 that Mr. Howard was there, how does the -- if you
9 add up the month that Mr. Howard was there and the
10 exposure that was estimated for each month, how does
11 that cumulative number -- what does that tell you
12 for your specific causation analysis?

13 A. Well, that -- that value of 5,937 is a
14 very high value. And so, you know, I would consider
15 it very highly as a causation.

16 Q. Does the cumulative exposure column, if
17 you turn back to the page before it, suggest that
18 Mr. -- that Dr. Reynolds took into account
19 Mr. Howard's use of the water in any way when she
20 determined the cumulative column?

21 A. Well, I can't speak to what she did. But
22 I assume that that was the cumulative exposure.

23 Q. That Mr. Davis -- strike that.

24 That Mr. Howard was exposed to, including
25 his unique interactions with the water?

1 A. Yes, if I understand you correctly.

2 Q. Okay. So if someone were living in a
3 place where there were 20 micrograms per liter of
4 TCE in the water, would it be important to know how
5 they interacted with the water in order to determine
6 their exposure?

7 A. Sure.

8 Q. And would you agree that just knowing that
9 there were 20 micrograms per liter of TCE or any
10 other chemical in the water would not allow you to,
11 in and of itself, determine the risk of any
12 particular individual without also assessing how
13 they uniquely consumed or interacted with the water;
14 fair?

15 A. Fair.

16 Q. You included in your report for Mr. Howard
17 the units of parts per billion.

18 And I think you -- you agree that
19 Dr. Reynolds used micrograms?

20 A. Correct.

21 Q. Okay. It wasn't intentional on your part
22 and you didn't do any analysis to convert
23 micrograms --

24 A. No.

25 Q. -- to parts per billion?

1 A. No.

2 Q. Do you know if the published literature
3 looking at exposure uses micrograms or parts per
4 billion?

5 A. I think some looks at part per billion and
6 some looks at micrograms.

7 Q. Do you know if the literature uses parts
8 per billion per liter a month as a unit to assess or
9 micrograms per liter month?

10 A. Yeah, I can't say that I've seen that per
11 month utilized in papers I reviewed.

12 Q. If you turn back to page 9 --

13 A. Right.

14 Q. -- you state that the -- I think you said
15 earlier that -- when I was asking you about how
16 these numbers played into your analysis, I believe
17 you testified they were high?

18 A. Right.

19 Q. What analysis are you doing or -- to
20 determine that they are high?

21 A. Well, I look at the maximum contaminant
22 levels that have been established, I think, by the
23 EPA for these agents, and I think they're all, you
24 know, at the five micrograms per liter level.

25 Q. Anything else?

1 A. That's the main thing.

2 Q. Turning to page 11 of your report, you, at
3 the top, provide again Dr. Reynolds' numbers.

4 And those are the same numbers that you
5 provided on page 6, correct?

6 A. Okay. Right.

7 Q. And you say (as read):

8 In my opinion, the level of
9 exposure to TCE, PCE and Benzene
10 that Mr. Howard experienced during
11 his 449 days living and working on
12 Camp Lejeune was more than
13 sufficient to cause his NHL and was
14 substantial.

15 Did I read that correctly?

16 A. Correct.

17 Q. What -- how did you determine the level of
18 exposure was sufficient?

19 A. Well, basing it on the expert report from
20 Dr. Reynolds, and also the literature that I cited
21 and referred to.

22 Q. And we -- I believe you testified
23 previously that you hadn't determined a threshold
24 amount of TCE, PCE or Benzene.

25 And that's also true for Mr. Howard; you

1 don't have that opinion in his report either,
2 correct?

3 A. Correct.

4 Q. As to exposure, other than the numbers of
5 absolute exposure and the micrograms per liter/month
6 that you have from Dr. Reynolds and the number of
7 days that Mr. Howard was living at Camp Lejeune, are
8 there any other factors of exposure you considered
9 in forming your opinion?

10 A. No.

11 Q. If you turn back to page 9, right under
12 the parts per billion per liter month sentence, you
13 have references to a study from 19- -- from the
14 1990s in New Jersey.

15 A. Right.

16 Q. I believe it's the next two paragraphs.

17 A. Yes.

18 Q. Why did you include that study?

19 A. Well, I thought it was perhaps the most
20 relevant because, you know, it related to
21 groundwater contamination and it was a large study.
22 They -- so I felt that their conclusions were valid.

23 Q. Do you know if this study is a cohort
24 study or an ecological study?

25 A. Let's see. This one, this was not a

1 cohort study, so I would assume that it's an
2 ecological study, if it's one or the other.

3 MS. HORAN: I'm marking as Hoppe
4 Exhibit 11.

5 (Whereupon, Deposition Exhibit 11
6 was marked for identification.)

7 BY MS. HORAN:

8 Q. This says (as read):

9 Drinking Water Contamination
10 and the Incidence of Leukemia and
11 Non-Hodgkin's Lymphoma.

12 And this is the Cohn study.

13 I apologize, there's some random
14 highlighting on this. I don't know where that came
15 from. But I'm not going to ask you about it, and
16 I'd just ask that you please ignore it.

17 MS. HORAN: Oh, maybe yours doesn't have
18 it.

19 Is there no highlighting on your copy?

20 MR. MCGOWAN: No.

21 MS. HORAN: Oh, great. I take that back,
22 then.

23 BY MS. HORAN:

24 Q. Dr. Hoppe, having had a chance to review
25 this study, do you have any opinion on what type of

1 epidemiological study this is?

2 A. Well, it doesn't specify that it's a
3 cohort study.

4 Q. And I think you testified earlier, you're
5 not particularly familiar with the term "ecological
6 study"?

7 A. Correct.

8 Q. Okay. Do you agree that this study, the
9 Cohn study, did not consider duration or extent of
10 exposure?

11 A. I believe that's the case.

12 Q. Okay. You can set that aside.

13 Dr. Hoppe, do you treat kidney cancer?

14 A. No, I don't.

15 Q. And you're not offering any opinions in
16 this case on the cause, treatment and/or prognosis
17 of Mr. Howard's kidney cancer?

18 A. That's correct.

19 Q. Turning to your medical history of
20 Mr. Howard, prior to June of 2023, when Mr. Howard
21 was brought into the ER, there were no signs of
22 lymphadenopathy, correct?

23 A. Umm, no.

24 Q. That's incorrect?

25 A. That's -- that's incorrect.

1 Q. Okay. Why is that incorrect?

2 A. Well, I -- included in my summary here, I
3 noted that on November 30th, 2016, an MRI at OSU
4 Wexner Medical Center noted that there are small to
5 prominent multiple noticeable mesenteric lymph nodes
6 in the central abdomen, which are nonspecific,
7 confluent mesenteric node in the left abdomen,
8 measures 1.3 by 2.5 cm in size. No definite
9 retroperitoneal adenopathy, no discrete enlarged
10 pelvic or inguinal nodes. Essentially stable since
11 the prior comparison CT dated 2014.

12 Q. And then on April 18th, 2019, a computed
13 tomographic scan of the thorax revealed
14 no mediastinal or auxiliary --

15 (Reporter clarification.)

16 MS. HORAN: Sure. Mediastinal.

17 THE WITNESS: Mediastinal.

18 BY MS. HORAN:

19 Q. Mediastinal or auxiliary lymphadenopathy.

20 Dr. Hoppe, how do you say that word?

21 A. Lymphadenopathy.

22 Q. Lymphadenopathy.

23 Okay. So after 2016, didn't the next
24 records suggest there was, again, no
25 lymphadenopathy?

1 A. Well, that was an examination of his chest
2 only, whereas the previous exam that I noted was a
3 scan that included his abdomen, and it was in his
4 abdomen that these lymph nodes were reported to be
5 present.

6 Q. Okay. And then in August of 2020, the
7 second sentence says (as read):

8 Imaging was performed at that
9 time, including a CT of the chest,
10 abdomen and pelvis, no
11 lymphadenopathy was reported.
12 Did I read that correctly?

13 A. Yes, you did.

14 Q. So in August of 2020, when his abdomen
15 underwent a CT, there was no lymphadenopathy?

16 A. According to the report, yes.

17 Q. Do you have reason to doubt the report?

18 A. I didn't look at the images myself so I
19 have to go by the report.

20 Q. Did you look at the images of the 2016 --

21 A. No, I did not.

22 Q. So there were -- in 2016 -- strike that.

23 In November of 2016, you think there were
24 signs of the lymphadenopathy, but then they -- when
25 they tested again in August of 2020, there were

1 none?

2 A. According to the reports, yes.

3 Q. Is that common or what does that tell you?

4 A. Well, there are two possibilities, or at
5 least two possibilities, you know. One is that the
6 lymph nodes that were identified in 2016 were
7 potentially infection-related or some other
8 inflammatory stimulus that was not present in 2020,
9 right. Is that what it -- yeah.

10 That's one possibility. Another
11 possibility is that he could have had lymphoma at
12 that time that -- with some regression that can
13 happen spontaneously, that became more evident at a
14 later date.

15 A third possibility is that given the
16 circumstances in August 2020 that this patient was
17 scanned following a bicycle accident and traumatic
18 injuries, there's a tendency for radiologists to
19 focus on the acute problem and not to pay too much
20 attention to some enlarged nodes that might be
21 present, especially if they're only marginally
22 enlarged. That's why I said I have to rely on the
23 report since I didn't see the images myself.

24 Q. Do you have any reason to believe that the
25 enlarged nodes that were seen in November of 2016

1 are related to Mr. Howard's subsequent development
2 of non-Hodgkin's lymphoma?

3 A. I can't be absolutely certain. I would
4 say there -- given that they were not seen
5 subsequently per reports, more likely they were not
6 related to lymphoma.

7 Q. And in 2016, they were not tested -- or no
8 tests were done to determine if they were
9 non-Hodgkin's lymphoma?

10 A. Correct.

11 Q. And to the best of your knowledge, there
12 was no investigation by the physicians at that time,
13 or consideration of them, that the enlarged nodes
14 were non-Hodgkin's lymphoma; fair?

15 A. Correct.

16 Q. And then in June of 2023, which begins
17 kind of towards the end of the page --

18 A. Yeah.

19 Q. -- Mr. Howard was brought into the ER;
20 fair?

21 A. Right.

22 Q. And the last sentence reads (as read):

23 He biked 30 to 40 miles a day,
24 but was complaining of some fatigue
25 and body aches.

1 Correct?

2 A. Correct.

3 Q. And then in October of 2023, Mr. Howard
4 was diagnosed with diffuse large B-cell lymphoma;
5 fair?

6 A. Right.

7 Q. And he began chemotherapy on
8 October 16th of 2023?

9 A. Yes.

10 Q. Give you a minute. All set?

11 A. Yeah.

12 Q. Okay. Would you agree that diffuse large
13 B-cell lymphoma is the most common lymphoma in the
14 United States?

15 A. It's one of the two most common.

16 Q. What's the other common?

17 A. Follicular lymphoma.

18 Q. And you agree that Mr. Howard's treatment
19 for his diffuse large B-cell lymphoma was
20 appropriate?

21 A. Yes.

22 Q. And you agree that Mr. Howard tolerated
23 chemotherapy well for his non-Hodgkin's lymphoma?

24 A. Yes.

25 MS. HORAN: I'm marking as Hoppe

1 Exhibit 13. These are medical records of Mr. Howard
2 with the Bates 00490_HOWARD_KH_0000000334 and it
3 goes through -339.

4 (Whereupon, Deposition Exhibit 13
5 was marked for identification.)

6 BY MS. HORAN:

7 Q. Dr. Hoppe, have you seen these medical
8 records before?

9 A. Yes, I believe I have.

10 Q. And the first page is for a date of
11 encounter from October 24th, 2023?

12 A. Yes.

13 Q. And this is for a follow-up appointment
14 after his first round of chemotherapy; fair?

15 A. Right.

16 Q. And it says (as read):

17 Still lives an active
18 lifestyle, states he rode 50 miles
19 on his bike the day after
20 treatment.

21 Do you see that?

22 A. That's great. Yes.

23 Q. And it says (as read):

24 Patient is very happy to
25 report lymphadenopathy has

1 significantly decreased. Appetite
2 is good, no nausea, no issues with
3 constipation or diarrhea, no chest
4 pain or shortness of breath, no
5 fever or chills.

6 Do you see that?

7 A. Yes.

8 Q. And you would agree that that's a patient
9 who is tolerating chemotherapy very well; fair?

10 A. Yes.

11 Q. You can set that aside.

12 Following the two cycles of chemotherapy,
13 a PET scan showed that Mr. Howard had a complete
14 metabolic response to his treatment, correct?

15 A. Correct.

16 Q. That means there was no clear evidence for
17 residual or recurrent disease; fair?

18 A. Well, it's likely that he still had
19 disease, it just didn't show up on imaging.

20 Q. Oh, okay. I think I might have -- okay.

21 So is it fair to say that there was no
22 clear evidence for residual or recurrent disease
23 that was seen?

24 A. Or you could say more precisely, he had a
25 complete metabolic response.

1 Q. Okay. And he completed his treatment for
2 non-Hodgkin's lymphoma on February 19th of 2024?

3 A. Right.

4 Q. And as of today, there's no evidence of
5 any recurrence of Mr. Howard's NHL; fair?

6 A. Right.

7 Q. Turning to your Section 11, which is
8 page 11 of Mr. Howard's report, that's the title --
9 or the section with a title "Differential Diagnosis,
10 Methodology to Determine the Etiology of the NHL."

11 Do you see that section?

12 A. Yes.

13 Q. And if you turn to the last page, page 12,
14 you say (as read):

15 Given the lack of any other
16 risk factors for the development of
17 NHL, e.g., immunosuppression,
18 autoimmune disorders, HIV
19 infection, EBV infection, hepatitis
20 C virus infection, organ
21 transplantation, familial history
22 or exposure to herbicides and the
23 increased risk for lymphoma among
24 individuals exposed to TCE, PCE and
25 Benzene, I conclude that it is more

1 likely than not that in
2 Mr. Howard's case, the additive
3 exposure to TCE, PCE and Benzene
4 increased the risk of and was
5 more -- and was likely a
6 significant contributing cause of
7 his diffuse large B-cell lymphoma.
8 Did I read that correctly?

9 A. Yes.

10 Q. So the only causal explanation you
11 identify for Mr. Howard's NHL is the water at
12 Camp Lejeune; fair?

13 A. Yeah. All other risk factors were absent.

14 Q. And you used the same differential
15 diagnosis methodology that you used for Mr. Davis,
16 correct?

17 A. Correct.

18 Q. So we went through for Mr. Davis the risk
19 factors for NHL generally and the risk factors for
20 marginal zone lymphoma.

21 And for NHL generally, you mention risk
22 factors of immunosuppression, infection with EBV,
23 which I believe is Epstein Bar Virus, exposure to
24 chemical agents and genetic family, familial
25 relations.

1 Is the general list the same for Howard of
2 risk factors?

3 A. The general risk factors, yes. But you
4 didn't mention all of them. You didn't mention,
5 like, transplantation.

6 Q. Oh, the paragraph -- the parentheses are
7 the list of risk factors you considered for
8 Mr. Howard?

9 A. Yeah.

10 Q. Okay. And are these general to NHL or are
11 any of these specific to diffuse large B-cell
12 lymphoma?

13 A. Well, for example, the organ
14 transplantation, most of the secondary lymphomas
15 among patients with organ transplantation are
16 diffuse large B-cell, although occasionally, you
17 will find others.

18 Q. Any other specific to --

19 A. HIV infection.

20 Q. Okay.

21 A. Immunosuppression in general.

22 But, you know, they -- most of the
23 secondary lymphomas in those situations are diffuse
24 large B-cell, but you can say other lymphomas as
25 well.

1 Q. And when you say, "secondary lymphomas,"
2 do you mean they've already developed a lymphoma and
3 this is the --

4 A. No.

5 Q. -- second one?

6 A. No. No. It's secondary to the risk
7 factor.

8 Q. Okay. So they have already developed some
9 type of immuno- -- or have some type of
10 immunosuppression --

11 A. Right.

12 Q. -- and then they developed diffuse large
13 B-cell --

14 A. Right.

15 Q. Okay.

16 (Reporter clarification.)

17 BY MS. HORAN:

18 Q. What studies or your experience, what did
19 you rely on in determining what the risk factors you
20 should consider for Mr. Howard were?

21 A. My general knowledge of risk factors in
22 patients who develop lymphoma.

23 Q. Did you look for any studies or anything
24 to determine or to confirm your experience?

25 A. No.

1 MS. HORAN: I'm marking as Hoppe
2 Exhibit 14. This is a study, "Epidemiology and the
3 etiology of diffuse large B-cell lymphoma" by
4 Sofia S. Wang.

5 (Whereupon, Deposition Exhibit 14
6 was marked for identification.)

7 BY MS. HORAN:

8 Q. Dr. Hoppe, have you seen this study
9 before?

10 A. No.

11 Q. Could you turn to page 258?

12 Do you see Table 4, which is in the top
13 right, says (as read):

14 Summary of risk associations
15 of established risk factors for
16 diffuse large B-cell lymphoma?

17 A. Right.

18 Q. And you would agree that that chart does
19 not include TCE, PCE or Benzene as a risk factor;
20 fair?

21 A. It does not list those.

22 Q. And you would agree that chart does not
23 list exposures to any toxic chemical agent as a risk
24 factor?

25 A. I agree.

1 Q. Is exposure to TCE, PCE and Benzene
2 commonly considered by practitioners when assessing
3 the cause of diffuse large B-cell lymphoma?

4 A. Well, I would only say that if they are
5 faced with a patient who has those exposures, they
6 would consider it. In my practice, exposure to
7 those agents is, you know, very rare. And so I
8 wouldn't have reason for most patients to ask about
9 that specific exposure.

10 Q. You can set that aside.

11 Oh, actually, do you agree with the
12 established risk factors for diffuse large B-cell
13 lymphoma in Table 4, do you generally agree with
14 that table, that those are established risk factors?

15 A. I agree with these.

16 Q. You can set that aside.

17 Do you agree that most cases of diffuse
18 large B-cell lymphoma are of unknown cause?

19 A. Yes.

20 Q. Did Mr. Howard's hypothyroidism factor
21 into your differential diagnosis at all?

22 A. I don't recall when his hypothyroidism
23 developed. But I would say hypothyroidism is not a
24 predisposing cause for lymphoma. It's not a risk
25 factor for lymphoma, even, you know, in the list

1 that you provided from Dr. Wang.

2 Q. So you did not consider it as part of your
3 differential diagnosis methodology then?

4 A. No, I would not have because it's not a
5 risk factor.

6 Q. Is it possible that Mr. Howard's diffuse
7 large B-cell lymphoma is idiopathic?

8 A. I would only consider it idiopathic if
9 there was no other explanation.

10 MR. ELLIOTT: Go off the record.

11 MS. HORAN: Can we go off the record?

12 THE VIDEOGRAPHER: The time is 2:53 p.m.
13 Pacific Time. We're going off the record.

14 (Whereupon, a recess was taken from
15 2:53 p.m. to 3:04 p.m.)

16 THE VIDEOGRAPHER: The time is 3:04 p.m.
17 Pacific Time. We're back on the record.

18 BY MS. HORAN:

19 Q. Dr. Hoppe, you -- on page 11 of Exhibit 3,
20 which is your report for Mr. Howard, if you could
21 turn to page 11.

22 A. All right.

23 Q. And you have, just a little bit past the
24 midway of the page, it says -- the paragraph starts,
25 "For instance."

1 Do you see that paragraph?

2 A. Yes.

3 Q. And it includes a number of citations to
4 Mr. Howard's deposition transcript?

5 A. Right.

6 Q. Other than his deposition transcript, did
7 you also -- or what other documents did you review
8 to determine what risk factors were relevant to your
9 differential diagnosis?

10 A. Only what I saw in the medical record.

11 Q. Anything other than medical records and
12 his deposition?

13 A. No.

14 Q. Were there any risk factors that you were
15 not able to rule in or rule out based on the
16 deposition and medical records?

17 A. No.

18 Q. The next -- or at the end of page, there's
19 a paragraph that begins "In a Bove, et.al., study in
20 2024."

21 Do you see that?

22 A. Yes.

23 Q. And that is the 2024 Bove study that we
24 looked at earlier that's been marked as Exhibit --
25 Exhibit 9?

1 A. Right.

2 Do you want me to --

3 Q. Sorry, I just want to confirm that it's
4 the same study.

5 A. It is the same study, yeah.

6 Q. And I think you actually mentioned this
7 already, but you cited the statistics for civilian
8 workers in Mr. Howard's report?

9 A. Yes.

10 Q. Why?

11 A. Well, because they were there.

12 Q. And you did not cite the statistics for
13 Marines even though they were also in the study,
14 correct?

15 A. That's correct.

16 Q. And you didn't cite the statistics as they
17 applied to Marines that showed that there was no
18 association; fair?

19 A. No reported association, correct.

20 Q. You did not do a quantitative risk
21 assessment for Mr. Howard, correct?

22 A. What do you mean by "quantitative risk
23 assessment"?

24 Q. Did you take any effort to quantify the
25 risk -- the increased risk of Mr. Howard developing

1 diffuse large B-cell lymphoma in light of his
2 exposure to TCE, PCE and Benzene?

3 A. Well, I -- perhaps not quantitative, but
4 qualitative.

5 Q. And what -- other than the term "increased
6 risk," is there any more specific assessment you did
7 to qualitatively determine his risk -- increased
8 risk?

9 A. By reviewing the literature related to
10 exposure to TCE, PCE and Benzene in the non-Hodgkin
11 lymphomas.

12 Q. Did you assess what Mr. Howard's risk for
13 developing non-Hodgkin's lymphoma or diffuse large
14 B-cell lymphoma was regardless of his exposure to
15 TCE, PCE and Benzene?

16 A. You mean his --

17 Q. I mean the general population --

18 A. His general population --

19 Q. Yeah.

20 A. -- risk?

21 No, I didn't.

22 Q. Was that not necessary for your assessment
23 of the increased risk in light of these exposures?

24 A. Well, I believe that the data are what
25 they are relative to the studies that had been

1 published indicating an increased risk. And those
2 were the numbers that I gave my opinion on.

3 Q. If you turn to the last page, page 12,
4 your concluding paragraph includes a conclusion that
5 it was TCE, PCE and Benzene that made it --
6 that -- strike that.

7 You conclude that (as read):

8 It's more likely than not that
9 in Mr. Howard's case, the additive
10 exposure to TCE, PCE and Benzene
11 increased the risk of and was
12 likely a significant contributing
13 cause of his diffuse large B-cell
14 lymphoma. Furthermore, I conclude
15 to a reasonable degree of
16 scientific and medical certainty
17 that Mr. Howard's exposure to TCE,
18 PCE and Benzene while stationed at
19 Lejeune was an independent cause of
20 his lymphoma.

21 Do you see that?

22 A. Yes.

23 Q. So you -- for Mr. Howard, you opined that
24 TCE, PCE and Benzene were all a significant
25 contributing -- were all the cause of his

1 non-Hodgkin's lymphoma; fair?

2 A. Yes.

3 Q. And if you look back to Exhibit 1 for
4 Mr. Davis, your concluding paragraph for Mr. Davis
5 includes only PCE and Benzene.

6 Is there a reason why there's a
7 discrepancy between those two?

8 A. No specific reason. I just didn't address
9 the PCE issue in as much detail in the Davis case
10 versus the Howard case.

11 Q. Turning to his prognosis, on page 8, you
12 say that Mr. Howard's likelihood of relapse is
13 10 percent.

14 What did you rely on for that figure?

15 A. Those are data that have been published
16 related to the International Prognostic Index and
17 its value in predicting outcome for patients treated
18 with contemporary therapy for diffuse large B-cell
19 lymphoma.

20 Q. And you also offer two late effects from
21 treatment he received, including a cardiac effect
22 from doxorubican [sic] and impaired immune health
23 from rituximab?

24 A. Rituximab.

25 Q. Rituximab.

1 Is that fair?

2 A. Yes. Potential.

3 Q. Potential?

4 A. Potential late effects.

5 Q. So Mr. Howard has not experienced any
6 cardiac effects from doxorubican [sic]?

7 A. Not that I'm aware of.

8 Q. And you're not aware that Mr. Howard has
9 experienced any impaired immune health from
10 Rituximab?

11 A. Not that I'm aware of.

12 Q. It's speculative if any of these late
13 effects will impact Mr. Howard; fair?

14 A. Well, there are established risks. I
15 wouldn't call it speculative. It's unknown.

16 Q. It's unknown.

17 Turning first to the cardiac effects, you
18 agree that it's a known risk that doctors control
19 for by limiting the cumulative dose of doxorubican
20 [sic]?

21 A. Yes.

22 Q. And Mr. Howard's physician limited his
23 cumulative dose of doxorubican [sic]?

24 A. Yes, he did because beyond a certain
25 point, the -- the risk of those late effects

1 increases substantially, but the risk is there even
2 with the conventional doses of chemotherapy,
3 including doxorubicin.

4 (Reporter clarification.)

5 THE WITNESS: Cin, C-I-N.

6 MS. HORAN: I'm marking as Hoppe
7 Exhibit 15. This is Zduniak article from 2022
8 titled "Cardiovascular outcomes of patients treated
9 for non-Hodgkin lymphoma with first line
10 doxorubicin-based chemotherapy."

11 (Whereupon, Deposition Exhibit 15
12 was marked for identification.)

13 BY MS. HORAN:

14 Q. Dr. Hoppe, this is a study you cite to in
15 your report, correct?

16 A. Yes.

17 Q. And you cite to it for the proposition
18 that the cumulative incidence of cardiovascular
19 events at five years among patients treated with
20 standard chemotherapy for diffuse large B-cell
21 lymphoma is 11.4 percent, correct?

22 A. Correct.

23 Q. And that 11.4 percent includes the first
24 six months, one year and over one year, correct?

25 A. Correct.

1 Q. And Howard is now past one year since his
2 treatment?

3 A. I believe so. Yes.

4 Q. And the study only found that 31 percent
5 of cardiac events were after the first year?

6 A. Are you saying 31 percent of patients
7 or ...

8 Q. Yes.

9 A. 'Cause I'm looking at the curves in
10 Figure 2, and it looks like the majority of events
11 occur beyond 12 months.

12 Q. So if you look at Table 2.

13 A. Okay.

14 Q. Actually, strike that.

15 You see the -- across the top, it says (as
16 read):

17 Early onset CV event N equals
18 23.

19 A. Correct.

20 Q. Is that your understanding that there were
21 23 events that were early onset --

22 A. Right.

23 Q. -- CV?

24 A. Right.

25 Q. And there were 12 that were subacute CV

1 events?

2 A. Right.

3 Q. And 16 that were late CV events?

4 A. Right.

5 Q. And so of the population, roughly
6 31 percent were late events?

7 A. Okay.

8 Q. So the risk to Mr. Howard would be that
9 11.4 percent multiplied by that 31 percent; fair?

10 A. Well, the one thing I'm looking for here
11 is what the -- the median followup was of these
12 patients. Because the true risk of the late events
13 would depend on the duration of followup.

14 So, yeah, they say here the median
15 followup was five years, which is not very late in
16 terms of potential toxicity for the agents that we
17 use for cancer treatment.

18 Q. And what's your opinion that that's not
19 very late based off of?

20 A. My general experience and knowledge that
21 late effects can occur many years after -- after
22 primary treatment.

23 Q. And that's based on your practice as a
24 treating physician?

25 A. Yes.

1 Q. Do you have any studies or anything that
2 has looked beyond five years?

3 A. I would have to -- I'd have to search on
4 that. I'm sure there is -- there are some, but off
5 the top of my head, I can't quote them.

6 Q. Turning back to your report.

7 A. Yes.

8 Q. So back to Exhibit 3, which is
9 Mr. Howard's report, you state that Rituximab is a
10 known immunosuppressive therapy, it may result in
11 long-term impaired immune health, correct?

12 A. Yes.

13 Q. And then you cite to a study Shree 2020?

14 A. Right.

15 MS. HORAN: I'm marking as Exhibit --
16 Hoppe Exhibit 16. This is "Impaired immune health
17 in survivors of diffuse large B-cell lymphoma," by
18 Shree.

19 (Whereupon, Deposition Exhibit 16
20 was marked for identification.)

21 BY MS. HORAN:

22 Q. Dr. Hoppe, is this the study you cite to
23 in your report?

24 A. Yes.

25 Q. And you cite to the study for the

1 proposition that Rituximab may impact immune health?

2 A. Yes.

3 Q. On the first page, do you see the section
4 that says "results"?

5 A. Yes.

6 Q. The last sentence reads (as read):

7 The elevated risks could not
8 be explained by exposure to
9 chemotherapy, stem cell
10 transplantation or Rituximab except
11 for IRRs for humoral deficiency,
12 which were consistently higher
13 after the incorporation of
14 Rituximab into DLBCL treatments.
15 Do you see that sentence?

16 A. Yes.

17 Q. Would you agree that the study concluded
18 that elevated risks of various immune-related
19 conditions could not be explained by exposure to
20 Rituximab?

21 A. Well, it's a little confusing, this
22 sentence, taking it out of context, because it says
23 (as read):

24 Except for IRRs for humoral
25 deficiency, which were consistently

1 higher after the incorporation of
2 Rituximab into DLBCL treatments.

3 So it doesn't absolve Rituximab completely
4 of accounting for these side effects.

5 Q. But it also doesn't attribute them
6 definitively to Rituximab; fair?

7 A. Can you repeat that question?

8 Q. Sure.

9 The study is not definitively attributing
10 the impacts to Rituximab; fair?

11 A. Not to Rituximab directly.

12 Q. I want to turn next, Dr. Hoppe, unless you
13 have something else on that exhibit.

14 A. No.

15 Q. I want to turn next to what we've been
16 referring to as your general causation opinions.

17 And these are the same as my understanding
18 from you today for both Mr. Howard and Mr. Davis.

19 So do you have a preference on which
20 report we use --

21 A. No.

22 Q. -- to go through them?

23 Okay. Turning to page -- we'll use your
24 Davis report, then, which is Exhibit 1. And this
25 might be easier just 'cause the citations are in the

1 text.

2 On page 6 of your report, you have a
3 couple of sentences on the standards for evidence
4 for causation for TCE, PCE and Benzene.

5 Do you see that at the top of the page?

6 A. The very -- very first paragraph on
7 page 6?

8 Q. Yes.

9 A. Yes.

10 Q. And you're equating equipoise and above
11 evidence with the standard at least as likely or
12 not -- as not; fair?

13 A. Yes.

14 Q. The top of page 6, the first paragraph,
15 the standard sufficient evidence equipoise and above
16 and sufficient evidence that you use for TCE, PCE
17 and Benzene, those studies came from the 2017 ATSDR
18 study?

19 A. Correct.

20 Q. Do you see those standards regularly in
21 your practice?

22 A. Well, as I -- I think I said earlier, I
23 don't use this terminology in my practice.

24 Q. And you said earlier, I believe, that
25 you've never read the Camp Lejeune Justice Act?

1 A. You know, I -- I don't think so. If I
2 did, it was very early in the materials that were --
3 were given to me.

4 Q. But you're not attempting to interpret
5 legal language or legal causation standards in your
6 report; fair?

7 A. I don't think so.

8 Q. And you didn't feel it was necessary to
9 review statutory language in order to offer your
10 opinions in this case?

11 A. No.

12 Q. Other than the ATS- -- 2017 ATSDR report,
13 have you seen any published guidance on how one
14 applies the equipoise and above or as likely as not
15 standard?

16 A. I -- I think I've seen it referred to in
17 some other publications, but I can't -- I wouldn't
18 be able to pinpoint where.

19 Q. Turning to page 3, so the first part of
20 this page is about TCE, correct?

21 A. Yes.

22 Q. And you opine that TCE can cause immune
23 system dysfunction?

24 A. Yes.

25 Q. And the two -- or the human studies you

1 cite is the two Bassig studies on the Chinese
2 factory worker, the Bassig 2013 and 2016?

3 A. Yeah. And also the -- the Lash study.

4 MS. HORAN: Marking as Hoppe Exhibit 17.
5 This is "Occupational Exposure to Trichloroethylene
6 and Serum Concentrations of IL-6, IL-10 and the TNF
7 Alpha." The author is Bassig, and it was published
8 in 2013.

9 (Whereupon, Deposition Exhibit 17
10 was marked for identification.)

11 BY MS. HORAN:

12 Q. Dr. Hoppe, this is the Bassig 2013 study
13 that you cite to?

14 A. Yes.

15 Q. Could you turn to page 6, please? The
16 last two sentences, which are at the top of page 6,
17 read (as read):

18 Given that immunologic
19 alterations are suspected to play a
20 role in lymphomagenesis, and IL-10
21 plays an important role in
22 immunologic processes, our findings
23 provide additional evidence that
24 TCE is immunotoxic in humans and
25 some support for the biologic

1 plausibility that TCE may be
2 associated with NHL. However, our
3 findings require replication in
4 larger studies and in other exposed
5 populations.

6 Do you see that?

7 A. Yes.

8 Q. You agree the study did not find that TCE
9 causes NHL?

10 A. No. It demonstrated effects on the immune
11 system that would potentially be causative for NHL.

12 Q. Sure.

13 So it did not find a causative
14 relationship between TCE and NHL; fair?

15 A. No. But I'm not sure that was what they
16 were trying to do. They were trying to demonstrate
17 that exposure to this agent affected immune markers.

18 Q. And so it offers just some support for the
19 biologic plausibility that TCA may -- TCE may be
20 associated with NHL?

21 A. Yes.

22 Q. And that's the limit of their findings;
23 fair?

24 A. Yeah.

25 MS. HORAN: I'm marking as Hoppe

1 Exhibit 18. This is a "Comparison of hematological
2 alterations and markers of B-cell activation in
3 workers exposed to Benzene, formaldehyde and
4 trichloroethylene." And this is a Bassig study from
5 2016.

6 (Whereupon, Deposition Exhibit 18
7 was marked for identification.)

8 BY MS. HORAN:

9 Q. Dr. Hoppe, you also cite to this study in
10 your report; fair?

11 A. Yes.

12 Q. In this study, were the immune markers of
13 the exposed workers within normal range?

14 A. What do you include under "immune
15 markers"?

16 Q. What would you include as an immune marker
17 for this study?

18 A. Well, I would include, for example,
19 chromosome loss, which is demonstrated to be
20 affected by Benzene exposure.

21 Q. What page are you looking at?

22 A. That is page 697.

23 Q. You're looking at the charts?

24 A. Right. Or in Figure 2, certain subsets of
25 lymphocytes being significantly affected by exposure

1 to TCE.

2 Q. Anything else?

3 A. Well, those are -- those are examples,
4 yeah. So, you know, I would -- I think your
5 statement was that there was no -- no association --

6 Q. Oh, no, I asked if the immune markers of
7 the exposed workers were within normal range.

8 A. I'm not certain if they were within normal
9 range, but they were significantly decreased.

10 Q. And would you agree that changes in immune
11 markers in the normal range would not be clinically
12 significant, even if there were changes?

13 A. No. I wouldn't agree that would not be
14 clinically significant.

15 Q. So you would -- it's your opinion that if
16 there's a change in the immune marker, but it
17 remains in the normal range, that's clinically
18 significant?

19 A. Yes.

20 Q. Do you know if these workers were followed
21 to determine if NHL developed?

22 A. If --

23 Q. NHL --

24 A. Well, again, I think that this study was
25 not intended to look at the absolute linkage to NHL.

1 Q. You can put that aside.

2 The -- the two studies we just looked at,
3 which were marked as Exhibit 16 and 17 -- 17 and 18,
4 those studies involved comparison for the measured
5 outcomes between TCE exposed and controlled or
6 unexposed factory workers, correct?

7 A. Correct.

8 Q. So you -- in order for these studies to be
9 relevant to Camp Lejeune, you have to adopt the
10 assumption that the exposures to TCE for the workers
11 in these studies was sufficiently similar for TCE
12 exposure for Camp Lejeune subjects; fair?

13 A. Well, I think this relates more to
14 mechanisms of -- that might predispose one to the
15 development of lymphoma. You know, and, you know,
16 that's the entire reason for including them.

17 Q. Ah.

18 So you included the Bassig 2013 and 2016
19 studies in order to, in your review of the
20 mechanisms, the biologic mechanisms under which TCE
21 can impact the immune system?

22 A. Right.

23 Q. Do you know if the Chinese factory workers
24 in the studies that you cited to were exposed to TCE
25 via contaminated water?

1 A. I don't know that they weren't.

2 Q. Do you know what the source of their TCE
3 exposure was?

4 A. So it was occupational exposure. Exactly
5 what the occupations were, I'm uncertain. They were
6 factory workers.

7 Q. So because you limit the utility of these
8 studies to biologic mechanisms for the interaction
9 between TCE and the immune system, does the
10 frequency, intensity and duration of TCE exposure,
11 does it matter if it's the same between the Chinese
12 factory workers and the Camp Lejeune individuals for
13 your -- for the purposes of your analysis?

14 A. I would say no. It's simply an
15 explanation of the mechanisms, potential mechanisms
16 related to development of lymphoma.

17 Q. Is it your opinion that subjects with
18 lower but normal lymphoid subpopulation counts are
19 immunosuppressed relative to subjects with higher
20 but normal numbers of lymphoid cell populations?

21 A. I would say that for certain
22 subpopulations of lymphocytes, if you look at the
23 total population of lymphocytes, it would be hard to
24 say that in the lower part of the normal range
25 there's any greater risk than in the higher part of

1 the normal range.

2 Q. The immune markers looked at the
3 studies -- looked at in the studies, are those
4 immune markers considered to be validated, reliable
5 and relevant markers of cancer risk?

6 A. Yes.

7 Q. And why is that?

8 A. Well, because effects on lymphocyte
9 subpopulations can affect what's referred to as
10 immune surveillance, where certain subsets of
11 lymphocytes recognize foreign antigens, foreign
12 proteins or -- that may be products of -- of
13 neoplasm or cancer. And if subpopulations of
14 lymphocytes are reduced, then there may be a
15 decreased ability for immune surveillance.

16 Q. In your report on page 3 -- excuse me --
17 after the Bassig studies, you cite to, in the
18 following paragraph, the Karami 2013 study and the
19 Scott Jinot 2011 study?

20 A. Right.

21 Q. Excuse me.

22 Are there any other meta-analysis you
23 looked at related to TCE other than Karami and Scott
24 and Jinot?

25 A. Those are the two main ones that I recall.

1 MS. HORAN: I'm marking as Hoppe
2 Exhibit 19. This is the "Occupational
3 trichloroethylene exposure and risk of lymphatic and
4 hematopoietic cancers: a meta-analysis." This is
5 Karami 2013.

6 (Whereupon, Deposition Exhibit 19
7 was marked for identification.)

8 THE WITNESS: Oh, sorry.

9 BY MS. HORAN:

10 Q. Dr. Hoppe, this is the study you relied
11 on, correct?

12 A. Yes.

13 Q. Did you evaluate the underlying studies?

14 A. The -- each individual study included in
15 the analysis --

16 Q. Yes.

17 A. -- no.

18 Q. Did you look at any of them?

19 A. Yes. Well, I can say I recall looking at
20 the Cocco study.

21 I'm not sure about any others.

22 Q. Why didn't you include the Cocco study in
23 your report?

24 A. Well, I didn't look upon this as an
25 extensive general causation analysis. So, you know,

1 I -- the Karami study and the Scott Jinot study were
2 meta-analyses, and so they included studies like the
3 Cocco study in their -- in drawing their
4 conclusions.

5 Q. When you say you didn't view this as an
6 extensive general causation analyses, what did you
7 view your general causation analyses to be?

8 A. Well, I knew that there were general
9 causation experts, and I was a specific causation
10 expert. That was my understanding, at least, to --
11 to include some general considerations, which I did.
12 But not to be -- not to extensively review the
13 literature.

14 Q. Why didn't you submit your opinions --
15 your general causation opinions at the same time as
16 the other general causation experts?

17 Do you know why?

18 A. I was told I had a certain deadline, you
19 know, for preparing my report.

20 I had no idea when the general causation
21 deadlines were.

22 Q. Fair enough.

23 If you look at Karami, which is
24 Exhibit 19, do you see the abstract, the second
25 sentence reads (as read):

1 We conducted a meta-analysis
2 of published cohort and case
3 controlled studies exploring
4 occupational TCE exposure in
5 relation to five different
6 lymphatic and hematopoietic
7 cancers.

8 Do you see that?

9 A. Yes.

10 Q. And that's your understanding of what
11 Karami did?

12 A. Yes.

13 Q. And all the studies and the analyses were
14 classified as those that assessed either
15 occupational TCE exposure or mixture of chlorinated
16 solvent exposure studies; fair?

17 A. Yes.

18 Q. And if you turn to page 2, do you see the
19 section that says "Methods"?

20 A. Yes.

21 Q. The very end of that page in the first
22 column, it says (as read):

23 As a result, we excluded
24 community-based studies of TCE
25 exposure from drinking water since

1 the level and route of exposure
2 differ from those found in
3 occupational settings.

4 Did I read that correctly?

5 A. Yes.

6 Q. Do you agree with the authors' decision to
7 exclude drinking water studies?

8 A. Well, they -- that was their choice. They
9 wanted to have one less variable in their analysis.
10 So whether I agree or disagree with them, this --
11 that was their decision.

12 Q. Does their decision to exclude drinking
13 water studies impact the applicability of this study
14 to your findings related to drinking water at
15 Camp Lejeune?

16 A. No. I -- you know, because as they
17 explained the level and route of exposure was
18 different, and they just didn't want to confuse
19 their -- their data analysis by having those
20 variables.

21 Q. Sure.

22 So they did not include in their analysis
23 the route of exposure relevant to this case; fair?

24 A. They excluded studies of drinking water.

25 Q. And your specific causation opinions in

1 this case are exclusively related to exposure of
2 drinking water; fair?

3 A. Well, there were other exposures in
4 addition to drinking that were outlined.

5 Q. In your report, you're saying?

6 A. Yeah.

7 Q. But Dr. Reynolds and her exposure
8 assessment considered only drinking water --

9 A. Okay.

10 Q. -- is that fair?

11 A. Yeah.

12 Q. Do you agree that the level and route of
13 TCE exposure from drinking water is different from
14 the level and route of TCE exposure in an
15 occupational setting?

16 A. Certainly the route is different.

17 Q. Do you agree that the level is also
18 different?

19 A. It may be, but I don't know in which
20 direction.

21 Q. Do you believe that TCE in a residential
22 water is comparable or similar to TCE in the ambient
23 air in an occupational setting?

24 A. I would guess that it's more hazardous --
25 hazardous in water than in the occupational setting.

1 Q. And why is that?

2 A. Well, I just think if you're ingesting
3 something, it's more hazardous than simply inhaling
4 some volatile components of that chemical.

5 Q. And I think you started out your answer
6 with it's just a guess; is that fair?

7 Or do you have any studies that set forth
8 that?

9 A. No, I don't have any studies that report
10 it.

11 Q. Have you seen any other epidemiology
12 studies where this type of distinction is made?

13 A. I may have in the papers that I've looked
14 at, but I don't recall specifically.

15 Q. How do you compare contaminant levels in
16 drinking water to an occupational setting?

17 A. Well, they're different in the sense that
18 the route of the chemical from entering the body is
19 different.

20 Q. And how do you compare them?

21 How do you take a study on occupational
22 setting and apply it to a case on drinking levels --
23 drinking water?

24 A. Well, the exposure is there. And if the
25 exposure is significant, then -- then it's

1 comparable.

2 Q. Can you turn back to the abstract. The
3 second-to-last sentence says (as read):

4 Summary estimates for
5 occupational TCE exposure were not
6 associated with risk of HLMM
7 leukemia.

8 A. Leukemia.

9 Q. Oh, leukemia, or CLL, SLL.
10 Do you see that sentence?

11 A. Yes.

12 Q. How do you explain the finding of a raised
13 summary estimate for NHL, but a null result for CLL?

14 A. I'm not an expert on CLL, so ...

15 Q. Well, let me ask a different question,
16 then.

17 Does that suggest TCE exposure does not
18 have the same effect on all NHL subtypes?

19 A. Well, just that they were not able to
20 demonstrate a relationship, and I don't know what
21 their exact results were for CLL, but they did not
22 see an increased risk.

23 Q. Sure.

24 And CLL is a subtype of NHL; fair?

25 A. Yes.

1 Q. And so the fact that they found an
2 association for NHL and no association for CLL
3 suggests that TCE exposure doesn't have the same
4 effect on all subtypes of NHL; fair?

5 A. Yes.

6 Q. Could you turn to page 8?

7 Do you see it says (as read):

8 Our meta-analytical findings
9 for TCE exposure and NHL risk still
10 warrant further exploration given
11 the limited dose response patterns
12 observed in our review and the
13 recent conclusion by IARC that the
14 carcinogenic evidence for TCE and
15 NHL is limited.

16 Did I read that correctly?

17 A. Yeah. It took me awhile to find it, but I
18 think so, yes.

19 Q. Okay. Have you had a chance to review
20 that second-to-last --

21 A. Yeah.

22 Q. -- sentence now?

23 A. Yeah.

24 Q. Do you agree with that second-to-last
25 sentence?

1 A. Well, I agree that it warrants further
2 exploration.

3 Q. Do you know one way or the other whether
4 IARC concluded that the carcinogenic evidence for
5 TCE and NHL is limited?

6 A. No.

7 Q. You don't know one way or the other?

8 A. I -- I was not aware of that, no.

9 MS. HORAN: We've been going about an
10 hour. Do you mind if we take a break, and I might
11 be able to streamline the end of this?

12 THE WITNESS: Sure.

13 MS. HORAN: Go off the record.

14 THE VIDEOGRAPHER: The time is 4:00 p.m.
15 Pacific Time. We're going off the record.

16 (Whereupon, a recess was taken from
17 4:01 p.m. to 4:12 p.m.)

18 THE VIDEOGRAPHER: The time is 4:12 p.m.
19 Pacific Time. We're back on the record.

20 MS. HORAN: I'm marking as Exhibit 20.
21 This is a study called "Long-term exposure to low
22 level ambient BTEX and site-specific cancer risk: A
23 national cohort study in the UK Biobank," by Yu and
24 it's a 2025 study.

25 / /

1 (Whereupon, Deposition Exhibit 20
2 was marked for identification.)

3 BY MS. HORAN:

4 Q. Dr. Hoppe, I don't believe this is in your
5 report, but I believe you've mentioned this a couple
6 of times today; is that fair?

7 A. That's correct.

8 Q. And this study focuses on low-level
9 ambient exposure to BTEX; fair?

10 A. Yes.

11 Q. Meaning it studied lower exposure doses
12 than occupational studies would?

13 A. Yes.

14 Q. It also evaluates long-term exposures;
15 fair?

16 A. Yes.

17 Q. Do you know if the Yu study controls for
18 co-exposures?

19 A. For?

20 Q. Co-exposures.

21 A. Meaning, like, occupational exposures
22 or --

23 Q. Sure.

24 Being just exposed to more than just one,
25 one thing?

1 A. I don't think so.

2 Q. This study has no data on NHL subtypes,
3 correct?

4 A. That's my recollection.

5 Q. This study evaluates all NHLs as a whole?

6 A. Right.

7 Q. Do you know -- and I think you've
8 testified that you don't -- you're not familiar with
9 a term of an ecological study, so you don't know one
10 way or the other whether this study is an ecological
11 study; fair?

12 A. I don't know, but by the nature of the
13 analysis, I suspect it may be ecological.

14 Q. And it didn't have individual exposure
15 data for participants; fair?

16 A. Fair.

17 Q. If you could turn to page 5. The second
18 column, the top paragraph, the last two sentences
19 reads (as read):

20 The exposure assessment based
21 on residential address could not
22 capture activity patterns of
23 individuals, thus, potential
24 exposure misclassification might
25 exist. Moreover, despite the

1 adjustment of a series of
2 confounders, we could not rule out
3 residual confounding by other
4 unmeasured factors that might
5 affect the exposure and cancer
6 incidents. Finally, indoor
7 emissions are an important source
8 of BTEX. The lack of data on
9 individual indoor exposure is a
10 common limitation in environmental
11 epidemiological research and the
12 results should be interpreted with
13 caution.

14 Did I read that correctly?

15 A. Yes.

16 Q. So there's no way to know which study
17 participants were exposed to what levels of
18 contamination; fair?

19 A. That's true. But, you know, what -- what
20 you quote is, you know, every, you know, current
21 scientific paper mentions the strengths of their
22 studies and the weaknesses of their studies. And,
23 you know, I wouldn't -- I wouldn't interpret this
24 extraction of data to, you know, reflect on the --
25 the overall manuscript. But yes, you are correct.

1 Q. Do you agree that the results should be
2 interpreted with caution, as they state?

3 A. Sure.

4 Q. The study found a positive association
5 between every cancer and every chemical it
6 evaluated; fair?

7 A. Yes.

8 Q. You can set that aside.

9 MS. HORAN: I'm marking as Exhibit --
10 Hoppe Exhibit 21. This is a "Retrospective cohort
11 study of cause-specific mortality and incidence of
12 hematopoietic malignancies in Chinese
13 Benzene-exposed workers." And it's Linet 2015.

14 (Whereupon, Deposition Exhibit 21
15 was marked for identification.)

16 BY MS. HORAN:

17 Q. Dr. Hoppe, you cite to this study in your
18 report, correct?

19 A. Yes.

20 Q. And that's on page 4 of your report as it
21 relates to Benzene?

22 A. Yes.

23 Q. Could you turn to page 2 of this study?
24 Do you see where it says "study
25 population"?

1 A. Yes.

2 Q. Roughly in the middle of that paragraph,
3 there's a section -- or a sentence that begins (as
4 read):

5 Briefly Benzene-exposed
6 workers.

7 Do you see that?

8 A. Yes.

9 Q. Okay. And that reads (as read):

10 Briefly Benzene-exposed
11 workers in the spray and brush
12 painting coatings, rubber chemical,
13 including pharmaceutical
14 manufacturing, shoe making and
15 other, including printing and
16 insulation industries were
17 identified from those employed any
18 length of time during 1972 to 1987
19 to 1,427 work units, departments,
20 and 672 factories in 12 Chinese
21 cities. See Table 1.

22 Do you see that sentence?

23 A. Yes.

24 Q. Do you agree that factory workers in China
25 between 1972 and 1987 in coatings, chemical, shoe

1 making, printing and insulation industries were
2 exposed to higher levels of Benzene than individuals
3 at Camp Lejeune through the water between 1953 and
4 1987?

5 A. I have no idea how to compare those two.

6 Q. If you're not clear -- strike that.

7 If you're not sure how to compare the
8 population in Linet with the population at
9 Camp Lejeune's exposures, how does Linet factor into
10 your analysis?

11 A. Well, that is simply exposure to those
12 agents, including Benzene, resulted in an increased
13 risk for non-Hodgkin lymphoma in this population.

14 Q. Sure.

15 And how would you take that finding and
16 apply it to this case, which is Camp Lejeune water?

17 A. Well, the mechanisms of injury are the
18 same whether you ingest it or inhale it.

19 Q. And is there any way for you to compare
20 the levels of exposure between those two
21 populations?

22 A. No. I think that's what I was trying to
23 get at.

24 Q. Turning to your report, you also cite the
25 Rana 2021 study?

1 A. Yes.

2 Q. You would agree that the Rana study found
3 that the risk of developing NHL differed by subtype
4 of NHL; fair?

5 A. I don't recall offhand. I have to take --
6 I would have to take -- I would have to take a look
7 at that.

8 Q. Well, just looking at your report, you
9 state (as read):

10 They reported increases in the
11 risk for a wide variety of
12 lymphomas --

13 A. Oh, yeah.

14 Q. (As read):

15 -- and specifically a doubling
16 of the risk --

17 A. Yeah.

18 Q. (As read):

19 -- of diffuse large B-cell --

20 A. Right.

21 Sorry.

22 Q. So you agree that the Rana study found
23 that the risk of developing NHL differed by subtype?

24 A. Yes.

25 Q. Turning to your section on PCE, every

1 study that you cite to includes the null value in
2 their confidence interval, suggesting no
3 association; fair?

4 A. That's correct.

5 Q. And you're familiar with IARC?

6 A. I forget what IARC stands for.

7 Q. International Agency for Research on
8 Cancer.

9 A. Okay.

10 Q. You cite to IARC as a reliable source for
11 Benzene?

12 A. Yes.

13 MS. HORAN: So I'm handing you what's been
14 marked as Hoppe Exhibit 22.

15 (Whereupon, Deposition Exhibit 22
16 was marked for identification.)

17 MS. HORAN: "Trichloroethylene,
18 tetrachloroethylene and some other chlorinated
19 agents," and this is by IARC.

20 BY MS. HORAN:

21 Q. Have you seen this before?

22 A. This report is from -- I saw some part of
23 it. I don't think I saw this entire report.

24 Q. Could you please turn to page 329?

25 MR. MCGOWAN: Can I just hand him this

1 one?

2 MS. HORAN: That's fine with me.

3 MR. MCGOWAN: This is page 329.

4 THE WITNESS: I got it.

5 MR. MCGOWAN: All right.

6 THE WITNESS: Okay.

7 BY MS. HORAN:

8 Q. And do you see where it's 6.3 overall
9 evaluation?

10 A. Yes.

11 Q. And it says (as read):

12 Tetrachloroethylene is
13 probably carcinogenic to humans,
14 group 2A.

15 A. Yes.

16 Q. And if you turn to page 326.

17 A. Okay.

18 Q. Do you see a 5.2.2, other cancer sites?

19 A. Correct.

20 Q. Do you see it says (as read):

21 Several studies evaluated
22 exposure to tetrachloroethylene and
23 the risk of cancers at other sites,
24 including esophagus, kidney, cervix
25 and non-Hodgkin's lymphoma, no

1 consistent patterns were seen
2 across studies.

3 A. Yes.

4 Q. Do you agree with that assessment?

5 A. Well, that's their assessment --
6 assessment based on the studies they reviewed, yes.

7 Q. And based on the studies you've reviewed,
8 do you agree with that assessment?

9 A. I would have to look at their -- at the
10 sources that they use to make this conclusion.

11 Q. Could you turn to page 327?

12 A. Yeah.

13 Q. So right above 5.3, there's a sentence
14 that starts "For non-Hodgkin lymphoma."

15 Do you see that?

16 A. Yes.

17 Q. It says (as read):

18 For non-Hodgkin lymphoma,
19 three cohort studies showed an
20 increased risk based on small
21 numbers and the largest study with
22 the best control of potential
23 confounders did not. Case control
24 studies on non-Hodgkin lymphoma did
25 not find significant associations.

1 Did I read that correctly?

2 A. Yes.

3 Q. IARC is a respected organization; fair?

4 A. Yes.

5 Q. You can set that aside.

6 Do you see Hoppe Exhibit 23? It says (as
7 read):

8 ATSDR assessment of the
9 evidence -- sorry.

10 Let me start over.

11 MS. HORAN: I am marking as Exhibit 23,
12 Hoppe Exhibit 23, "ATSDR assessment of the evidence
13 for the drinking water contaminants at Camp Lejeune
14 and specific cancers and other diseases."

15 And it's dated January 13th, 2017.

16 (Whereupon, Deposition Exhibit 23
17 was marked for identification.)

18 BY MS. HORAN:

19 Q. Dr. Hoppe, this is the ATSDR study that
20 you discuss on pages 5 and the top of 6 of your
21 expert reports; fair?

22 A. Yes.

23 Q. Have you read Dr. Bove's deposition
24 transcript?

25 A. No.

1 Q. Do you know how long an epidemiological
2 study takes to plan and perform?

3 A. Depending on the nature of the
4 epidemiological study, I would say at least three or
5 four years if they are retrospective.

6 Q. Did you know that Dr. Bove performed ATSDR
7 systematic review of four chemicals and 16 health
8 outcomes at Camp Lejeune in six weeks?

9 A. Well, he completed that analysis.

10 Q. In six weeks, were you aware of that?

11 A. No.

12 Q. And do you know if he had any help in
13 performing the analysis?

14 A. No.

15 Q. Are you aware that Dr. Bove testified that
16 the 2017 assessment's purpose was to add diseases to
17 the VA presumption list?

18 A. No.

19 Q. The 2017 assessment did not use
20 significance testing to assess the evidence for
21 causality; fair?

22 A. I'm sorry, can you repeat that?

23 Q. The 2017 assessment did not use
24 significance testing to assess the evidence for
25 causality; fair?

1 A. I don't recall. I mean, it looked at
2 multiple studies and recorded whether they were
3 significant or not.

4 Q. Do you see on page 8, the last paragraph
5 on page 8 says (as read):

6 In our assessment, we did not
7 use confidence intervals to
8 determine whether a finding was
9 statistically significant, nor did
10 we use significance testing to
11 assess the evidence for causality.
12 Did I read that correctly?

13 A. Yes.

14 Q. So you agree that ATSDR did not use
15 significance testing to assess the evidence?

16 A. Yes.

17 Q. Instead, it looked at the ratio of the
18 upper end of the confidence interval to the lower
19 end, correct?

20 A. Are you reading something?

21 Q. I believe that's what it says in the
22 paragraph just above.

23 A. Okay.

24 Q. Are you aware of whether it's generally
25 acceptable in epidemiology to use a confidence

1 interval ratio?

2 A. I'm not aware.

3 Q. In the sentence -- the last sentence of
4 the second-to-last paragraph says (as read):

5 An effect estimate --

6 A. Sorry, where are you reading from?

7 Q. Page 8 still.

8 A. Okay.

9 Q. The second-to-last paragraph. It's a
10 short one.

11 A. Yeah.

12 Q. Begins "In the disease."

13 A. Yeah.

14 Q. The second sentence says (as read):

15 An effect estimate, e.g., risk
16 ratio, odds ratio or standardized
17 mortality ratio was considered to
18 have good precision or less
19 uncertainty if the ratio of the
20 upper limit to the lower limit of
21 its 95 percent confidence interval
22 was less than or equal to 2.

23 A. Okay.

24 Q. Have you ever used this parameter before?

25 A. No.

1 Q. Have you ever seen an authority that
2 suggests that this is a common or a standard
3 methodology?

4 A. No. Again, I'm not an epidemiologist, so
5 I don't travel in those circles.

6 Q. If you turn to page 6 or 7 -- or 6.
7 Sorry. This classification scheme categories
8 section, which runs from 6 to 7, references an
9 epidemiological study considered to be of high
10 utility.

11 And I believe you referenced that language
12 in your report as well.

13 A. Yes.

14 Q. How do you define "high utility"?

15 A. Can you show me again where that phrase is
16 used?

17 Q. So it's used at least on page 7, number 2.

18 A. Oh, okay, I was looking at page 6.

19 Q. Partially down the middle, but it might
20 be -- it's also in, I believe, number 3. I think
21 they use it a couple times.

22 A. Well, I would say high utility would mean
23 a very useful study.

24 Q. And how would you determine whether a
25 study was very useful?

1 A. Well, that would be based on -- in my
2 mind, on number of patients, duration of followup,
3 the confidence related to exposure and exposure
4 duration.

5 Q. Anything else you can think of right now?

6 A. The elimination of other -- other effects
7 that might influence the development of endpoint.

8 Q. Anything else?

9 A. Not offhand.

10 Q. In rendering your opinion, did you rely on
11 high utility epidemiological studies as you've
12 defined the term?

13 A. I believe so.

14 Q. And what studies -- what high utility
15 epidemiological studies did you rely on that you
16 would consider high utility as you just defined it?

17 A. The -- well, essentially all of the
18 studies that I included in my report.

19 Q. All of those studies, in your opinion,
20 would qualify as high utility as you've just defined
21 the term?

22 A. Yes.

23 MS. HORAN: I think I am wrapped up. Do
24 you mind if we go off the record for one or two
25 minutes and I can confer with my colleague?

1 MR. ELLIOTT: Absolutely.

2 THE VIDEOGRAPHER: The time is 4:36 p.m.
3 Pacific Time. We're going off the record.

4 (Whereupon, a recess was taken from
5 4:36 p.m. to 4:38 p.m.)

6 THE VIDEOGRAPHER: The time is 4:38 p.m.
7 Pacific Time. We're back on the record.

8 MS. HORAN: Dr. Hoppe, thank you very much
9 for your time today. I don't have any further
10 questions for you.

11 I will just note, I don't believe we have
12 materials considered list that includes
13 Dr. Ambinder's reports. We'll check our files
14 again, but we'll follow up with you because I
15 believe Dr. Hoppe testified that he has read and
16 reviewed those. So we'll go through our files, and
17 we'll follow up with you afterwards, but I just
18 wanted to note that for the record.

19 MR. MCGOWAN: Okay. All right. We're
20 going to take five minutes ourselves. We'll be
21 right back.

22 MS. HORAN: Sure.

23 THE VIDEOGRAPHER: Time is 4:39 p.m.
24 Pacific Time. We're going off the record.

25 (Whereupon, a recess was taken from

1 4:39 p.m. to 4:45 p.m.)

2 THE VIDEOGRAPHER: The time is 4:45 p.m.
3 Pacific Time. We're back on the record.

4 EXAMINATION BY MR. MCGOWAN

5 BY MR. MCGOWAN:

6 Q. Doctor, could you describe briefly for the
7 judges who will read this one day what your
8 day-to-day work entails outside of any litigation
9 context?

10 A. Sure.

11 That's nearly all of my time. And as I
12 indicated earlier, about 60 percent of my time is in
13 clinical practice, and that includes seeing new
14 patients with cancer, specifically lymphoma, since
15 my practice is limited to lymphoma, seeing those
16 patients in consultation, treating them when
17 appropriate, and also following them after the
18 completion of therapy in long-term followup.

19 That's 60 percent of my time.

20 The other 40 percent includes teaching.
21 We have teaching programs with residents and fellows
22 and medical students who are learning the
23 disciplines of cancer treatment. And also, clinical
24 research. I'm involved in a number of clinical
25 trials related to the treatment of patients with

1 lymphoma. And the followup of long-term
2 complications of lymphoma, lymphoma treatment.

3 And then an additional proportion of my
4 time is spent in administration. I currently chair
5 the department committee for appointments and
6 promotions.

7 Q. How many years have you been treating,
8 teaching and researching cancer, lymphoma in
9 particular?

10 A. So I've been on the faculty at Stanford
11 for 49 years, and I would say that 47 of those I've
12 been limited to the -- to lymphoma, my practice.
13 And throughout that time, I've been involved in
14 teaching and research.

15 Q. Okay. Is it accepted in your field that
16 PCE, TCE and Benzene can cause NHL?

17 A. Yes.

18 Q. And the exposure numbers in your report,
19 were those cumulative numbers?

20 MS. HORAN: Objection to form.

21 THE WITNESS: Sorry?

22 MS. HORAN: You can answer. I object,
23 Dr. Hoppe, but you should answer the question. I
24 just said objection, form.

25 THE WITNESS: Okay. Can you repeat the

1 question?

2 BY MR. MCGOWAN:

3 Q. Yeah. The exposure numbers in your
4 report, were those cumulative?

5 A. Yes.

6 MS. HORAN: Same objection.

7 BY MR. MCGOWAN:

8 Q. All right. I want to draw your attention
9 to the Bove 2024 study that we talked about earlier,
10 some hours ago.

11 And do you remember the .89 hazard ratio
12 for DLBC?

13 A. Right.

14 Q. Now, if we just take that on its face,
15 would that -- could you -- could someone
16 misrepresent that to say, hey, look, because it's
17 .89, these chemicals are protective or preventive of
18 that disease?

19 A. No. I wouldn't draw that conclusion.

20 Q. Right.

21 Are there limitations on that study and
22 every study?

23 A. Yes.

24 Q. All right. Do scientists who actually
25 want to know the truth cherry-pick a single study or

1 do they look at the body of science as a whole in
2 making determinations and judgments?

3 A. They look at the overall body of data.

4 Q. Okay. And does a single study make the
5 body of science in any given topic?

6 A. No.

7 Q. Now, the IARC meeting, the publication
8 that was put in front of you, do you recall that?

9 A. Yes.

10 Q. Are you aware that that meeting was held
11 in 2012 and it was published in 2014?

12 A. I did notice that it was published in
13 2014.

14 Q. And today is now 2025, so we have 11 years
15 more of experience and research between then and
16 now?

17 A. Yes.

18 Q. All right. We keep hearing this
19 throughout this case about the confidence interval
20 including the null. Okay.

21 That -- the fact that a confidence
22 interval includes the null does not dictate or
23 suggest that there's no association; is that true?

24 It's just a mathematical question?

25 MS. HORAN: Objection. Form.

1 THE WITNESS: Yes. That's -- that's
2 correct. It does not mean there's no association.
3 This is statistics and confidence intervals reflect
4 the statistics.

5 BY MR. MCGOWAN:

6 Q. Okay. And is it -- is it correct and fair
7 to say that a study with a confidence interval
8 includes the null does not show an association?

9 Is that -- is that a true statement? Is
10 that a fair statement?

11 MS. HORAN: Objection. Form.

12 THE WITNESS: No.

13 BY MR. MCGOWAN:

14 Q. Okay. And last, is it -- is it true that
15 when we're talking about water concentrations,
16 micrograms equals parts per billion, that's just
17 math?

18 MS. HORAN: Objection. Form.

19 THE WITNESS: Yes.

20 MR. MCGOWAN: Okay. That's all I have for
21 you, Doctor. Thank you.

22 MS. HORAN: I just have one question.

23 FURTHER EXAMINATION BY MS. HORAN

24 BY MS. HORAN:

25 Q. I think earlier today you testified that

1 you did not assess whether micrograms were the same
2 as parts per billion, and I believe you just
3 testified that they are the same.

4 What changed?

5 A. I checked on that.

6 Q. And what did you look at?

7 A. Well, I -- I asked the attorneys.

8 Q. And they told you that?

9 A. Yeah.

10 MS. HORAN: No further questions.

11 THE VIDEOGRAPHER: This concludes today's
12 testimony given by Dr. Richard Hoppe. Going off the
13 record at 4:51 p.m. Pacific Time.

14 (Whereupon, the deposition concluded
15 at 4:51 p.m.)

16 --oOo--

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I declare under penalty of perjury the
foregoing is true and correct. Subscribed at

_____, _____,
CITY STATE

this ___ day of _____, 2025.

WITNESS SIGNATURE

CERTIFICATE OF REPORTER

I, Kathleen A. Maltbie, Certified
Shorthand Reporter licensed in the State of
California, License No. 10068, the State of Nevada,
CCR 995, and the State of Texas, CSR 12212, hereby
certify that deponent was by me first duly sworn,
and the foregoing testimony was reported by me and
was thereafter transcribed with computer-aided
transcription; that the foregoing is a full,
complete, and true record of proceedings.

I further certify that I am not of counsel
or attorney for either or any of the parties in the
foregoing proceeding and caption named or in any way
interested in the outcome of the cause in said
caption.

The dismantling, unsealing, or unbinding
of the original transcript will render the
reporter's certificates null and void.

In witness whereof, I have hereunto set my
hand this day:

_____ Reading and Signing was requested.

_____ Reading and Signing was waived

 x Re Kathleen Maltbie tested.

KATHLEEN A. MALTBIE

RPR-RMR-CRR-CCRR-CLR-CRC-RDR

California CSR 10068, Nevada CCR 995

Texas CSR 12212

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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.

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